

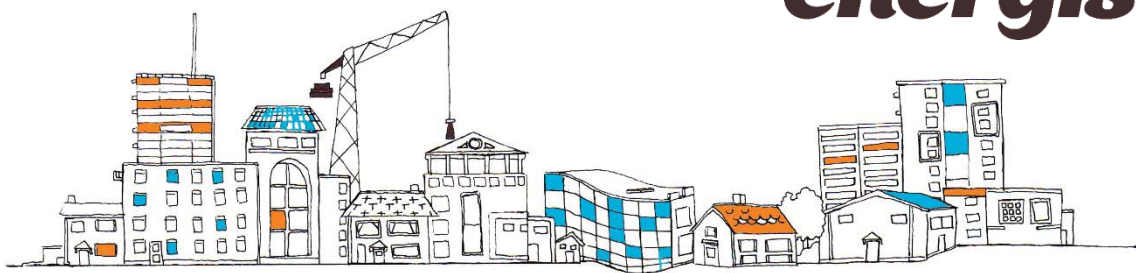
Energy Statement

New Operating Theatres & Support Facilities, Neath Port Talbot Hospital

On behalf of Blade Room

Revision B

Date: 10/05/2022



energist[®]

REVISION HISTORY

Revision	Issue Date	Description	Issued By	Checked By
A	01/04/2022	Original Document	ME	GS
B	10/05/2022	Updated PPW	ME	GS

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Calculations contained within this report have been produced based on information supplied by the Client and the design team. Any alterations to the technical specification on which this report is based will invalidate its findings.

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Energy Statement

New Operating Theatres & Support Facilities,
Neath Port Talbot Hospital, SA12 7BX

May 2022

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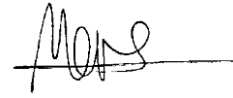
Contents

Contents	1
Document Control	2
1. Executive Summary	3
2. Introduction	4
3. Building Regulations and Policy Review	5
Policy and Regulations Overview	5
Part L2A Wales	6
Local Policy	6
Policy SP18: Renewable and Low Carbon Energy.....	6
Policy RE1: Criteria for the Assessment of Renewable and Low Carbon Energy Development.....	6
Policy RE2: Renewable and Low Carbon Energy in New Development	7
4. Energy Hierarchy	8
5. Calculation Methodology	9
National Calculation Method (NCM).....	9
6. Proposed Development.....	10
7. Energy Efficient Design	11
Step 1 – Minimising Energy Consumption – Be Lean	11
Step 2 – Supply Energy Efficiently – Be Clean	12
Step 3 – Utilising Low to Zero Carbon Technologies – Be Green	13
8. Results	16
9. Conclusions.....	17

Document Control

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Revision History

Revision	Date	Details
A	01/04/2022	First Issue
B	10/05/2022	Updated in line with PPW

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1. Executive Summary

- 1.1 This Energy Statement has been prepared in support of a planning application for the proposed extension to Neath Port Talbot Hospital providing new operating theatres & support facilities. The application consists of a new building with extension link to provide three additional operating theatres to the existing hospital.
- 1.2 This sustainability and energy statement has been produced to show compliance with the relevant sections of The Neath Port Talbot County Borough Councils Local Development Plan (2011-2026) and the Renewable and Low Carbon Energy Supplementary Planning Guidance (July 2017).
- 1.3 This is achieved by outlining the predicted energy demand and resultant carbon emissions of the development. It also shows how the proposals have incorporated energy efficiency measures, low carbon and renewable technologies in order to mitigate the effects of climate change.
- 1.4 In order to meet the requirements, the energy hierarchy has been followed. The development has improved upon the building regulation requirements through passive design and a fabric first approach. The building will be a highly insulated, light weight building and will be fitted with energy efficient services and fixings.
- 1.5 This report concludes that the most appropriate sustainable building services strategy for the development is predominantly an air source heat pump serving underfloor heating. VRF heating and cooling systems are proposed for the operating theatres and IT rooms. Further Hot water generation is also to be provided by an air source heat pump.
- 1.6 The modelling confirms that there is no further requirement for on-site renewable energy generation at this stage of design.
- 1.7 The use of air source heat pumps providing both heating and hot water has resulted in a 12.25% reduction in CO₂ emissions over the Building Regulations Target Emission Rate. This also equates that 60.99% of the buildings energy demand is met directly through low carbon/renewable technologies.
- 1.8 This has been deemed adequate to satisfy Part L2A of the Welsh Building Regulations, and the relevant parts of the Neath Port Talbot County Borough Councils Local Development Plan. A summary of the energy demand and emissions is shown below.

	Energy demand (kWh pa)	Energy saving achieved (%)	Regulated CO ₂ emissions (kg pa)	Saving achieved on residual CO ₂ emissions (%)
Building Regulations Part L Compliance (Target energy demand and emissions)	160,396.47	-	53,224.46	-
Proposed scheme after on- site renewables	91,678.84	42.84%	46,704.76	12.25%

Table 1: Summary of site wide emissions and energy demand

2. Introduction

- 2.1 E & S Bristol have prepared this energy statement on behalf of Energist UK in support of a planning application at Neath Port Talbot Hospital. The application consists of a new building connected to the existing hospital with a link to provide three additional operating theatres and associated support facilities.
- 2.2 The statement outlines how the proposed development complies with the National Planning Policy Framework with regards to achieving a sustainable development. The objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own need.
- 2.3 In particular this statement sets out the approach to satisfying the environmental objectives of Neath Port Talbot Council planning policy. This will be achieved by contributing to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change.
- 2.4 The following documents have been used and referred to in this statement in order to deliver compliance with National, Regional and Local Policy;
- Planning Policy Wales (Edition 11, February 2021)
 - The Neath Port Talbot County Borough Councils Local Development Plan (2011-2026)
 - The Renewable and Low Carbon Energy Supplementary Planning Guidance (July 2017)
 - Welsh Edition Part L2A Conservation of fuel and power in buildings other than dwellings (2014, 2016 Amendments)
- 2.5 Consideration has been given to the current and future intentions of the building regulations and planning policy for sustainable development.
- 2.6 The unit will be required to comply with Building Regulation Part L2A Wales criteria. A Dynamic Simulation Model (DSM) calculation has been performed for the development to assess compliance.

3. Building Regulations and Policy Review

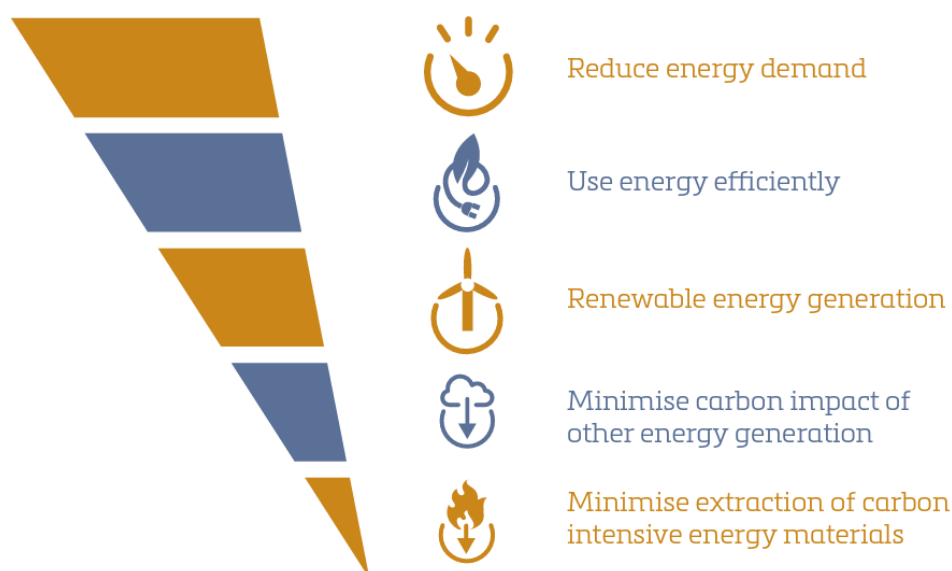
Policy and Regulations Overview

- 3.1 Local and national policy, regulations and guidance have been followed. Best practice standards and the high aspirations of the client have also been integrated.

Planning Policy Wales (Edition 11, February 2021)

- 3.2 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015 and the Well-being of Future Generations (Wales) Act 2015.
- 3.3 PPW states that the Welsh Government expects all new development to mitigate the causes of climate change in accordance with the energy hierarchy for planning (Figure 10). Reducing energy demand and increasing energy efficiency, through the location and design of new development, will assist in meeting energy demand with renewable and low carbon sources. This is particularly important in supporting the electrification of energy use, such as the growing use of electric vehicles and heat pumps. All aspects of the energy hierarchy have their part to play, simultaneously, in helping meet decarbonisation and renewable energy targets.

Figure 10: The Energy Hierarchy for Planning



- 3.4 The In order to further promote energy efficiency and energy conservation, PPW states that planning authorities should consider including development plan policies requiring applications for major development to be accompanied by an Energy Report. This independent report should include recommendations to the developer relating to energy efficiency and appropriate renewable energy technologies that could be incorporated into the development. A response to that report from the developer should also accompany the application. If planning authorities feel that insufficient consideration has been given to energy issues in project design, they may refuse planning permission.
- 3.5 The proposed units will be required to comply with Building Regulations Approved Document L2A 2014 (ADL2A) for Wales.

Part L2A Wales

- 3.6 To comply with Building Regulations Approved Document Part L2A (ADL2A) 2014, 5 Criteria must be met. This report details compliance with Criteria 1, 2 and 3. Criteria 4 and 5 will require post construction testing and demonstration.
- 3.7 1. Criterion 1 is a mandatory requirement which must be met by all new buildings. In order to achieve compliance, it must be demonstrated that:
- a) The calculated Building CO2 Emissions Rate (BER) does not exceed the Target CO2 Emission Rate (TER).
 - b) The calculated Building Primary Energy Consumption (BPEC) rate does not exceed the Target Primary Energy Consumption (TPEC).
- 3.8 2. Reasonable provision has been made to limit heat gains and losses through the fabric of the building, and energy efficient fixed building services with effective controls are provided to all buildings
- 3.9 3. The building has appropriate passive control measures to limit solar gains and limit or eliminate the need for air conditioning.
- 3.10 4. The performance of the building, as built, is consistent with the prediction made in the BER
- 3.11 5. The necessary provisions for enabling energy efficient operation of the building are put in place.

Local Policy

- 3.12 The Neath Port Talbot County Borough Councils Local Development Plan (2011-2026) and the Renewable and Low Carbon Energy Supplementary Planning Guidance (July 2017) set out in three policies how the aim to reduce carbon emissions will be applied under the Councils jurisdiction:

Policy SP18: Renewable and Low Carbon Energy

- 3.13 A proportionate contribution to meeting national renewable energy targets and energy efficiency targets will be made while balancing the impact of development on the environment and communities. This will be achieved by:
- 1. Encouraging where appropriate, all forms of renewable energy and low carbon technology development;
 - 2. Encouraging energy conservation and efficiency measures in all new major development proposals;
 - 3. Ensuring that development will not have an unacceptable impact on the environment and amenity of local residents.

Policy RE1: Criteria for the Assessment of Renewable and Low Carbon Energy Development

- 3.14 Proposals for renewable and low carbon energy development will only be permitted subject to the following criteria:
- 1. Large scale wind farm developments (>25MW) will be expected to be located within the boundaries of the refined Strategic Search Areas.
 - 2. Proposals for wind farms of any size outside the SSAs will only be permitted where it is demonstrated that there will be no unacceptable impact on visual amenity or landscape character through the number, scale, size, design and siting of turbines and associated infrastructure.

3. Small scale wind farm developments (<5MW) will be required to demonstrate that impacts are confined to the local scale.
4. All renewable energy or low carbon energy development proposals will be required to demonstrate that:
 - (a) Measures have been taken to minimise impacts on visual amenity and the natural environment;
 - (b) There will be no unacceptable impacts on residential amenity;
 - (c) The development will not compromise highway safety;
 - (d) The development would not interfere with radar, air traffic control systems, telecommunications links, television reception, radio communication and emergency services communications; and
 - (e) There are satisfactory proposals in place for site restoration as appropriate.

Policy RE2: Renewable and Low Carbon Energy in New Development

- 3.15 Schemes that connect to existing sources of renewable energy, district heating networks and incorporate on-site zero / low carbon technology (including microgeneration technologies) will be encouraged.
- 3.16 The following proposals will be required to submit an Energy Assessment to determine the feasibility of incorporating such a scheme and where viable, would be required to implement the scheme:
 - (a) Residential development for 100 or more dwellings;
 - (b) Development with a total floorspace of 1,000 sqm or more.

4. Energy Hierarchy

- 4.1 This development has been designed in line with the principles of the energy hierarchy. The energy assessment will first establish the regulated CO₂ emissions assuming the development complied with Part L 2014 of the Building Regulations.
- 4.2 At the Be Lean stage sustainable design principles will be implemented to go beyond the Part L Building Regulations. This aims to encourage developers to design in a way that reduces the energy demand of the development. Achieving compliance with Part L at the Be Lean stages requires an uplift in fabric standards, including glazing specifications, lower air permeability targets and improved building services efficiencies.
- 4.3 At the Be Clean stage the feasibility of decentralised energy supply will be examined. Developers must consider the provision of heat and energy – either by connecting into an existing district heating network where possible or providing an on-site communal heat network, with central plant such as gas fired CHP.
- 4.4 Finally, at the Be Green stage a feasibility study for renewable technologies will be undertaken. This will seek to maximise opportunities for renewable energy by producing and using renewable energy on site. Depending upon the results of the technical feasibility and the performance of the development following the Be Clean stage, renewable technologies will be considered for implementation.

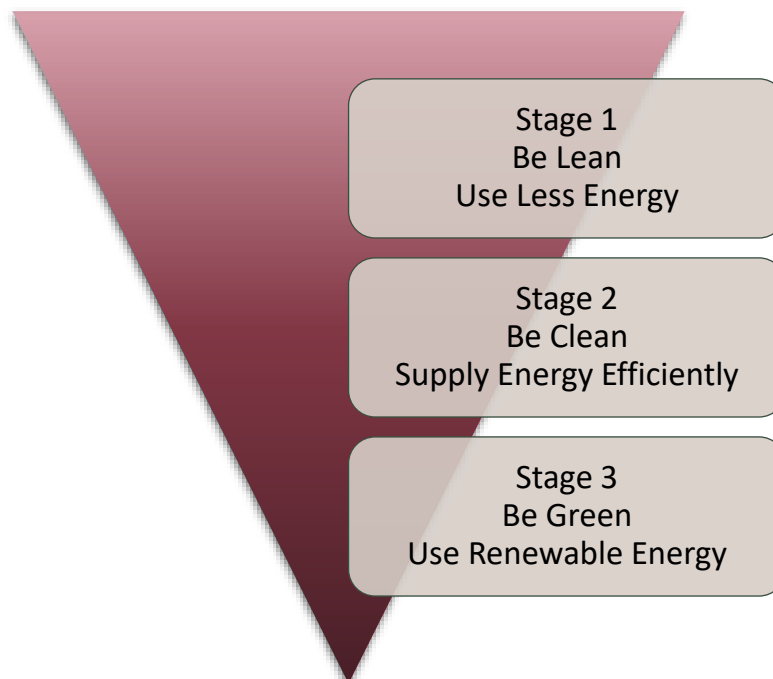


Figure 1: The Energy Hierarchy

5. Calculation Methodology

National Calculation Method (NCM)

- 5.1 The National Calculation Method (NCM) provides the underlying method and the standard data sets necessary to calculate the annual energy use of a proposed building and comparing it with the energy use of a 'notional' building of a similar type, under similar circumstances. This is done by calculating the Target Emission Rate (TER - the CO2 emission rate for the notional building) and comparing this with The Building Emission Rate (BER) for the proposed building. The BER must not be higher than the TER. The 'notional' building in a Wales Part L 2014 calculation already has an allowance for photovoltaic panels in its calculation so it may be that in order to achieve compliance some renewable technology is required to be adopted.
- 5.2 The building has been modelled using Integrated Environmental Solutions Virtual Environment (IESVE) Compliance, an approved ADL2A 2014 modelling package. IESVE uses dynamic simulation modelling to simulate the performance of the building at hourly intervals for a full test year.
- 5.3 The model geometry has been constructed using floor plan files provided by Blade Room.
- 5.4 As required by ADL2A 2014 building occupancies, room heating set-points, ventilation rates and illumination levels have been modelled according to the National Calculation Method (NCM) as defined by the Department for Communities and Local Government. The NCM enables calculation of the energy consumption required to deliver a defined level of comfort and service provision, based on standardised occupancy conditions.

6. Proposed Development

- 6.1 The current layout of the New Operating Theatres & Support Facilities consists of a reception, assessment/consulting rooms, and changing facilities at ground floor level, with 3no. operating theatres and ancillary service rooms at first floor level. There are two link corridors to provide access to the existing hospital building.
- 6.2 The total floor area of the building is approximately 1200m².

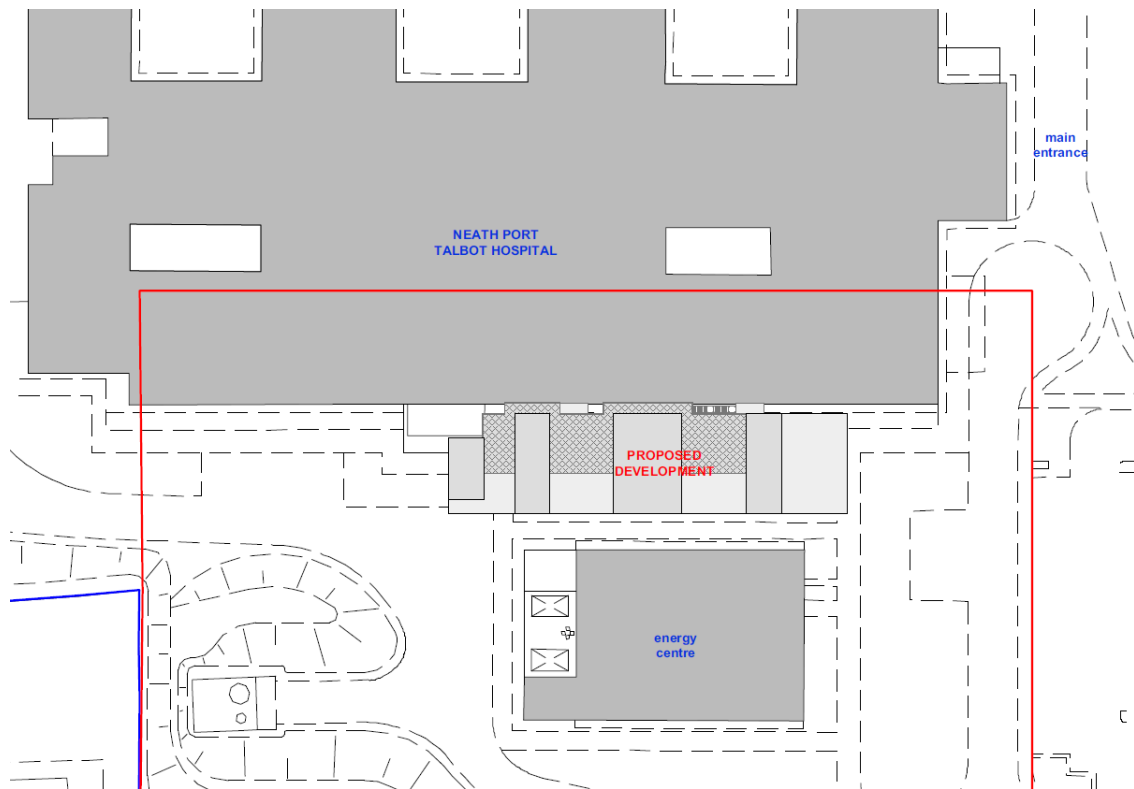


Figure 2: Site Location (Courtesy of Module Co)



Figure 3: 3d Render (Courtesy of Module Co)

7. Energy Efficient Design

Step 1 – Minimising Energy Consumption – Be Lean

- 7.1 This section of the report looks at the measures that are available to reduce the energy demand for the new development beyond the notional building baseline.
- 7.2 Energy demand reduction provides the largest opportunity for minimising a building's potential CO₂ emissions. Minimising energy consumption for the development will be accommodated by driving down energy demand through passive building design and operational techniques prior to focusing on energy efficient plant and controls.
- 7.3 The first principle therefore relies on energy efficient design and the site characteristics which embody passive designs. Furthermore, the design of the building fabric can reduce energy wastage and associated energy demand.
- 7.4 From the outset a high standard of sustainable design and construction has been incorporated into the design of the proposal. The building has been designed to maximise the potential for passive energy savings.
- 7.5 To reduce CO₂ emissions throughout the development high levels and high-performance insulation will be specified. Through increased thickness and an improved thermal conductivity of the insulation the U-Values for the thermal elements will exceed the Building Regulations Part L2 standards. These high levels of insulation will help to contain heat within the hotel therefore reducing demand on the heating and the associated CO₂ emissions.
- 7.6 During construction, efforts will be taken to overlap all insulation and effectually seal joints where air leakage and thermal bridging could occur. The principles of the accredited construction details (ACDs) will be followed. Alongside the ACDs once the insulation manufacturer has been confirmed appropriate calculated Psi values will also be implemented where possible.

Step 2 – Supply Energy Efficiently – Be Clean

- 7.7 Following the implementation of all appropriate passive measures, the integration of energy efficient technologies into the development should be sought.
- 7.8 The second principle places the emphasis on using energy more efficiently. This is on the understanding that low carbon technologies can be cost-effective and can also provide significant carbon savings when compared to conventional technologies.
- 7.9 The ventilation strategy for the building consists of mechanical supply and extract with heat recovery. Each operating theatre will have its own Air Handling Unit (AHU) which works by removing warm, stale air, this warm air then passes over a heat exchanger which transfers a high proportion of the heat to the incoming (fresh) air which is then distributed to other habitable rooms. The other areas of the building such as WC's, Changing rooms, showers and corridors will also be serviced by an additional AHU.
- 7.10 The lighting used will be low energy LEDs throughout. All fittings will have a minimum efficacy of 95 lumens per circuit watt. PIR Auto on off sensors will be fitted in the corridors, WCs and store rooms.
- 7.11 In line with the future intentions of the building regulations, it is proposed the heating is provided by an air to water air source heat pump. An air-to-water heat pump transfers heat from outside air via an evaporator unit to water through a condenser and refrigerant. This hot water then will heat the rooms via a radiant floor. The DSM model at this stage of the design is based on 3no. Hitachi Model RHMA 50AN.
- 7.12 The hot water system for the building is proposed to be heated also by using air source heat pumps. The model selected at this stage is a Hitachi Yutaki S80 high temperature heat pump.
- 7.13 In order to maintain comfortable temperatures in the operating theatres, these areas will be served by a VRF air source heat pump which is capable of providing both heating and cooling. The VRF plant currently used in the assessment consists of 2no. Daikin ERQ250 and 1no. Daikin ERQ100 for each operating theatre.

Step 3 – Utilising Low to Zero Carbon Technologies – Be Green

- 7.14 The following sections discuss the renewable energy generation measures that have been considered, and those which will be implemented at the development. Renewable technologies harness energy from the environment and convert this to a useful form. Many renewable technologies are available, however, not all of these are commercially viable and suitable to the site.
- 7.15 The feasibility of the renewable technologies has been undertaken with the results included in Table 7 below.

Technology	Suitable for the Proposal	Further Details
Solar Photovoltaics	Yes	Solar PV panels could be located on the building roof laid flat or on A Frames. Owing to the required area for plant rooms, space is limited for a large array of PV. PV would feed directly into the building and could be used as generated or exported to the national grid. There are no potential over shading risks which could limit the number of panels which could be installed.
Solar Water Heating (Solar Thermal)	Yes	As mentioned above there is adequate space on the main roof to locate solar collectors, although after PV, space may be restricted. As there is year round hot water demand, solar thermal would be beneficial. However, Solar thermal provides limited emissions savings as they can only cover a proportion of the hot water load. For higher emissions savings they would need to be linked with other low carbon or renewable systems to meet the emission reduction targets.
Air Source Heat Pumps (ASHP)	Yes	An air source heat pump (ASHP) would be suitable for the proposal as initially there is outdoor space and roof top space available for the outdoor units. ASHP has become more viable as higher coefficients of performance are achievable throughout the year. A VRV air source heat pump can provide highly efficient heating and cooling simultaneously, through air distribution, maximising comfort for the building users. As the building is to be well insulated, with excellent levels of air tightness a high temperature heat pump could also be installed to provide heating to a wet central heating system or even to meet the hot water demand. Furthermore, with the decarbonisation of the grid the emissions associated with ASHPs is continually decreasing.
Ground Source Heat Pump (GSHP)	No	The building is situated in an established site, surrounded by hard standing, therefore there is inadequate space available to locate either horizontal ground loop systems to serve the site. Vertical ground loops can be combined with foundation piling; however, this technique is not being used here. A borehole will typically need to reach depths of 100m for sufficient performance. For a heating system this would require very deep bore pipework, which will incur excessive infrastructure and excavation costs.
Wind Turbines	No	Due to the suburban and sheltered nature of the site and the potential visual, flicker and noise impact wind turbines would not be suitable. Micro-wind turbines would also not be suitable owing to surrounding obstacles - the quality of wind supplied to the turbine would be poor as result of turbulence which will reduces the overall efficiency of the turbine.
Biomass	No	A biomass boiler has been ruled out primarily due to the combustion in smaller scale systems and associated fuel transport are likely to have adverse impacts on air quality in an area. Also, the need for a solid fuel store also increases the space requirement. Biomass pellets are also expensive compared to other fuels, this with the relatively low energy demand of the proposals makes biomass unfeasible.

Table 2: Renewables feasibility study

- 7.16 As part of the Neath Port Talbot County Borough Councils Local Development Plan, consideration has been given to renewable technologies to supply the heating to the development. The feasibility of other renewable technologies has also been considered.
- 7.17 Based on the above, the most feasible option for this development is either through the implementation of air source heat pumps, solar PV panels or solar thermal panels.
- 7.18 Whilst solar PV and solar thermal are considered feasible as there is limited roof space, the initial approach will be to utilise the ASHP to maximise savings through the building services. This aligns with planning policy, whereby priority should be given to supplying heating and cooling to the development through systems using renewable energy sources.
- 7.19 Calculations will be carried out incorporating air source heat pumps as the primary heat source for the development, linking to an underfloor heating manifold. The heating system will have both central and local time and temperature controls.
- 7.20 A full summary of the specification is shown in Table 3 and Table 4 below.

Building Fabric		
Element	Specification	U-Value
Ground Floor	12mm Cement Particle Board, 0.7mm Steel Sheet, 12mm Cement Particle Board Floor, 200mm "C" Section Floor Joists @ 400mm Centres, 200mm Of Mineral Wool Insulation Laid Between Joists, 100mm Stonewool Composite Panel Underdraw	0.13 W/m ² k
External Wall	15mm Plasterboard To Inside, 150mm Metal Stud Layer Filled With 150mm Rockwool SFS Slab Fitted Between, 12.5mm Weather Defence Board Faced With A 50mm Void With 75mm Europanel F5 Extra Composite Cladding To Outside	0.20 W/m ² k
Internal Walls	70mm GTEC Dryline Studs @ 600mm Centres Filled With 25mm Mineral Wool Insulation, 15mm Tapered Edge Megadeco Plasterboard	N/A
Roofs	Armourplan PSG Single Ply Membrane, 80-320mm Rockwool Hardrock Tapered Insulation, Vapour Membrane, 35mm Metal Deck, 140mm "C" Section Ceiling Joists @ 600mm Centres, Vapour Control Barrier, 15mm Megadeco Plasterboard Finish.	0.13 W/m ² k
Internal Windows	Double glazed Argon filled LowE coated glass G Value: 0.40 Light Transmittance: 0.72	1.40 W/m ² k
Glazed Roof	Double glazed Argon filled LowE coated glass G Value: 0.40 Light Transmittance: 0.72	1.40 W/m ² k
Doors	Insulated Steel Doors	1.60 W/m ² k
Air Permeability	Score of 5.00 m ³ /hm ² to be achieved on site	
Thermal Bridging	Principles of Accredited Construction Details to be followed	

Table 3: Building Fabric Specification

Building Services		
Element	Specification	
Ventilation	Mechanical Ventilation with Heat Recovery	
	Operating Theatres	AHU Specific Fan Power: 1.80 W/l/s. Heat Recovery Efficiency 75%
	Rest of Building	AHU Specific Fan Power: 1.80 W/l/s. Heat Recovery Efficiency 75%
Heating System	Whole Building	Air Source Heat pump to Underfloor Hitachi Model RHMA 50AN Heating Efficiency (COP): 3.54
	Operating Theatres	VRF ASHP Heating and Cooling 2no. Daikin ERQ250 & 1no. Daikin ERQ250 Combined System Efficiency: COP:4.17, EER: 3.81, SEER: 6.00
	IT & UPS Rooms	VRF ASHP Heating and Cooling Daikin RXM71N + FTXM71 AC System System Efficiency: COP:3.61, EER: 3.39, SEER: 6.90
Hot Water	Hitachi Yutaki S80 high temperature heat pump Heating Efficiency (COP): 4.57	
Lighting	Whole Building	Low Energy LED Lighting – Minimum efficacy 95 Lm/cW
Lighting Controls	Manual Switching Throughout WCs, Stores, changing rooms and Corridors to have PIR Auto on/Off	
Metering	Monitoring and Targeting to Lighting - With Out of Range Values to heating and lighting	
Electric Power Factor	Greater than 0.95	

Table 4: Building Services Specification

8. Results

- 8.1 Incorporating the energy efficient design features outlined in Section 7 results in the emissions outlined in Table 5 and energy demand shown in Table 6.

Model	Emission Rate kgCO ₂ /m ² /Year	Total Emissions kgCO ₂ /m ²	Primary Energy kWh/m ² /year	EPC Rating
Target Building	44.9	53,224.46	243.26	B 32
Proposed Building	39.4	46,704.76	194.57	B 28
Result	Pass	Pass	Pass	-

Table 5: Summary of emissions

Model	Heating Demand (kWh/year)	Cooling Demand (kWh/year)	Auxiliary Demand (kWh/year)	Lighting Demand (kWh/year)	Hot Water Demand (kWh/year)	PV Generation (kWh/year)	Total Energy Demand (kWh/year)
Target Building	88,952.42	9,257.97	8,475.61	54,670.65	6,578.97	- 7,539.14	160,396.47
Proposed Building	26,754.48	6,092.96	16,939.37	38,975.95	2,916.08	-	91,678.84

Table 6: Summary of energy demand

- 8.2 The sitewide building emissions are summarised below:

Target CO₂ emissions (TER x Floor Area) 53,224.46 KgCO₂/Year

Building CO₂ emissions (BER x Floor area) 46,704.76 KgCO₂/Year

Result **Pass**

- 8.3 When compared with the Building Regulations Target Emission Rate the building has improved upon CO₂ emissions by a margin of 12.25%.

- 8.4 The site wide energy demand is summarised below:

Target Energy Demand 160,396.47 kWh/Year

Building Energy Demand 91,678.84 kWh/Year

- 8.5 The site wide Be Green energy demand improves upon the Target Emission Rate by 42.84%.

- 8.6 The Air Source heat pump is meeting 38,763.52 kWh/year which equates to 60.99% of the sitewide energy demand.

- 8.7 The results above show that the scheme as it stands comfortably passes the Part L2A Wales requirements outlined earlier in the report. Furthermore the development satisfies The Neath Port Talbot County Borough Councils Local Development Plan and The Renewable and Low Carbon Energy Supplementary Planning Guidance.

- 8.8 These results also correspond and an indicative EPC rating of 'B 28'

- 8.9 Note: These results are subject to change following any further design development.

9. Conclusions

- 9.1 E & S Bristol has explored the options for reducing the energy demands and CO₂ emissions for the proposed New Operating Theatres & Support Facilities, Neath Port Talbot Hospital. This Energy Strategy has identified a set of deliverable energy strategy solutions that when adopted would ensure the development complied with relevant national planning policy and Neath Port Talbot Local Development Plan policies relating to energy and climate change.
- 9.2 Energy strategy options were assessed according to the energy hierarchy and the resulting savings calculated against a Building Regulations Part L2A 2013 baseline. The strategy meets the energy and CO₂ emission saving targets and other related policies applicable to the site and enable each step of the energy hierarchy to be addressed.
- 9.3 The energy hierarchy has been followed, improving upon the baseline and Building Regulations through high levels of insulation and energy efficient services and fixings.
- 9.4 Following a feasibility study evaluating the suitability of various low/zero carbon and renewable technologies, it has been deemed most suitable to proceed with air source heat pumps providing heating, cooling and hot water.
- 9.5 Proposing air source heat pumps is in line with the future Building Regulations and Policy where by the grid is becoming decarbonised and the emissions associated with electricity are considerably reduced.
- 9.6 In summary, this sustainability statement concludes that the proposed development at Neath Port Talbot Hospital has met the requirements of Part L2A of the Building Regulations, and the relevant parts of the Neath Port Talbot Local Development Plan and encompasses energy efficiency throughout.
- 9.7 Further details are shown in the summary table below. SBEM Reports are available upon request.

	Energy demand (kWh pa)	Energy saving achieved (%)	Regulated CO ₂ emissions (kg pa)	Saving achieved on residual CO ₂ emissions (%)
Building Regulations Part L Compliance (Target energy demand and emissions)	160,396.47	-	53,224.46	-
Proposed scheme after on- site renewables	91,678.84	42.84%	46,704.76	12.25%

Table 7: Summary of site wide emissions and energy demand