

Berkeley

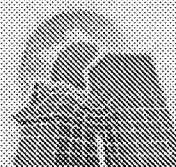
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NORTH BERSTED – PHASE 4C



ENERGY STATEMENT

21st November 2019



Southern Energy
Consultants
Energy & Sustainability Solutions

About Southern Energy Consultants Ltd

Southern Energy Consultants Ltd are a construction consultancy specialising in sustainability, energy conservation, the application of renewable technologies and statutory utilities infrastructure design and management. As a consultancy we do not sell or have financial interest in any products so are able to take an objective view of developments to assist developers with incorporating cost effective and practical solutions.

Our services include Planning Energy Statements, energy calculations for Building Regulation compliance, Code for Sustainable Homes assessments and utilities design and management. Our team of consultants include registered SAP, SBEM and Code for Sustainable Homes assessors, Planning Specialists, Renewable Energy Specialists, CAD Specialist, Utilities Specialists and Civil Engineers.

Within SEC Ltd we have over 25 years experience working with and for National Developers, Construction and Design and Build Contractors we apply our expertise not only to assist with developers understanding of new energy and sustainability obligations but also in a way that ensures that the needs and responsibilities of all stakeholders are wholly respected.

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Planning Application - Supporting Document

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1.0 Introduction

1.1 This Energy Statement has been commissioned by Berkeley Homes (the Applicant) and carried out by Southern Energy Consultants in response to planning condition 8 of the planning consent (Ref: BE/27/19/PL, dated 21st June 2019) for the Phase 4C development at North Bersted. Planning application BE/27/19/PL relates to the construction of 15 dwellings, however, this Statement shall provide a response pertaining to all 44 dwellings proposed for Phase 4C, as set out in the outline planning application (Ref: BE/45/04) and the reserved matters application (Ref: BE/8/09).

1.2 An array of planning applications pertain to Phase 4C, including the re-plan of 15 plots under application BE/27/19/PL. 11 of these dwellings are required to be constructed according to Building Regulations L1A 2013 standards, with the remainder falling under the preceding L1A 2006 requirements. Application BE/27/19/PL triggered Condition 8, which is underpinned by Policy ECC SP2 of the Arun District Council Local Plan 2011-2031 (adopted July 2018).

1.3 Condition 8 states the following:

"The new dwellings shall not be occupied unless and until the applicant has submitted a scheme for approval by the Local Planning Authority to demonstrate that the new houses will incorporate decentralised, renewable and low carbon energy supply systems. The approved scheme shall thereafter be implemented prior to occupation of the dwellings and any approved renewable energy supply systems shall be permanently retained & maintained in good working order thereafter."

1.4 Condition 8 is justified through Policy ECC SP2 (Energy and Climate Change Mitigation) of Arun District Council's Local Plan (2018). This policy requires all major developments of 10 or more dwellings to incorporate decentralised, renewable and low carbon energy supply systems, which must be responsible for producing at least 10% of the total predicted energy requirements from renewable or low carbon energy generation on site. It is stated that all new residential developments will be expected to be energy efficient and to demonstrate

how they will achieve energy efficiency measures that reflect current standards applicable at the time of submission. Furthermore, the policy outlines that 'allowable solutions' (i.e. not involving renewable technologies) will be permitted to meet or exceed the 10% target.

Summary of Requirements

- 1.5 The aim of this Statement is to set out the Applicant's approach which will comply with Condition 8 and Policy ECC SP2 by exceeding the regulatory standards for carbon dioxide emissions pertaining to Phase 4c of the North Bersted development. This will involve designing and constructing the 33 dwellings falling under 2006 L1A standards to the current, 2013 L1A, requirements. In so doing, it will be demonstrated how this strategy exceeds the requirements of Policy ECC SP2, thus reducing carbon dioxide emissions by more than 10% against the applicable regulatory baseline for Phase 4C as a whole.
- 1.6 In order to arrive at the optimal strategy for Phase 4C of the North Bersted development, Southern Energy Consultants have carried out Standard Assessment Procedure (SAP) calculations on the proposed dwellings, using Government approved Elmhurst software. These have been conducted according to either the 2006 or 2013 L1A standard, depending on the regulations applicable to the specific dwellings. The eleven dwellings falling under the 2013 L1A standard are plots 9, 10, 11, 12, 13, 18, 19, 20, 21, 22 and 23.
- 1.7 Section 2 of this Statement calculates the baseline emissions for the development. These are the carbon dioxide emissions equivalent to the regulatory standard set by Part L1a of 2006/2013 Building Regulations, encompassing the sources of space heating, hot water and fixed electrical items. The Applicant's array of best practice energy efficiency measures are then outlined and the emissions performance compared to the baseline standard. It is their preference to deliver reductions in carbon dioxide emissions without recourse to renewable energy technologies, which can be visually intrusive and have a limited lifespan of only around 25 years, as opposed to energy efficiency measures which remain in situ and deliver emissions reductions across the whole lifespan (usually 100 years or more) of a development.

2.0 Calculation of Baseline Carbon Dioxide Emissions and Emissions Performance

Calculation of Emissions Baseline

- 2.1 In order that an energy assessment can be conducted, the theoretical baseline for carbon dioxide emissions first has to be calculated for the range of twelve proposed dwelling types. The estimated regulated carbon dioxide emissions for the dwellings have been calculated using SAP 2005 and 2012 methodology for dwellings constructed according to 2006 and 2013 Building Regulations (L1A) standards, respectively. SAP calculates the regulated carbon dioxide emissions associated with space heating, hot water and fixed electrical items.
- 2.2 The Appendix to this Statement provides a plot-by-plot breakdown of the regulatory emissions standard. For each dwelling, the Target Emission Rate (TER) is multiplied by the floor area (m²) to arrive at the Total TER for each dwelling in kgCO₂/year. These are then aggregated according to whether the plots fall under 2006 or 2013 Building Regulations, and these two aggregations are then combined to arrive at the total baseline emissions for Phase 4C.
- 2.3 Table 1 below summarises the aggregation of the regulatory baseline for Phase 4C of the North Bersted development.

Table 1: Baseline emissions calculation – Phase 4C, North Bersted

DWELLINGS (APPLICABLE REGULATIONS)	NUMBER OF DWELLINGS	TOTAL EMISSIONS (kgCO ₂ /yr)
2006 L1a	33	74,466
2013 L1a	11	15,667
TOTAL	44	90,133

- 2.4 The regulatory baseline for Phase 4C of the North Bersted development is **90,133 kgCO₂/year**. Therefore, in order to comply with the 10% emissions reduction target set by

Condition 8 and Policy ECC SP2 of the Arun District Council's Local Plan, the Applicant must reduce emissions by at least 9,013 kgCO₂/year.

Applicant's Measures to Better the Baseline Scenario

- 2.5 In addition to the passive solar gains secured by orientating the majority of dwelling living areas in a southerly, south-westerly or south-easterly direction and maximising opportunities to increase the area of glazing on these elevations, the Applicant would comply with the baseline scenario by meeting the fabric performance for the main thermal elements (walls, roofs, floors and glazing) listed in Table 2 below. The fabric performance standards are superior overall to the limiting area-weighted standards set by Part L1a of Building Regulations (2013) and even more superior to their 2006 counterparts.

Table 2: Fabric Performance Standards – Phase 4C, North Bersted

Thermal Element	U-value (W/m ² K) Allowable (L1a 2006)	U-value (W/m ² K) Allowable (L1a 2013)	Proposed U-value (W/m ² K)	Improvement (%) on 2006 Allowable U-Value Standard	Improvement (%) on 2013 Allowable U-Value Standard
Main external walls	0.35	0.30	0.23-0.24	31.43-34.29	36.67-40.00
Roof (joists)	0.25	0.20	0.09	64.00	55.00
Roof (rafters)	0.25	0.20	0.18	28.00	10.00
Ground floor	0.25	0.25	0.14-0.16	36.00-44.00	36.00-44.00
Windows	2.20	2.00	1.40	36.36	30.00

- 2.6 The space heating requirement for the development will be reduced as a consequence of the fabric measures detailed above. In addition, the Applicant will specify ATAG A325CX Combi boilers with a SEDBUK 2009 efficiency of more than 88.5%. The proposed dwellings will also benefit from enhanced heating controls to maximise efficiency in use. As well as

having independent temperature controls such as thermostatic radiator valves, all dwellings will be supplied with programmers, timers, room thermostats, and Time and Temperature Zone Controls.

- 2.7 Air tightness standards will be improved by the Applicant adopting predominantly Aircrete Product Association psi values for non-repeating thermal bridges, which better the thermal heat loss results delivered via traditional Accredited Construction Details. The Applicant's details incorporate thermal heat loss improvements by reducing air leakage loss and convective bypass of insulation. This approach will assist all dwellings in delivering a reduction in air permeability from $10\text{m}^3/\text{hm}^2$ to not more than $5\text{m}^3/\text{hm}^2$.
- 2.8 Ventilation will be provided via high-efficiency, low energy decentralised extract fans (Greenwood CMEV.4e model). It is not proposed to provide any mechanical cooling to the proposed dwellings. Instead it is the intention of the Applicant to reduce the need for active cooling as far as possible. This will be achieved through the specification of mainly non-mechanical measures such as good thermal insulation and an air tight build. Openable windows will be installed as a necessary fixture in all dwellings to facilitate natural ventilation. These will help facilitate cross-ventilation, convective-ventilation and night purging.
- 2.9 All internal lighting throughout Phase 4C of the North Bersted development will be of the dedicated low energy type. External lighting will also be low energy and some will be controlled through PIR sensors or daylight cut-off devices.

Carbon Dioxide Emissions Analysis – After Best Practice Energy Efficiency Measures

- 2.10 The Appendix to this Statement provides a plot-by-plot breakdown of the emissions following the Applicant's adoption of best practice energy efficiency measures to all dwellings. For each dwelling, the Dwelling Emission Rate (DER) is multiplied by the floor area (m^2) to arrive at the Total DER for each dwelling in $\text{kgCO}_2/\text{year}$. These are then aggregated according to whether the plots fall under 2006 or 2013 Building Regulations.

2.11 Table 3 below summarises the aggregation of the dwelling emission (as-designed) performance for Phase 4C of the North Bersted development.

Table 1: As-designed emissions calculation – Phase 4C, North Bersted

DWELLINGS (APPLICABLE REGULATIONS)	NUMBER OF DWELLINGS	TOTAL EMISSIONS (kgCO ₂ /yr)
2006 L1a	33	60,255
2013 L1a	11	15,355
TOTAL	44	75,610

2.12 As a result of the best practice energy efficiency measures, the Applicant's carbon dioxide emissions are reduced from the regulatory baseline scenario of 90,133 kgCO₂/year to 75,610 kgCO₂/year. This is a reduction of 14,523 kgCO₂/year, or 16.11% in proportional terms. This thus exceeds the 10% target set by Condition 8 and Policy ECC SP2 of Arun District Council's Local Plan.

3.0 Conclusion

- 3.1 This Energy Statement has set out the Applicant's proposed energy strategy for Phase 4C of the North Bersted development. In response to the stipulations of Planning Condition 8, the Applicant has proposed an approach that seeks to minimise energy consumption and carbon dioxide emissions at the point of demand through the installation of highly efficient fabric, ventilation and heating systems, together with the benefits of passive solar gains, all features which will also help to lower the fuel bills of future occupants.
- 3.2 The Applicant's proposed approach will reduce emissions by 16.11% compared to the applicable regulatory standard set by Building Regulations (Part L1A) for the 44 dwellings. This is in excess of the 10% requirement set by Condition 8 and its underpinning Policy ECC SP2. It is thus the case that the Applicant is proposing an approach that is compliant with Condition 8 and local policy.

Appendix

Phase 4C, TER/DER Review Design SAP Summary

North Bersted, Phase 4C

L1A 2006 dwellings

House Name	Plot Number	DER	TER	Total floor area	Total DER/year	Total TER / Year
4H7	1	17.30	21.64	148.81	2574	3220
3BH2	2	18.25	23.01	93.12	1699	2143
3H3G	3	18.02	22.39	94.46	1702	2115
3H3G	4	17.58	22.39	94.46	1661	2115
3BH2	5	18.37	23.01	93.12	1711	2143
3H50	7	17.04	21.10	122.48	2087	2584
3H50	8	17.12	21.10	122.48	2097	2584
3H50	14	17.04	21.10	122.48	2087	2584
3H50a	15	17.34	17.34	122.48	2124	2124
3H50	16	17.04	21.10	122.48	2087	2584
3H50a	17	17.34	17.34	122.48	2124	2124
3H1	24	18.37	22.86	88.12	1619	2014
3H1	25	16.76	20.25	88.12	1477	1784
3H3e	26	17.44	22.13	99.13	1729	2194
2H3a	27	19.42	24.15	78.1	1517	1886
2H3a	28	19.46	24.15	78.1	1520	1886
2H3	29	19.18	23.82	78.1	1498	1860
2H2a	30	17.77	21.57	70.96	1261	1531
2H2	31	17.51	21.22	70.96	1243	1506
2H3a	32	19.46	24.15	78.1	1520	1886
2H3	33	19.18	23.82	78.1	1498	1860
2H2	34	17.51	21.22	70.96	1243	1506
3H1	35	18.18	22.86	88.12	1602	2014
3H10b	36	19.40	25.21	113.93	2210	2872
2H3a.1	37	20.01	24.97	78.1	1563	1950
3H1b	38	19.96	25.62	89.16	1780	2284
3H1b	39	18.27	22.92	89.16	1629	2044
3H1b	40	18.28	22.92	89.16	1630	2044
3H8.1	41	17.62	22.77	118.7	2091	2703
4H7	42	16.77	21.64	148.81	2496	3220
4H30	43	16.90	21.50	148	2501	3182
3H8.2	44	17.86	22.73	118.7	2120	2698
4H7	45	17.19	21.64	148.81	2558	3220
					60255	74466

North Bersted, Phase 4C
L1A 2013 dwellings

House Name	Plot Number	DER	TER	Total floor area	Total DER / year	Total TER / Year
3H1	9	18.30	18.44	88.12	1613	1625
2H2	10	17.86	18.32	70.76	1264	1296
2H2a	11	17.97	18.56	70.76	1272	1313
2H2	12	17.86	18.32	70.76	1264	1296
3H1	13	18.20	18.35	88.12	1604	1617
3H1b	18	18.58	18.77	88.12	1637	1654
2H2	19	17.86	18.32	70.76	1264	1296
2H2a	20	17.97	18.56	70.76	1272	1313
2H2	21	17.75	18.32	70.76	1256	1296
2H2a	22	18.08	18.56	70.76	1279	1313
3H1b	23	18.52	18.68	88.12	1632	1646
					15355	15667

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

FLOOR	HOUSE TYPE	U-VALUE EXT. WALLS W/m ² .K	U-VALUE ROOF/WALLS W/m ² .K	VENTILATION	EXT. WALL MAKE-UP (1)	THERMAL BRIDGING L1A 2005	THERMAL BRIDGING L1A 2013	SCOPS 4.1.1	U-VALUE WALLS W/m ² .K	HEAT LOST THROUGH WALLS W/m ² .K	U-VALUE WALLS W/m ² .K	ROOF/HEAT LOSS W/m ² .K	CONTROLS	WEATHER/CLIM COMPENSATION	LIGHTING	SECONDARY HEATING	CYCLING
1	APT	1.40	1.40	Greenwood CMBV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (b) Tie Hanging Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (c) Weatherboard Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block returning U-Value 0.24 W/m ² .K	APA (0.04)	BPEC APA ACD SAP Appendix K	(a) Plaster - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 150mm 0.022 W/m.K PIR Board under Rafters (c) - Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	50mm spaced 100mm over 1570 insulation over 200mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAS A2005	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	2100w ASAS Electric Cylinder 1.620kW/day Standing heat loss
2	SMG2	1.40	1.40	Greenwood CMBV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (b) Tie Hanging Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (c) Weatherboard Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block returning U-Value 0.24 W/m ² .K	APA (0.04)	BPEC APA ACD SAP Appendix K	(a) Plaster - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 150mm 0.022 W/m.K PIR Board under Rafters (c) - Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	50mm spaced 100mm over 1570 insulation over 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAS A215CA CMBV	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
3	SMG3	1.40	1.40	Greenwood CMBV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (b) Tie Hanging Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (c) Weatherboard Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block returning U-Value 0.24 W/m ² .K	APA (0.04)	BPEC APA ACD SAP Appendix K	(a) Plaster - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 150mm 0.022 W/m.K PIR Board under Rafters (c) - Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	50mm spaced 100mm over 1570 insulation over 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAS A215CA CMBV	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
4	SMG4	1.40	1.40	Greenwood CMBV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (b) Tie Hanging Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² .K (c) Weatherboard Battens 100mm Hemselle Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m.K Acoustic Block returning U-Value 0.24 W/m ² .K	APA (0.04)	BPEC APA ACD SAP Appendix K	(a) Plaster - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 150mm 0.022 W/m.K PIR Board under Rafters (c) - Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	50mm spaced 100mm over 1570 insulation over 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAS A215CA CMBV	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

PLANT	HOUSE TYPE	U-VALUE EXT. WALLS W/m ² K	U-VALUE ROOFS W/m ² K	VENTILATION	EXT. WALL MAKE-UP (U)	THERMAL BRIDGING U/A DDB	THERMAL BRIDGING U/A DDB	ROOFT R-10	U-VALUE WALLS	HEAT LOSS FLOOR	U-VALUE WALLS	WALLS/HEAT PUMP	CONTROLS	WEATHER/CLIM COMPENSATOR	LIGHTING	SECONDARY HEATING	COLUMNA
9	3000	1.40	1.40	Greenwood CMV-Ac	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	AFR (0.04)	SPEC AFR AC3 SAP Appendix E	(a) Plots - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over 1070 insulation over, 100mm Tarmac Tiefloor infilled Beam Flooring	0.14 - 0.16 dependent on FTA	ATAG AS25CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100W LED	N/A	N/A
7	3000	1.40	1.40	Greenwood CMV-Ac	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	AFR (0.04)	SPEC AFR AC3 SAP Appendix E	(a) Plots - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over 1070 insulation over, 100mm Tarmac Tiefloor infilled Beam Flooring	0.14 - 0.16 dependent on FTA	ATAG AS25CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100W LED	N/A	N/A
8	3000	1.40	1.40	Greenwood CMV-Ac	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	AFR (0.04)	SPEC AFR AC3 SAP Appendix E	(a) Plots - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over 1070 insulation over, 100mm Tarmac Tiefloor infilled Beam Flooring	0.14 - 0.16 dependent on FTA	ATAG AS25CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100W LED	N/A	N/A
9	3000	1.40	1.40	Greenwood CMV-Ac	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	AFR (0.04)	SPEC AFR AC3 SAP Appendix E	(a) Plots - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over 1070 insulation over, 100mm Tarmac Tiefloor infilled Beam Flooring	0.14 - 0.16 dependent on FTA	ATAG AS25CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100W LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

FLOOR	HOUSE TYPE	U-VALUES EWT/G/M ² K	U-VALUES W/M ² K (20)	VENTILATION	EXT WALL MAKE-UP (1)	THERMAL BRIEFING L1A 2005	THERMAL BRIEFING L1A 2013	ROOF R.A.H.	U-VALUES W/M ² K	GLASS LOSS FLOORS	U-VALUES W/M ² K	WALLS/HEAT PUMP	CONTROLS	WEATHERLOAD COMPENSATOR	LIGHTING	SECONDARY HEATING	CEILING
10	2HO	1.40	1.40	Greenwood CMV4.4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPFC APA ACS SAP Appendix K	(a) Plank - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.22 (c) 0.22	65mm screed 100mm over TF70 insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CX Controls	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% L1	N/A	N/A
11	2HOA	1.40	1.40	Greenwood CMV4.4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPFC APA ACS SAP Appendix K	(a) Plank - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.22 (c) 0.22	65mm screed 100mm over TF70 insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CX Controls	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% L1	N/A	N/A
12	2HO	1.40	1.40	Greenwood CMV4.4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPFC APA ACS SAP Appendix K	(a) Plank - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.22 (c) 0.22	65mm screed 100mm over TF70 insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CX Controls	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% L1	N/A	N/A
13	2HO	1.40	1.40	Greenwood CMV4.4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block 12.50mm Plasterboard on Dales returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaflex Supafix 34 100mm 0.11 W/m.K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPFC APA ACS SAP Appendix K	(a) Plank - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.22 (c) 0.22	65mm screed 100mm over TF70 insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CX Controls	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% L1	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

PLOT	HOUSE TYPE	UNFILLABLE EXT. GLAZING W/m ² /K	U-VALUES W/m ² /K	VENTILATION	EXT. WALL MAKE-UP	THERMAL BRIDGING L1A 2005	THERMAL BRIDGING L1A 2013	ROOFS U, R	U-VALUE W/m ² /K	HEAT LOSS FLOORS	U-VALUE W/m ² /K	ROOFS/CHILL FLOOR	CONTROLS	WEATHER/GAS COMPENSATOR	LIGHTING	SECONDARY HEATING	CYLINDER
14	3BSS	1.40	1.40	Greenwood CASEV Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m²/K (b) Tie Hanging Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m²/K (c) Weatherboard Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block returning U-Value 0.23 W/m²/K	APR (0.04)	BPEC APP A AC3 SAP Appendix E	(a) Plane - 400mm 0.044 W/m²/K Mineral Wool over Battens 100mm 0.044 W/m²/K Mineral Wool between Battens (b) Slope - 70mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens (c) Flat Bay - 100mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens	(a) 0.09 (b) 0.28 (c) 0.12	60mm screed 100mm over TF70 insulation over 100mm Tarmac Topfloor infilled Roam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CA Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LED	N/A	N/A
15	3BSSa	1.40	1.40	Greenwood CASEV Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m²/K (b) Tie Hanging Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m²/K (c) Weatherboard Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block returning U-Value 0.23 W/m²/K	APR (0.04)	BPEC APP A AC3 SAP Appendix E	(a) Plane - 400mm 0.044 W/m²/K Mineral Wool over Battens 100mm 0.044 W/m²/K Mineral Wool between Battens (b) Slope - 70mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens (c) Flat Bay - 100mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens	(a) 0.09 (b) 0.28 (c) 0.12	60mm screed 100mm over TF70 insulation over 100mm Tarmac Topfloor infilled Roam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CA Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LED	N/A	N/A
16	3BSSb	1.40	1.40	Greenwood CASEV Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m²/K (b) Tie Hanging Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m²/K (c) Weatherboard Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block returning U-Value 0.23 W/m²/K	APR (0.04)	BPEC APP A AC3 SAP Appendix E	(a) Plane - 400mm 0.044 W/m²/K Mineral Wool over Battens 100mm 0.044 W/m²/K Mineral Wool between Battens (b) Slope - 70mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens (c) Flat Bay - 100mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens	(a) 0.09 (b) 0.28 (c) 0.12	60mm screed 100mm over TF70 insulation over 100mm Tarmac Topfloor infilled Roam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CA Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LED	N/A	N/A
17	3BSSc	1.40	1.40	Greenwood CASEV Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m²/K (b) Tie Hanging Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m²/K (c) Weatherboard Battens 100mm Hermite Block 100mm Cavity Fully Filled Knaf Superl 34 100mm 0.11 W/m²/K Aggregate Block returning U-Value 0.23 W/m²/K	APR (0.04)	BPEC APP A AC3 SAP Appendix E	(a) Plane - 400mm 0.044 W/m²/K Mineral Wool over Battens 100mm 0.044 W/m²/K Mineral Wool between Battens (b) Slope - 70mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens (c) Flat Bay - 100mm 0.022 W/m²/K PIR Board between Battens 25mm 0.021 W/m²/K PIR Board under Battens	(a) 0.09 (b) 0.28 (c) 0.12	60mm screed 100mm over TF70 insulation over 100mm Tarmac Topfloor infilled Roam Flooring	0.14 - 0.16 dependent on P/A	ATAG A325CA Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

Plot	House Type	UPGRADE EST DENSITY W/m ² /K	U-VALUES WINDOWS W/m ² /K	VENTILATION	EXT WALL ASSEMBLY	THERMAL Bridging L1A 2005	THERMAL Bridging L1A 2013	ROOFING U.V.	U-VALUE W/m ² /K	HEAT LOSS DENSITY	U-VALUE W/m ² /K	POWER/HEAT PUMP	CONTROLS	WEATHER/CLIM COMPENSATION	LIGHTING	SECONDARY HEATING	COLOR
18	3B3a	1.40	1.40	Greenwood CMEV.Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.24 W/m ² /K (b) Tie Hanging Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.23 W/m ² /K (c) Weatherboard Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block returning U-Value 0.23 W/m ² /K	APR (0.04)	SPIC APA ACD SAP Appendix E	(a) Plane - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TF70 insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on PFA	ATAG A325C3 Control	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
19	2H1	1.40	1.40	Greenwood CMEV.Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.24 W/m ² /K (b) Tie Hanging Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.23 W/m ² /K (c) Weatherboard Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block returning U-Value 0.23 W/m ² /K	APR (0.04)	SPIC APA ACD SAP Appendix E	(a) Plane - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TF70 insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on PFA	ATAG A325C3 Control	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
20	2H2a	1.40	1.40	Greenwood CMEV.Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.24 W/m ² /K (b) Tie Hanging Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.23 W/m ² /K (c) Weatherboard Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block returning U-Value 0.23 W/m ² /K	APR (0.04)	SPIC APA ACD SAP Appendix E	(a) Plane - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TF70 insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on PFA	ATAG A325C3 Control	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
21	2H2	1.40	1.40	Greenwood CMEV.Ae	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.24 W/m ² /K (b) Tie Hanging Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block 12.50mm Plasterboard on Gable returning U-Value of 0.23 W/m ² /K (c) Weatherboard Battens 100mm Harrogate Block 100mm Cavity Fully Filled Knurl Sapelli 34 100mm 0.11 W/m.K Accecrete Block returning U-Value 0.23 W/m ² /K	APR (0.04)	SPIC APA ACD SAP Appendix E	(a) Plane - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between rafters 25mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 25mm 0.021 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TF70 insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on PFA	ATAG A325C3 Control	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

FLUT	WALL TYPE	U-VALUE EXT. WALLS W/m ² K	U-VALUES INTERIOR W/m ² K	VENTILATION	EXT. WALL ASSEMBLY	TERMINAL HEATING L1A 2005	TERMINAL HEATING L1A 2013	ROOF U-VALUE	U-VALUE WALLS	U-VALUE ROOF	U-VALUE WALLS	POWER/HEAT FLOW	CONTROLS	WEATHER/LOAD COMPENSATION	Lighting	SECONDARY HEATING	Comments
22	2024	1.40	1.40	Greenwood CHRY 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tile Hanging Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	SPFC APA ACD SAP Appendix K	(a) Floor - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Insulation Wood between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	45mm screed 100mm over TF70 Insulation over 100mm Tarmac Tuffcoat infilled Beam Flooring	0.14 - 0.18 dependent on P/A	ATAG AS29CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LEL	N/A	N/A
23	2012	1.40	1.40	Greenwood CHRY 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tile Hanging Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	SPFC APA ACD SAP Appendix K	(a) Floor - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Insulation Wood between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	45mm screed 100mm over TF70 Insulation over 100mm Tarmac Tuffcoat infilled Beam Flooring	0.14 - 0.18 dependent on P/A	ATAG AS29CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LEL	N/A	N/A
24	2012	1.40	1.40	Greenwood CHRY 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tile Hanging Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	SPFC APA ACD SAP Appendix K	(a) Floor - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Insulation Wood between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	45mm screed 100mm over TF70 Insulation over 100mm Tarmac Tuffcoat infilled Beam Flooring	0.14 - 0.18 dependent on P/A	ATAG AS29CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LEL	N/A	N/A
25	2012	1.40	1.40	Greenwood CHRY 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tile Hanging Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Horrelite Block 100mm Cavity Fully Filled Knool Supafix 34 100mm 0.11 W/m ² K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	SPFC APA ACD SAP Appendix K	(a) Floor - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Insulation Wood between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	45mm screed 100mm over TF70 Insulation over 100mm Tarmac Tuffcoat infilled Beam Flooring	0.14 - 0.18 dependent on P/A	ATAG AS29CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRVs to Radiators	N/A	100% LEL	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

UNIT	HOUSE TYPE	U-VALUE EXT WALLS W/m ² K	U-VALUE ROOFS W/m ² K	VENTILATION	EXT WALL MAKE-UP	THERMAL BRIDGING L1A 2005	THERMAL BRIDGING L1A 2013	RAISED F.F.	U-VALUE W/m ² K	HEAT LOSS W/m ²	U-VALUE W/m ² K	POLYURETHANE FOAM	CONTROLS	WEATHER/UPD COMPENSATOR	LIGHTING	SECONDARY HEATING	CYLINDER
26	2B3c	1.40	1.40	Greenwood CAREV Air	(a) 100mm Brick 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPEC APA ACD SAP Appendix E	(a) Phase - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 250mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 250mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TFF insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on FFA	AT40 4325C3 Cocob	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
27	2B3a	1.40	1.40	Greenwood CAREV Air	(a) 100mm Brick 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPEC APA ACD SAP Appendix E	(a) Phase - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 250mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 250mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TFF insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on FFA	AT40 4325C3 Cocob	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
28	2B3b	1.40	1.40	Greenwood CAREV Air	(a) 100mm Brick 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPEC APA ACD SAP Appendix E	(a) Phase - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 250mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 250mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TFF insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on FFA	AT40 4325C3 Cocob	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
29	2B3	1.40	1.40	Greenwood CAREV Air	(a) 100mm Brick 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hermelite Block 100mm Cavity Fully Filled Knool Superb 34 100mm 0.11 W/m.K Aercrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	BPEC APA ACD SAP Appendix E	(a) Phase - 400mm 0.044 W/m.K Mineral Wool over Rafters 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m.K PIR Board between Rafters 250mm 0.021 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters 250mm 0.022 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	65mm screed 100mm over TFF insulation over 100mm Tarmac Togfloor infilled Beam Flooring	0.14 - 0.16 dependent on FFA	AT40 4325C3 Cocob	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

FLAT	HOUSE TYPE	U-VALUE GLAZING W/m ² K	U-VALUE WALLS/FLOORS W/m ² K	VENTILATION	EXT WALL MAKE-UP (U)	THERMAL BRIDGING 1/A 2005	THERMAL BRIDGING 1/A 2013	ROOFS U & R	10-100% W/m ² K	HEAT LOSS FIGURES	U-VALUE ROOFS	ROOF/HEAT PUMP	CONTROLS	WEATHER/LOAD COMPENSATION	LIGHTING	SECONDARY HEATING	CYLINDER
30	2024	1.40	1.40	Greenwood CMCV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block returning U-Value 0.23 W/m ² K	APA (5.04)	BPEC APA ACS SAP Appendix K	(a) Phase - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.23 (c) 0.22	65mm screed 100mm over TFFO insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on PIR	ATAG A325CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
31	202	1.40	1.40	Greenwood CMCV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block returning U-Value 0.23 W/m ² K	APA (5.04)	BPEC APA ACS SAP Appendix K	(a) Phase - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.23 (c) 0.22	65mm screed 100mm over TFFO insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on PIR	ATAG A325CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
32	2002	1.40	1.40	Greenwood CMCV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm Akrocrete 0.11 W/m ² K Block (0.23 W/m ² K) (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm Akrocrete 0.11 W/m ² K Block (0.23 W/m ² K) (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm Akrocrete 0.11 W/m ² K Block (0.23 W/m ² K)	APA (5.04)	BPEC APA ACS SAP Appendix K	(a) 80mm Mineral Wool (b) 100mm TFFO between rafters 17.06 TFFO under	(a) 0.13 (b) 0.21	65mm screed 100mm over TFFO, 100mm Tarmac Flooring	0.14	ATAG A325CX Combi	Programmer Room Thermostat & TRV's	N/A	100% LED	N/A	N/A
33	2003	1.40	1.40	Greenwood CMCV 4c	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (b) Tie Hanging Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Hemlock Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Akrocrete Block returning U-Value 0.23 W/m ² K	APA (5.04)	BPEC APA ACS SAP Appendix K	(a) Phase - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Slope - 75mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.23 (c) 0.22	65mm screed 100mm over TFFO insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on PIR	ATAG A325CX Combi	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

PLAT	HOUSE TYPE	U-VALUE EXT DOORS W/m ² K	U-VALUES WINDOWS W/m ² K	HEATING SYSTEM	EXT WALL MAKE-UP (1)	THERMAL BRIDGING L/A 2005	THERMAL BRIDGING L/A 2013	ROOFS R & H	U-VALUE W/m ² K	HEAT LOSS FLOOR	U-VALUE W/m ² K	ROLES/HEAT PUMP	CONTROLS	WEATHER/LEAD COMPENSATOR	GLAZING	SECONDARY HEATING	CHIMNEY
24	2x2	1.40	1.40	Greenwood Cable Air	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Superfl 34 100mm 0.11 W/m ² K Aircrete Block 12.50mm Plasterboard on Sails returning U-Value of 0.24 W/m ² K (b) Tile Hanging Battens 100mm Insulation Block 100mm Cavity Fully Filled Knurl Superfl 34 100mm 0.11 W/m ² K Aircrete Block 12.50mm Plasterboard on Sails returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Insulation Block 100mm Cavity Fully Filled Knurl Superfl 34 100mm 0.11 W/m ² K Aircrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	SPVC APA AC21 SAP Appendix E	(a) Plane - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Ridge - 70mm 0.022 W/m ² K PIR Board between rafters 25mm 0.023 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.023 W/m ² K PIR Board between Rafters 25mm 0.023 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	60mm screed 100mm over TYP Insulation over 100mm Tarmac Tuffloor infill Beam Flooring	0.14 - 0.16 dependent on FSR	ATAS 4325CX Corda	Delayed Start Programmer / Thermostat / Time & Temperature Zone Control / TRVs to Radiators	N/A	100% LEL	N/A	N/A
25	2x2	1.40	1.40	Greenwood Cable Air	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Superfl 34 100mm 0.11 W/m ² K Aircrete Block 12.50mm Plasterboard on Sails returning U-Value of 0.24 W/m ² K (b) Tile Hanging Battens 100mm Insulation Block 100mm Cavity Fully Filled Knurl Superfl 34 100mm 0.11 W/m ² K Aircrete Block 12.50mm Plasterboard on Sails returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Insulation Block 100mm Cavity Fully Filled Knurl Superfl 34 100mm 0.11 W/m ² K Aircrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	SPVC APA AC21 SAP Appendix E	(a) Plane - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Ridge - 70mm 0.022 W/m ² K PIR Board between rafters 25mm 0.023 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.023 W/m ² K PIR Board between Rafters 25mm 0.023 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	60mm screed 100mm over TYP Insulation over 100mm Tarmac Tuffloor infill Beam Flooring	0.14 - 0.16 dependent on FSR	ATAS 4325CX Corda	Delayed Start Programmer / Thermostat / Time & Temperature Zone Control / TRVs to Radiators	N/A	100% LEL	N/A	N/A
26	2x2.5x	1.40	1.40	Greenwood Cable Air	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Superfl 37 100mm Aircrete 0.11 W/m ² K Block 0.23 W/m ² K (b) Tile Hanging Battens 100mm Insulation Block 100mm Cavity Fully Filled Knurl Superfl 37 100mm Aircrete 0.11 W/m ² K Block 0.23 W/m ² K (c) Weatherboard Battens 100mm Insulation Block 100mm Cavity Fully Filled 100mm Knurl Superfl 37 100mm Aircrete 0.11 W/m ² K Block 0.23 W/m ² K	APA (0.04)		(a) 100mm Mineral Wool (b) 100mm TYP28 between rafters 37.50 R28 under	(a) 0.13 (b) 0.31	60mm screed 100mm TYP28 100mm Tarmac Flexibloc	0.16	ATAS 4325CX Corda	Programmer Room Thermostat & TRVs	N/A	100% LEL	N/A	N/A
27	2x2.5x	1.40	1.40	Greenwood Cable Air	(a) 100mm Brick 100mm Cavity Fully Filled Knurl Superfl 37 100mm Aircrete 0.11 W/m ² K Block 0.23 W/m ² K (b) Tile Hanging Battens 100mm Insulation Block 100mm Cavity Fully Filled Knurl Superfl 37 100mm Aircrete 0.11 W/m ² K Block 0.23 W/m ² K (c) Weatherboard Battens 100mm Insulation Block 100mm Cavity Fully Filled 100mm Knurl Superfl 37 100mm Aircrete 0.11 W/m ² K Block 0.23 W/m ² K	APA (0.04)		(a) 100mm Mineral Wool (b) 100mm TYP28 between rafters 37.50 R28 under	(a) 0.13 (b) 0.31	60mm screed 100mm TYP28 100mm Tarmac Flexibloc	0.16	ATAS 4325CX Corda	Programmer Room Thermostat & TRVs	N/A	100% LEL	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

FLAT	FLAT TYPE	U-VALUE EXT DOORS W/m ² K	U-VALUES WINDOWS W/m ² K	VENTILATION	EXT WALL MAKE-UP (1)	THERMAL BRIDGING L1A 2005	THERMAL BRIDGING L1A 2013	ROOF U-VALUE	U-VALUE W/m ² K	HEAT LOSS W/m ²	U-VALUE W/m ² K	ROOF/HEAT LOSS	CONTROLS	WEATHER/LOAD COMPENSATION	LIGHTING	SECONDARY HEATING	CURTAINS
38	3B2b	1.40	1.40	Greenwood CMCV 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block 12.50mm Plasterboard on Stubs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block 12.50mm Plasterboard on Stubs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	RPEC APA ACD SAP Appendix K	(a) Plane - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m ² K PIR Board between rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	60mm screed 100mm over TFFB insulation over, 100mm Tarmac Topfloor selfed beam flooring	0.14 - 0.16 dependent on FJA	ATAG A323CX Coorb	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
39	3B2b	1.40	1.40	Greenwood CMCV 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block 12.50mm Plasterboard on Stubs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block 12.50mm Plasterboard on Stubs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	RPEC APA ACD SAP Appendix K	(a) Plane - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m ² K PIR Board between rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	60mm screed 100mm over TFFB insulation over, 100mm Tarmac Topfloor selfed beam flooring	0.14 - 0.16 dependent on FJA	ATAG A323CX Coorb	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
40	3B2b	1.40	1.40	Greenwood CMCV 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block 12.50mm Plasterboard on Stubs returning U-Value of 0.24 W/m ² K (b) Tie Hanging Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block 12.50mm Plasterboard on Stubs returning U-Value of 0.23 W/m ² K (c) Weatherboard Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 34 100mm 0.11 W/m ² K Acrocrete Block returning U-Value 0.23 W/m ² K	APA (0.04)	RPEC APA ACD SAP Appendix K	(a) Plane - 400mm 0.044 W/m ² K Mineral Wool over Rafters 100mm 0.044 W/m ² K Mineral Wool between Rafters (b) Slope - 70mm 0.022 W/m ² K PIR Board between rafters 25mm 0.022 W/m ² K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m ² K PIR Board between Rafters 25mm 0.022 W/m ² K PIR Board under Rafters	(a) 0.09 (b) 0.28 (c) 0.22	60mm screed 100mm over TFFB insulation over, 100mm Tarmac Topfloor selfed beam flooring	0.14 - 0.16 dependent on FJA	ATAG A323CX Coorb	Delayed Start Programmer / Thermostat Time & Temperature Zone Control TRV's to Radiators	N/A	100% LED	N/A	N/A
41	3B2b	1.40	1.40	Greenwood CMCV 4e	(a) 100mm Brick 100mm Cavity Fully Filled Knaf Supafix 37 100mm Acrocrete 0.11 W/m ² K Block (0.25 W/m ² K) (b) Tie Hanging Battens 100mm Henselite Block 100mm Cavity Fully Filled Knaf Supafix 37 100mm Acrocrete 0.11 W/m ² K Block (0.23 W/m ² K) (c) Weatherboard Battens 100mm Henselite Block 100mm Cavity Fully Filled 100mm Knaf Supafix 37 100mm Acrocrete 0.11 W/m ² K Block (0.23 W/m ² K)	APA (0.04)		(a) 100mm Mineral Wool (b) 100mm TFFB between rafters 17.50 R18 under	(a) 0.13 (b) 0.21	60mm screed 100mm TFFB, 100mm Gypro Flooring	0.16	ATAG A323CX Coorb	Programmer Room Thermostat & TRV's	N/A	100% LED	N/A	N/A

NORTH BERSTED - PHASE 4C L1A 2005 & 2013 COMPLIANCE SUMMARY

PLAT	HOUSE TYPE	U-VALUE EXT DOORS W/m ² K	U-VALUES WINDOWS W/m ² K	VENTILATION	EXT WALL MAKE-UP (U)	THERMAL BRIDGING L1A 2005	THERMAL BRIDGING L1A 2013	ROOF U-VALUE	U-VALUE ROOF/K	HEAT LOSS FIGURES	U-VALUE FLOOR	WALLS/ROOF POWER	CONTROLS	WEATHER/LOAD COMPENSATION	LIGHTING	SECONDARY HEATING	CHILLERS
42	4417	1.40	1.40	Greenwood CMEV 4c	(a) 120mm Brick ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block ; 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block ; 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block returning U-Value 0.23 W/m ² K	APA (2.04)	SPSC ; APA ACD ; SAP Appendix E	(a) Floor - 400mm G044 W/m.K Mineral Wool over Rafters ; 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 75mm 0.022 W/m.K PIR Board between Rafters 25mm 0.023 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters ; 25mm 0.023 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.29 (c) 0.22	45mm screed 100mm over TF70 Insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on F/A	ATAG A2005	Delayed Start Programmer / Thermostat ; Time & Temperature Zone Control ; TRVs to Radiators	N/A	100% LED	N/A	210W ATAG Electrical Cylinder 1.600kWh/day Standing Heat Loss
43	4190	1.40	1.40	Greenwood CMEV 4c	(a) 100mm Brick ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block ; 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block ; 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block returning U-Value 0.23 W/m ² K	APA (2.04)	SPSC ; APA ACD ; SAP Appendix E	(a) Floor - 400mm G044 W/m.K Mineral Wool over Rafters ; 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 75mm 0.022 W/m.K PIR Board between Rafters 25mm 0.023 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters ; 25mm 0.023 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.29 (c) 0.22	45mm screed 100mm over TF70 Insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on F/A	ATAG A2005	Delayed Start Programmer / Thermostat ; Time & Temperature Zone Control ; TRVs to Radiators	N/A	100% LED	N/A	210W ATAG Electrical Cylinder 1.600kWh/day Standing Heat Loss
44	318.2	1.40	1.40	Greenwood CMEV 4c	(a) 100mm Brick ; 100mm Cavity Fully Filled Knaf Supafix 37 ; 100mm Concrete 0.11 W/m.K Block (0.23 W/m ² K) (b) Tie Hanging ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 37 ; 100mm Concrete 0.11 W/m.K Block (0.23 W/m ² K) (c) Weatherboard ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 37 ; 100mm Concrete 0.11 W/m.K Block (0.23 W/m ² K)	APA (2.04)		(a) 100mm Mineral Wool (b) 100mm TF70 between rafters 17.50 G18 under	(a) 0.19 (b) 0.21	45mm screed 100mm TF70 100mm Tarmac Flooring	0.16	ATAG A2005 Combi	Programmer Room Thermostat & TRVs	N/A	100% LED	N/A	N/A
45	4417	1.40	1.40	Greenwood CMEV 4c	(a) 100mm Brick ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block ; 12.50mm Plasterboard on Dabs returning U-Value of 0.24 W/m ² K (b) Tie Hanging ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block ; 12.50mm Plasterboard on Dabs returning U-Value of 0.23 W/m ² K (c) Weatherboard ; Battens ; 100mm Hemlock Block ; 100mm Cavity Fully Filled Knaf Supafix 34 ; 100mm 0.11 W/m.K Concrete Block returning U-Value 0.23 W/m ² K	APA (2.04)	SPSC ; APA ACD ; SAP Appendix E	(a) Floor - 400mm G044 W/m.K Mineral Wool over Rafters ; 100mm 0.044 W/m.K Mineral Wool between Rafters (b) Slope - 75mm 0.022 W/m.K PIR Board between Rafters 25mm 0.023 W/m.K PIR Board under Rafters (c) Flat Bay - 100mm 0.022 W/m.K PIR Board between Rafters ; 25mm 0.023 W/m.K PIR Board under Rafters	(a) 0.09 (b) 0.29 (c) 0.22	45mm screed 100mm over TF70 Insulation over, 100mm Tarmac Topfloor infilled Beam Flooring	0.14 - 0.16 dependent on F/A	ATAG A2005	Delayed Start Programmer / Thermostat ; Time & Temperature Zone Control ; TRVs to Radiators	N/A	100% LED	N/A	210W ATAG Electrical Cylinder 1.600kWh/day Standing Heat Loss

Issue Date	Revision	Comments
28/06/2019	Design Issue	

(1) Not all make-ups applicable to all plots, refer to plot specific drawings for details

(2) U-PVC Double Glazed 54mm low E 0.28 g Rating 0.73

ARON DISTRICT COUNCIL 28/06/2019

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