

10. Flood Risk and Drainage Strategy

- 10.1. For a more detailed view of the flood risk assessment and drainage strategy please refer to the JNP Group 'Flood Risk Assessment and Drainage Strategy' report. A summary of the conclusions can be found below:
- 10.2. All potential sources of flood risk at the development site have been assessed based on the available information. The key potential sources of flood risk to the proposed development are surface water, groundwater and sewers.
- 10.3. In accordance with the available information, the development site is largely at very low risk of surface water flooding, even considering the predicted impacts of climate change, with areas at low, medium and high risk of surface water flooding restricted to three (west-east) overland flow paths adjacent/through the site.
- 10.4. Site-specific flood risk modelling has been undertaken by JNP Group, with results detailed in the accompanying report ref. BR31287-JNP-XX-XX-RP-C-1001. Site-specific results are broadly in line with the EA's Long Term Flood Risk, confirming the key findings stated above in relation to overland flow paths, while also enabling the distinction between runoff generated off or on-site.
- 10.5. In accordance with the available information, the development site is largely at no/low risk of flooding from groundwater, with higher risk restricted to the northern end of the site, in alignment with the chalk stream/'dry-valley' along House Lane - Oaklands Lane. This presumed low risk of groundwater flooding is supported by the available records of boreholes within/near the development site, where groundwater was found at depths ranging between 20 m and 5 m bgl.
- 10.6. HCC's and SACDC's strategic flood risk assessments note 24 records of sewer flooding in the postcode area of the development site between 2018 and 2024. For confidentiality reasons, TW does not provide the exact location of sewer flooding incidents. In the absence of sufficient information to quantify or discard sewer flood risk at the development site, it must be assumed that existing sewers upslope and within the development site can pose some flood risk.

- 10.7. The following measures have been implemented in the proposed development's master plan to ensure it can be made safe for its lifetime without increasing flood risk elsewhere:

- In order to maximise the site's development potential and achieve other wider sustainability goals, some (limited) manipulation of Flood Zones 2 and 3 along overland flow paths is proposed through the formalization of blue/green corridors across the site compatible with the proposed master plan. Site-specific flood risk modelling detailed in the accompanying report ref. BR31287-JNP-XX-XX-RP-C-1001 confirms that the proposed development can be made safe without increasing flood risk elsewhere.
- The finished floor level (FFL) of all vulnerable development will be set at least 300 mm above the nearest/relevant 1.0% AEP + climate change flood level.
- The FFL of all vulnerable development will also be set at least 150 mm above external ground levels and 300 mm above road channel levels, which in turn will be designed to safely route overland flows away from vulnerable features and towards the proposed blue/green corridors or other existing overland flow routes off-site, using water compatible or less vulnerable parts of the proposed development such as public open spaces, parking areas and roads to convey and attenuate flood flows.
- Safe ingress/egress routes to all vulnerable parts of the proposed development are available for storm events up to 1.0% AEP + climate change.
- The proposed surface water drainage strategy has been designed so that flooding does not occur on any part of the site for events up to 1.0% AEP + climate change.

11. Ecological Impact and Biodiversity Net Gain

- 11.1. Ecological Survey and Assessment Ltd (ECOSA) have completed an Ecological Impact Assessment to support the planning application. Please refer to ECOSA's report 'Ecological Impact Assessment' for more detail but an overview of the conclusions is provided below.
- 11.2. The site supports day roosts of common pipistrelle and assemblages of breeding birds and has suitability for otter, badger, invertebrates, European hedgehog, polecat, harvest mouse and common toad. Adverse impacts on these ecological features have been identified and appropriate mitigation measures proposed.
- 11.3. At the time of preparing this statement, surveys are ongoing to determine the presence of roosting bats, hazel dormouse, breeding birds and reptiles on site and further mitigation measures will be provided once the surveys are completed. At present, no residual or cumulative impacts are anticipated.
- 11.4. The site will be enhanced for bats, hazel dormouse, birds and invertebrates through the installation of roosting and nesting features and provision of new planting creating breeding spaces and foraging and commuting opportunities. As such it is considered that the proposals have scope to accord with all relevant national and local planning policy in relation to ecology including Policy 106 of the Local Plan and the NPPF (see Section 2.0).
- 11.5. The site is currently achieving a 10% net gain, please refer to ECOSA figures in the corresponding reports of the planning submission.

12. Conclusions

- 12.1. This Climate Change, Energy and Sustainability Statement has been prepared on behalf of the Applicant to demonstrate that at planning stage, due consideration has been given to sustainability and the proposed approach to sustainable construction to be employed at the development known as Oaklands Blossom.
- 12.2. The primary purpose of this statement is to present a robust sustainability strategy which is the driving force behind the design of the buildings and their surroundings. In addition to address the local policy relating to sustainable design and construction, specifically Policies 69 and 70 from the current St Albans local plan, and CE1 & CE2 within the St Albans Draft Local Plan and D7 of the Sandridge Neighbourhood Plan and SPG, which requires an uptake of renewable technologies across all major schemes.
- 12.3. The statement sets out a fabric first approach to sustainable construction, demonstrating that decisions about the built form, orientation and design as well as improvements in insulation specification, a reduction in thermal bridging, unwanted air leakage paths and further passive design measures will ensure that energy demand and consequent CO₂ emissions are minimised.
- 12.4. A range of potentially appropriate technologies have been assessed for feasibility in delivering a further reduction in CO₂ emissions concluding that a variety of renewable technologies are suitable. These include Photovoltaic Arrays, Air Source Heat Pumps, and Hot Water Heat Pumps complying with Policy SP2.

Residential Energy Strategy

- 12.5. Calculations undertaken based on a sample range of dwelling types under the approved Standard Assessment Procedure demonstrate that Part L compliant emissions would equate to an estimated 184,267 kgCO₂/year and 297,578 kgCO₂/year for the detailed and outline elements respectively.
- 12.6. Through following the energy efficiency approach described, supplemented with efficient heating systems and low carbon energy, the calculated as-designed emissions are reduced by 25.86% and 36.84% over Part L 2021 requirements for the reserved matters and outline elements respectively.

Non-Residential Energy Strategy

- 12.7. Calculations undertaken for the non-residential unit demonstrate that by following a fabric first approach supplemented by low carbon heating in the form of air source heat pumps, the overall improvement equates to circa 11.33% above the Part L 2021 baseline.

Overall Performance

- 12.8. It has been demonstrated that all units residential and non-residential are compliant with the latest revision of Part L 2021 Building Regulations.
- 12.9. The site-wide carbon emissions for the reserved matters area are estimated at 139,848 kgCO₂/year, a reduction of circa 25.57% over the Part L 2021 baseline.
- 12.10. It is currently not feasible to detail the outline residential and non-residential site-wide reduction as the non-residential estimated performance will be determined at a later stage of planning.

Waste & Water Conservation

- 12.11. Opportunities and strategies for waste reduction and the reduction of primary materials use have been detailed, along with the measures that will be taken to reduce the embodied carbon of the development.
- 12.12. Water efficiency measures including the use of efficient dual flush WCs, low flow showers and taps and appropriately sized baths will be encouraged with the aim to limit the use of water during the operation of the development. Each new residential unit will minimise water usage to at least 110 litres/person/day in line with the current national optional standards and policies CE1 & D6.
- 12.13. In conclusion, this statement demonstrates that the sustainable design and construction elements which are at the heart of the development proposals reflect the Applicant and design team's aspirations in delivering a sustainable development of a high quality and meet the sustainability planning policy requirements in response to the local, regional and national legislation.

Appendix A - BRUKL Output Documents

Project name

Shell and Core

8524_Oaklands Blosson_PL

As designed

Date: Thu Sep 04 14:38:05 2025

Administrative information

Building Details

Address: Unit 1, St Albans, AL4

Certifier details

Name: AES Sustainability Consultants Ltd

Telephone number: 01884 242050

Address: 4B Oaklands Court, Tiverton Way, Tiverton
Business Park, Tiverton, EX16 6TG

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.29

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.29

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 299.55The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	3.2
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	3.18
Target primary energy rate (TPER), kWh _{PE} /m ² annum	34.97
Building primary energy rate (BPER), kWh _{PE} /m ² annum	34.47
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.2	0.2	GF000004:Surf[3]
Floors	0.18	0.14	0.14	GF000004:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.11	0.11	GF000004:Surf[26]
Windows** and roof windows	1.6	1.4	1.4	GF000004:Surf[1]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors [^]	1.6	1.4	1.4	GF000004:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	6.5	0	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Hot Water

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

Shell and core configuration

Zone	Assumed shell?
GF_Unit 1	NO
GF_Commercial Plant	NO

General lighting and display lighting	General luminaire	Display light source	
		Efficacy [lm/W]	Power density [W/m ²]
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
GF_Unit 1	125	120	1.25
GF_Commercial Plant	125	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Unit 1	NO (-34.5%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	370.3	370.3
External area [m ²]	623.3	623.3
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	174.68	191.76
Average U-value [W/m ² K]	0.28	0.31
Alpha value* [%]	25	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
100	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	4.99	3.79
Cooling	3.68	4.98
Auxiliary	0	0
Lighting	12.67	14.49
Hot water	1.37	0.46
Equipment*	67.55	67.55
TOTAL**	22.71	23.72

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	136.36	121.05
Primary energy [kWh _{PE} /m ²]	34.47	34.97
Total emissions [kg/m ²]	3.18	3.2

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	93.1	75.5	6.2	4.5	0	4.19	4.62	4.5	6.5
Notional	46.9	102.7	4.7	6.2	0	2.78	4.63	----	----
[ST] No Heating or Cooling									
Actual	0	0	0	0	0	0	0	0	0
Notional	0	0	0	0	0	0	0	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

Shell and Core

8524_Oaklands Blosson_PL

As designed

Date: Thu Sep 04 14:39:45 2025

Administrative information

Building Details

Address: Unit 2, St Albans, AL4

Certifier details

Name: AES Sustainability Consultants Ltd

Telephone number: 01884 242050

Address: 4B Oaklands Court, Tiverton Way, Tiverton
Business Park, Tiverton, EX16 6TG

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.29

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.29

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 80.57The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	5.86
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	5.16
Target primary energy rate (TPER), kWh _{PE} /m ² annum	61.5
Building primary energy rate (BPER), kWh _{PE} /m ² annum	54.29
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.2	0.2	GF000006:Surf[3]
Floors	0.18	0.15	0.15	GF000006:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.11	0.11	GF000006:Surf[15]
Windows** and roof windows	1.6	1.4	1.4	GF000006:Surf[1]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors [^]	1.6	1.4	1.4	GF000006:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	6.5	0	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Hot Water

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

Shell and core configuration

Zone	Assumed shell?
GF_Unit 2	NO

General lighting and display lighting	General luminaire	Display light source	
	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
Standard value	95	80	0.3
GF_Unit 2	125	120	1.25

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Unit 2	NO (-0.9%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	80.6	80.6
External area [m ²]	227.2	227.2
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	110.68	86.78
Average U-value [W/m ² K]	0.49	0.38
Alpha value* [%]	25	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
100	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	19.29	21.13
Cooling	4.27	1.61
Auxiliary	0	0
Lighting	9.96	17.53
Hot water	1.7	0.56
Equipment*	20.26	20.26
TOTAL**	35.21	40.84

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	362.03	238.32
Primary energy [kWh _{PE} /m ²]	54.29	61.5
Total emissions [kg/m ²]	5.16	5.86

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	291.1	70.9	19.3	4.3	0	4.19	4.62	4.5	6.5
Notional	211.4	26.9	21.1	1.6	0	2.78	4.63	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

Shell and Core

8524_Oaklands Blosson_PL

As designed

Date: Thu Sep 04 14:47:34 2025

Administrative information

Building Details

Address: Unit 3, St Albans, AL4

Certifier details

Name: AES Sustainability Consultants Ltd

Telephone number: 01884 242050

Address: 4B Oaklands Court, Tiverton Way, Tiverton
Business Park, Tiverton, EX16 6TG

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.29

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.29

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 93.28The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	4.68
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	4.05
Target primary energy rate (TPER), kWh _{PE} /m ² annum	50.11
Building primary energy rate (BPER), kWh _{PE} /m ² annum	43.48
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.2	0.2	GF000008:Surf[6]
Floors	0.18	0.13	0.13	GF000008:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.11	0.11	GF000008:Surf[7]
Windows** and roof windows	1.6	1.4	1.4	GF000008:Surf[2]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1.4	1.4	GF000008:Surf[3]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	6.5	0	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Hot Water

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

Shell and core configuration

Zone	Assumed shell?
GF_Unit 3	NO

General lighting and display lighting	General luminaire	Display light source	
	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
Standard value	95	80	0.3
GF_Unit 3	125	120	1.25

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Unit 3	NO (-4.2%)	YES

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	93.3	93.3
External area [m ²]	146.7	146.7
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	52.2	46.15
Average U-value [W/m ² K]	0.36	0.31
Alpha value* [%]	25	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
100	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	8.26	9.8
Cooling	3.63	1.94
Auxiliary	0	0
Lighting	14.94	21.35
Hot water	1.7	0.56
Equipment*	20.26	20.26
TOTAL**	28.52	33.66

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	185.01	130.37
Primary energy [kWh _{PE} /m ²]	43.48	50.11
Total emissions [kg/m ²]	4.05	4.68

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	124.7	60.3	8.3	3.6	0	4.19	4.62	4.5	6.5
Notional	98.1	32.3	9.8	1.9	0	2.78	4.63	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

Shell and Core

8524_Oaklands Blosson_PL

As designed

Date: Thu Sep 04 14:54:57 2025

Administrative information

Building Details

Address: Unit 4, St Albans, AL4

Certifier details

Name: AES Sustainability Consultants Ltd

Telephone number: 01884 242050

Address: 4B Oaklands Court, Tiverton Way, Tiverton
Business Park, Tiverton, EX16 6TG

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.29

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.29

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 99.4The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	4.55
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	3.98
Target primary energy rate (TPER), kWh _{PE} /m ² annum	48.29
Building primary energy rate (BPER), kWh _{PE} /m ² annum	42.58
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.2	0.2	GF000005:Surf[3]
Floors	0.18	0.15	0.15	GF000005:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.11	0.11	GF000005:Surf[12]
Windows** and roof windows	1.6	1.4	1.4	GF000005:Surf[1]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors [^]	1.6	1.4	1.4	GF000005:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	6.5	0	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Hot Water

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

Shell and core configuration

Zone	Assumed shell?
GF_Unit 4	NO

General lighting and display lighting	General luminaire		Display light source	
	Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
Standard value	95	80	0.3	
GF_Unit 4	125	120	1.25	

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Unit 4	NO (-45.6%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	99.4	99.4
External area [m ²]	181.5	181.5
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	53.18	62.36
Average U-value [W/m ² K]	0.29	0.34
Alpha value* [%]	25	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
100	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	8.14	11.58
Cooling	3.03	2.71
Auxiliary	0	0
Lighting	15.01	17.42
Hot water	1.7	0.56
Equipment*	20.26	20.26
TOTAL**	27.88	32.28

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	173.21	161.08
Primary energy [kWh _{PE} /m ²]	42.58	48.29
Total emissions [kg/m ²]	3.98	4.55

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	122.9	50.3	8.1	3	0	4.19	4.62	4.5	6.5
Notional	115.9	45.2	11.6	2.7	0	2.78	4.63	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

8524_Oaklands Blossom_PL

As designed

Date: Thu Sep 04 17:20:16 2025

Administrative information

Building Details

Address: Childrens home, St Albans, AL4

Certifier details

Name: AES Sustainability Consultants Ltd

Telephone number: 01884 242050

Address: 4B Oaklands Court, Tiverton Way, Tiverton
Business Park, Tiverton, EX16 6TG

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.29

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 58.73The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	5.03
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	3.84
Target primary energy rate (TPER), kWh _{PE} /m ² annum	52.92
Building primary energy rate (BPER), kWh _{PE} /m ² annum	40.5
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.25	0.25	GF000000_W0
Floors	0.18	0.12	0.12	GF000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.09	0.2	GF000002_C
Windows** and roof windows	1.6	0.86	0.89	GF000001_W1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors [^]	1.6	1.2	1.2	GF000003_W0_O1
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.06	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

2- Hot Water

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.06	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- SYST0001-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	0.014
Standard value	N/A	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	SFP [W/(l/s)]										HR efficiency	
	A	B	C	D	E	F	G	H	I	Zone	Standard	
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
GF_Kitchen	0.1	-	-	-	-	-	-	-	-	-	N/A	
GF_WC	0.1	-	-	-	-	-	-	-	-	-	N/A	
FF_Shower room	0.1	-	-	-	-	-	-	-	-	-	N/A	
FF_Bathroom	0.1	-	-	-	-	-	-	-	-	-	N/A	

Zone name	General lighting and display lighting	General luminaire	Display light source	
		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
Standard value		95	80	0.3
GF_Office		95	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
GF_Kitchen		95	-	-
GF_Living/Dining		95	-	-
GF_Circulation		95	-	-
GF_WC		95	-	-
FF_Bed 3		95	-	-
FF_Storage		95	-	-
FF_Shower room		95	-	-
FF_Bathroom		95	-	-
FF_Circulation		95	-	-
FF_Bed 1		95	-	-
FF_Bed 4		95	-	-
FF_Storage 2		95	-	-
FF_Bed 2		95	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Office	NO (-40.5%)	NO
GF_Living/Dining	NO (-40.8%)	NO
FF_Bed 3	NO (-66.8%)	NO
FF_Bed 1	NO (-72.8%)	NO
FF_Bed 4	NO (-65.7%)	NO
FF_Bed 2	NO (-75.1%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	117.5	117.5
External area [m ²]	264.6	264.6
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	64.49	115.45
Average U-value [W/m ² K]	0.24	0.44
Alpha value* [%]	63.05	36.64

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
100 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	10.4	15.58
Cooling	0	0
Auxiliary	3.05	10.2
Lighting	8.88	5.69
Hot water	3.98	3.73
Equipment*	43.74	43.74
TOTAL**	26.31	35.19

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	218.63	245.39
Primary energy [kWh _{PE} /m ²]	40.5	52.92
Total emissions [kg/m ²]	3.84	5.03

HVAC Systems Performance

System Type	Heat dem MJ/m ²	Cool dem MJ/m ²	Heat con kWh/m ²	Cool con kWh/m ²	Aux con kWh/m ²	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	102.2	116.4	10.4	0	3.1	2.73	0	3.06	0
Notional	148	97.4	15.6	0	3.7	2.64	0	----	----

Key to terms

Heat dem [MJ/m ²]	= Heating energy demand
Cool dem [MJ/m ²]	= Cooling energy demand
Heat con [kWh/m ²]	= Heating energy consumption
Cool con [kWh/m ²]	= Cooling energy consumption
Aux con [kWh/m ²]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

8524_Oaklands Blosson_PL

As designed

Date: Thu Sep 04 14:58:30 2025

Administrative information

Building Details

Address: Community Centre, St Albans, AL4

Certifier details

Name: AES Sustainability Consultants Ltd

Telephone number: 01884 242050

Address: 4B Oaklands Court, Tiverton Way, Tiverton
Business Park, Tiverton, EX16 6TG

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.29

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.29

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 99.38The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	5.09
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	4.14
Target primary energy rate (TPER), kWh _{PE} /m ² annum	53.27
Building primary energy rate (BPER), kWh _{PE} /m ² annum	43.64
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.2	0.2	GF000009:Surf[1]
Floors	0.18	0.15	0.15	GF000001:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.11	0.11	GF000009:Surf[2]
Windows** and roof windows	1.6	1.4	1.4	GF00000A:Surf[1]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors [^]	1.6	1.4	1.4	GF00000A:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	5

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	6.5	0	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Hot Water

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
	A	B	C	D	E	F	G	H	I	Zone	Standard	
ID of system type												
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
GF_Community Centre_WCs	-	-	0.3	-	-	-	-	-	-	-	N/A	

Zone name	General lighting and display lighting	General luminaire	Display light source	
		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
Standard value		95	80	0.3
GF_Community Centre_WCs		125	-	-
GF_Community Centre_Store		125	-	-
GF_Community Centre		125	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Community Centre_WCs	N/A	N/A
GF_Community Centre_Store	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF_Community Centre	NO (-2.7%)	YES

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	99.4	99.4
External area [m ²]	250	250
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	93.47	83.76
Average U-value [W/m ² K]	0.37	0.34
Alpha value* [%]	25	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces

100 Non-residential Institutions: Community/Day Centre

Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	15.31	21.31
Cooling	2.14	0.88
Auxiliary	2.03	3.86
Lighting	5.5	8.17
Hot water	3.33	1.11
Equipment*	5.86	5.86
TOTAL**	28.31	35.32

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	266.58	227.82
Primary energy [kWh _{PE} /m ²]	43.64	53.27
Total emissions [kg/m ²]	4.14	5.09

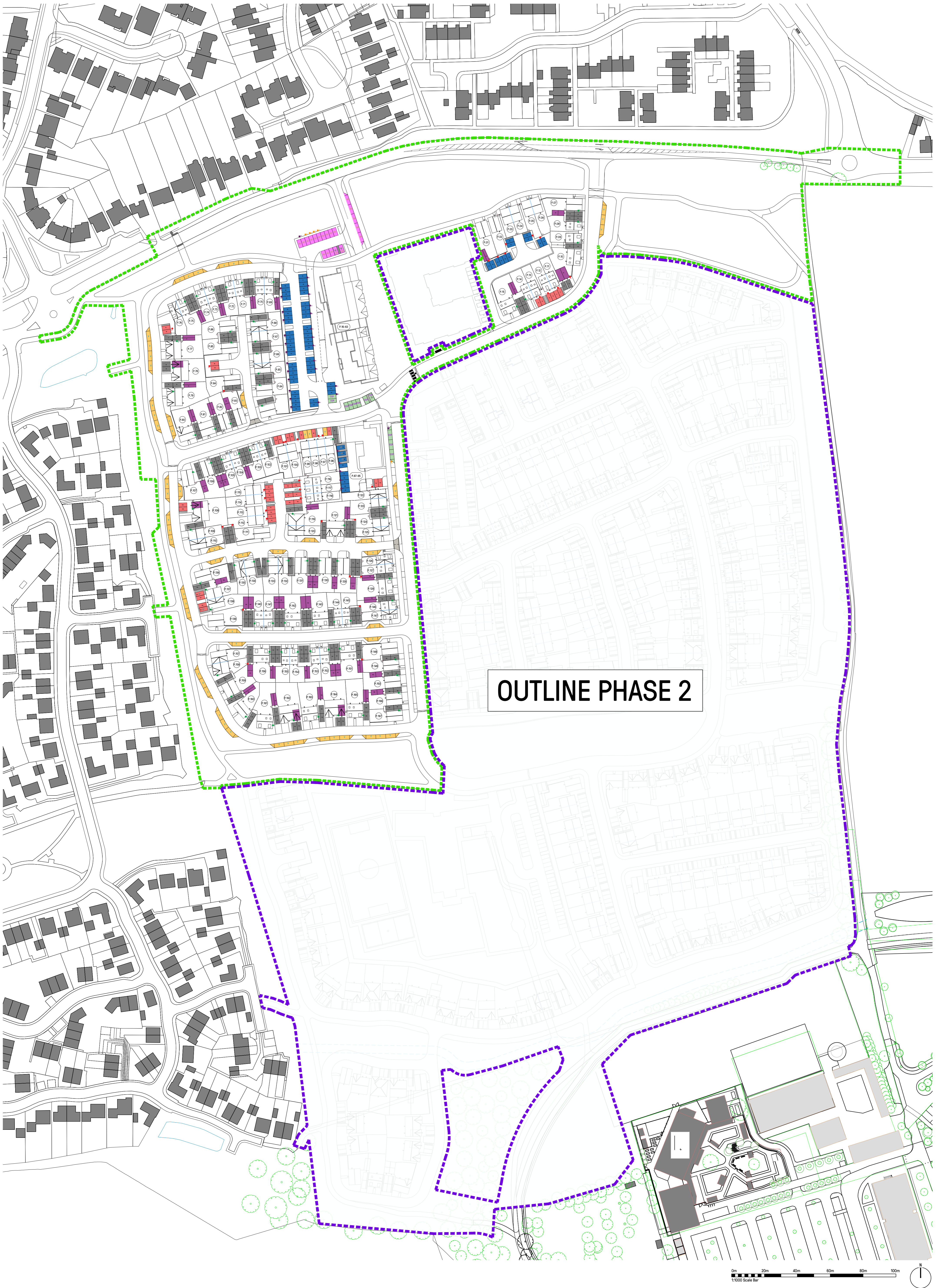
HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	231.1	35.5	15.3	2.1	2	4.19	4.62	4.5	6.5
Notional	213.2	14.6	21.3	0.9	3.9	2.78	4.63	----	----

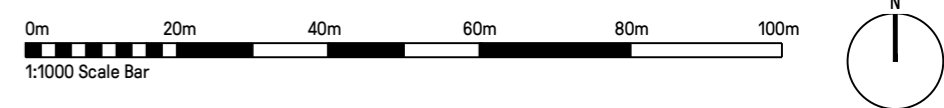
Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Appendix B – Parking Strategy Plan



OUTLINE PHASE 2



Notes - Copyright in this drawing remains the property of BM3 Architecture Limited. - Contractors and consultants are to advise BM3 Architecture Limited of any discrepancies.	Revision	Date	By	CDM Notes Legend: Application Boundary Outline Boundary - Phase 2	On-plot parking (170) Enclosed parking (48) Frontage parking (38) Courtyard parking (88) Visitor parking (38) Retail parking (20)	Community Centre parking (11) Active electric vehicle charging point EV Charger Pillar (dual access) - supplied by a metered feeder pillar EV Charger Pillar - supplied by a metered feeder pillar Future EV Charger Pillar	Project SANDPIT LANE ST ALBANS	Drawing PROPOSED SITE LAYOUT PARKING STRATEGY PLAN	Client Taylor Wimpey			
					PARKING KEY: On-plot parking (170) Enclosed parking (48) Frontage parking (38) Courtyard parking (88) Visitor parking (38) Retail parking (20)	Scale 1:1000@A1	Dated 09-25	Job No. 72223	Drawing No. D-106		Drawn by MBT	Checked by JB

T:\Design\72223 - Sandpit Lane, St Albans\01-MP-02-Detailed Planning\Site Layouts\Site Layouts.dwg plotted on 05.06.2025 by Monica Funnell

London Office: Selous House, 5-12 Mandela Street, Camden Town, London, NW1 0DU
 T: 0203 881 9290 E: design@bm3.co.uk