Planning Verification Statement
Energy & Sustainability

Planning Reference:

109701/J0/2015/S2
The Rookery, 196 Palatine Road, Didsbury Manchester, M20 2WG

Report Reference and Issue number:

CC180621-2 Issue 2, 19 July 2018

Report issued by:

M J Pickles, BSc MSc CEng MIMechE MCIOB
Constructive Compliance

1.1 Introduction – This statement has been prepared in support of discharge of Condition 4 of the Planning Approval 109701/J0/2015/S2. The wording of Condition 4 is reproduced here –

'The development hereby approved shall be implemented in full accordance with the measures as set out within the environmental sustainability elements (Building Regulation Specification by LHG Projects; Predicted Energy Assessment and Code for Sustainable Homes Statement) stamped as received by the City Council as local planning authority on 12th June 2016, including; measures to secure predicted carbon emissions and the attainment of specified environmental efficiency and performance. Within 3 months of the completion of the construction of the authorised development a verification statement shall be submitted to and approved in writing by the City Council as local planning authority, confirming the incorporation of the specified measures at each phase of the construction of the development, including dated photographic documentary evidence of the implementation and completion of required works.

1.2 Scope of Development - At the time of writing, the last of the 4 the 4 plots comprising the development has recently been completed. The plots known as plots 1-4 have been allocated the following addresses;

Plot 1 allocated postal address:

202 Palatine Road, Didsbury, Manchester, M20 2WG

Plot 2 address:

200 Palatine Road, Didsbury, Manchester, M20 2WG

Plot 3 address:

198 Palatine Road, Didsbury, Manchester, M20 2WG

Plot 4 address:

194 Palatine Road, Didsbury, Manchester, M20 2WG

1.3 Statement – It is confirmed that the 4 plots of the development have each been constructed in accordance with the measures as set out in Condition 4, namely:

The properties have been constructed in accordance with the Building Regulation specification included as appendix 1 which is the same as the LHG Projects specification previously submitted. The construction of the properties has been independently monitored by a Building Regulations Approved Inspector to confirm compliance with the specification. The final compliance certificates for each plot are included as appendix 4.

The properties have achieved the target performance identified in the previously submitted Predicted Energy Assessments and Code for Sustainable Homes statements. The actual performance in terms of Energy and Sustainability and the Code for Sustainable Homes Level are shown in the combined as-built reports for each property included as appendix 2.

Photographic evidence of the key aspects of the construction relating to Environmental Sustainability are included as appendix 3.

Appendix 1

Building Regulation Specification-As Built

FOUNDATIONS

Plot 4
Excavate trench for new concrete strip footings approx. 600mm wide x 900 mm deep. Following excavation ground conditions to be inspected and approved by Approved Inspector.

Pour new concrete strip footings 600mm wide x 200mm deep to support new external walls. Brickwork below ground to be Class B Engineering brick/Celcon Foundation Block. Cavity to external wall to be filled with a weak mix concrete to ground level.

Plots 1 -3
Foundations to be hollow circular section steel piles and pre-cast concrete ring beams as per Engineers specification and as designed by Charcon.

DPC
DPC to be pitch polymer to BS743 not less than 150mm above ground level, bedded on mortar with minimum 100mm lapped joints.

GROUND FLOOR CONSTRUCTION, & INSULATION
Plot 4-Dwelling
75mm PP reinforced fibrous screed over slip membrane sheet between insulation and screed doubling as a vapour control layer (VCL) - min 1200 gauge (0.3 mm thick) polyethylene sheet lapped 150 mm and taped at joins and turned up at floor edges. 75mm thick Kingspan Kooltherm K103 Floorboard. Building Paper. 150mm thick concrete bed with A192 reinforced steel mesh.2000 gauge visqueen.50mm sand blinding.200mm thick clean hard core bed. DPM and DPC to be continuous. Floor covering to ground floor to be tiling throughout.

P4-Garage
150mm thick concrete bed with A252 steel mesh. 2000 gauge visqueen. 50mm sand blinding. 200mm thick clean hard core bed. DPM and DPC to be continuous.

Plots 1-3

<u>Dwelling</u>
Pre-cast beam and block floor as designed by Charcon. 75mm PP reinforced fibrous screed over insulation over slip membrane sheet between insulation and screed doubling as a vapour control layer (VCL) - min 1200 gauge (0.3 mm thick) polyethylene sheet lapped 150 mm and taped at joins and turned up at floor edges. 75 mm thick Kingspan Kooltherm K103 Floorboard over beam and block. 2000 gauge visqueen beneath insulation. DPM and DPC to be continuous. Floor covering to ground floor to be tiling throughout.

<u>Attached Garage</u>

Pre-cast beam and block floor as designed by Charcon, without insulation. 7 N/mm2 concrete block. 65mm C30 concrete screed, reinforced with A192 mesh.

SUB-FLOOR VOID & VENTILATION
On plots 1,2 and 3, sub-floor void of minimum depth 150mm to be provided beneath beam and block ground floor. Ground within ground beams to be capped with min 50mm oversite concrete laid over polyethylene DPM.

Sub-floor to be ventilated with telescopic vents and air bricks/grilles on at least two opposite sides of the building. Minimum ventilation area to be 1500mm^2/metre run of wall – typically 3 vents each side of the building using 6600mm^2 vents.

MAIN EXTERNAL WALLS & INSULATION
External walls to consist of:

Plot 2 and Plot 4 : External leaf 100mm Aglite block, 100mm cavity, Internal leaf 100mm Aglite block. Structural engineer to confirm compressive strength of blockwork and lintel specifications. Cavity fully filled with Knauf Supafil 34 blown insulation. Vertical movement joints and bed joint reinforcement to be provided as per Engineer's details.

Plots 1 and 3:External leaf 100mm clay brick, 100mm cavity, Internal leaf 100mm Aglite block. Structural engineer to confirm compressive strength of blockwork and lintel specifications. Cavity fully filled with Knauf Supafil 34 blown insulation.

Walls between garage and heated dwelling space to be insulated. External walls of garage not to be insulated. Vertical movement joints to be provided at short clay masonry returns as per Engineer's details.

WALL TIES
Wall ties to be stainless steel and conform to BS1243. Ties to be embedded to a minimum depth of 50mm, positioned at maximum 750mm c/c horizontally and 450mm c/c vertically, (density of ties 2.5m^2). Ties to be evenly distributed over wall area in a staggered pattern. Additional ties are to be provided at 225mm c/c to the vertical edge of all window and door openings.

LINTELS

Provide and install Lintels over the new structural openings as per structural engineer's specification and details. Include for all Cavity Trays, Stop Ends, Weep Vents and Lintel Soffit Cladding as per manufacturers recommendations to complete the installation.

CAVITY CLOSERS
Cavities are to be closed at head, reveal and sill using Thermabate or similar Cavity Closers.

CAVITY TRAYS

Cavity trays to be provided over all window and door openings and over telescopic air ventilators to sub-floor of plots 1,2 and 3. Stepped cavity trays to be provided at the abutment between the two-storey room-over garage and the 3-storey gable to plots 1, 2 and 3.

INTERMEDIATE FLOOR STRUCTURE & INSULATION
New first and second floor to consist of:-

Subject to Engineer's confirmation- 253 X 97mm Posi-Joists spaced at 400mm centres. Supplied, installed and braced in accordance with the manufacturer's instructions. Provide and fix new 22mm T & G softwood floor boarding to new joists.

Acoustic Insulation to new floor
New first and 2nd floors to be insulated acoustically with 100mm Isowool APR 1200 between the joists.

Floor above integral attached garage.
Insulate with 250mm Earthwool Loftroll 32 Mineral wool between joists. No acoustic insulation required.

MAIN ROOF STRUCTURE & INSULATION
Roof structure as per Engineer's specification.

Ceilings following slope of roof to be insulated with 100 mm Kingspan K7 between the rafters & 37.5 mm Kingspan Kooltherm K18 insulated Dry-ling Board across the rafters. A minimum 50mm air space to be maintained between the K7 insulation and the underside of the Tyvek breathable membrane.

Horizontal ceilings - provide new 400 mm thick Knauf Earthwool Loft Roll 32 to roof space at ceiling joists level. 100mm between joists and 300 mm across joists.

Steel purlins and steel ridge as per structural engineers schedule. Pitch 30° & 55°

DORMER STRUCTURE- WALLS, ROOF & INSULATION
Dormer walls to consist of (structure as per Engineer's specification):

Dormers walls to be lined externally with 19mm plywood sheet with vapour control membrane over. Dormer walls to be insulated with 125mm Kingspan K8 between the studs and dry lined with 37.5mm Kingspan K18.

Flat Dormer roofs to be Warm Roof construction consisting of (structure as per Engineer's specification):

Timber Firrings to create a design-fall of 1 in 40 fall to rear. Actual fall to be checked on site prior to lead covering to verify a minimum actual fall of 1 in 80. 19mm plywood sheet over

roof timbers/firrings and vapour control membrane over and 85mm Kingspan TR27 over and covered with 19mm plywood sheet forming substrate for lead covering.

ROOF COVERINGS

Main Roof & Garage Roof
Roof covering to be Marley Eternit Rivendale slate 300x600 with TyVek breathable membrane, 38 x 25mm treated tile battens and all accessories required to complete the installation including dry fix verges and ridges.

Flat Roof – Dormers
Dormer roof and walls to be fully lead covered and clad with Code 4 lead.

FACSIAS/SOFFITS/BARGE BOARDS
Provide and fix new timber fascia's, soffits and barge boards.

RAINWATER GOODS
Provide and fix new 115mm Aluminium gutters and 68 mm downpipes – Yeoman Rainguard SL. Include for all necessary Aluminium brackets, fixings etc required to complete the installation.

WINDOWS & EXTERNAL DOORS
Provide and fix purpose made engineered timber windows and doors as indicated on drawings, all Secured By Design Accredited. To be factory painted. All opening casements to be minimum 1/20th of the floor area. Main entrance doors to be composite insulated, with maximum U value of 1.4 W/m² K. All vertical windows and highly glazed doors (eg Patio,French, Bi-fold) to be double-glazed, Argon filled, low-E glass with installed frame/glass U value of max 1.4 W/m² K. Safe breaking glazing to BS6206 1981 must be used to critical locations. On completion of all external works windows are to be mastic sealaed.

New windows to have an unobstructed openable area that is at least 0.33m2 and at least 450mm high and 450mm wide. Windows to be fitted with controllable trickle vents as required having a total area of not less than 8000mm².

<u>Garage Pedestrian Door</u>

Door between attached garage and dwelling to be FD30 rated and fitted with hydraulic self-closer. Door may be uninsulated.

INTERNAL DOORS
All internal doors including cupboards and to wet rooms to be FD30 rated. Self-closers are not required.

ROOF WINDOWS
Provide and install Velux Roof Windows as per the schedule supplied.

Include for all manufacturers recommended flashings and linings.

INTERNAL WALLS

Load Bearing - Blockwork
100mm thick concrete block 7 N/mm2

Timber stud partition
Construct new stud partitioning using 100 x 50mm treated timber studs as indicated on the drawing. Studs to be spaced at 400mm centres, noggins at 600mm centres.

Acoustic Insulation to stud walls
Infill studwork with 50mm thick Isowool APR 1200.

STAIRCASE
900 mm wide across strings closed riser softwood timber staircase with 190mm risers and 245mm goings (approximate). Handrail to be positioned 900mm from the pitch line, oak stop-chamfered balusters and Oak handrail and newels. Minimum headroom to staircase to be 2.0m. Guarding to landing shall be constructed so that a 100mm sphere cannot pass through any opening in the guarding. Guarding shall be of a design that is not readily climbable.

FINISHES

Ceilings
Underside of Floor Joists:-

12.5mm Gyproc Wall Board fixed to underside of new joists. Scrim joints and finish with 3mm plaster skim. Underside of Ceiling Joists:-Horizontal ceilings - 12.5mm Gyproc Wall Board Duplex fixed to underside of new joists. Scrim joints and finish with 3mm plaster skim. Sloping ceilings – see Main Roof Structure and Dormer Structure - where thermally dry-lined, scrim joints and finish with 3mm plaster skim. Underside of integral garage:-
One layer of 15 mm Gyproc Fire line plaster board finished with 3mm plaster skim.

Walls
Inner leaf of new external walls to be dry lined with 12.5mm Gyproc Wallboard on dabs. Scrim joints and finish with a 3mm plaster skim. Provide and fix 12.5mm Gyproc Wallboard to new stud partitions. Scrim joints and finish with a 3mm plaster skim.
Note: Allow for using Moisture Resistant Gyproc Wallboard to inner faces of bathrooms.
Dormers – see Dormer Structure & insulation – thermally dry lined. Scrim joints and finish with 3mm plaster skim.

Compliance with Approved Document Part M

Access into the dwelling

Front entrance door to have a minimum clear opening width of 775mm and level access threshold.

Corridors, passageways and internals doors within the entrance storey
All door openings to be provided with 900mm door sets.

Accessible switches and socket outlets in the dwelling
Socket outlets to be provided at 450mm above finished floor level. Switches to be positioned 1000mm above finished floor level.

ELECTRICAL INSTALLATION
Electricity tariff assumed to be standard, rather than off-peak. New installation to be in accordance with current IEE regulations and BS Codes of Practices. BS 7671 Electrical Installation Certificate to be issued for the work by a person competent to do so and with membership of an approved scheme. All fittings to comply with current British Standards and fitted in accordance with BS Codes of Practice, manufacturer's instructions and recommendations

MECHANICAL VENTILATION
Kitchen to be fitted with mechanical intermittent extract fan capable of extracting 60 litres per second or integrated above hob extract fitted with 150mm ducting.

Bathroom, En-Suite, shower room & W.C rooms to be fitted with a mechanical extract fan to provide an intermittent ventilation rate of not less than 15 litres per second. Fan to be fitted with a humidistat sensor. Fans to be wired in series with light switch to give a 15 minute overrun when light is turned off.

SMOKE/HEAT DETECTORS
Smoke/heat detector to be mains wired with battery back-up, installed at ceiling height to the positions shown on the plans. Installation to be in accordance with BS 5839 Part 1. At least one smoke detector required in stairwell at ground floor and intermediate landings. Heat detector required in kitchen. Heat detector required in any attached/integral garage.

Energy Efficient Lighting
Provide low-energy lamps to all fixed light fittings.

Any fixed external lighting to be dedicated low energy or max 100W per fitting with dusk til dawn control.

Water Consuming Fittings – Taps, Showers, WC's, Baths.
Kitchen taps – 1 hot and 1 cold tap or mixer with flow rate of each tap to be a maximum of 6 litres/min @ 3 bar. Basin taps - Ground WC room, 1st floor bathroom, ensuite an shower room : 1 hot and 1 cold tap or mixer for each. Flow rate of each tap to be a maximum of 6 litres/min @ 3 bar. Bath capacity to overflow to be a maximum of 167 litres for the 1st floor bathroom and master ensuite. All showers to have maximum flow rate of 10 litres/min @ 3

bar. All WC's to be dual-flush with a full flush capacity of 6 litres and part flush capacity of 4 litres.

GAS INSTALLATION

All installations to be in accordance with the new Gas Safety Register requirements and regulations. All work to gas installation to be carried out by an approved plumbing / heating engineer.All fittings to comply with current British Standards and fitted in accordance with BS Codes of Practice, manufacturer's instructions and recommendations. Gas supply is concealed box to side wall of garage/house. Gas supply required to front lounge fire point and to island hob in kitchen.

HEATING & HOT WATER SPECIFICATION

Boiler

Main space heating is by A rated Gas condensing system boiler – Worcester Bosch 30 CDi.

Space heating system controls

Central heating is under-floor to ground floor and pressed steel panel radiators s at 1st and 2nd floors. System control to be time and temperature and have 4 zones: rear kitchen/dayroom, remainder of ground floor, 1st floor, 2nd floor. Programmer and zone room-thermostats of slow-start type. Boiler interlock to be fitted. Max water flow temperature to be 45 degrees.

Operation and Maintenance

Upon completion, operation and maintenance manuals for heating and hot water systems are to be provided.

Domestic Hot Water Heating and Storage

Domestic hot water heated by main space heating system. No solar-thermal water heating is installed. No thermal store fitted. Hot water storage cylinder capacity to be 250 Litres and foam insulated- Telford Tempest TSMI250 with maximum standing heat loss of 2.1 kWh/24h. Primary pipework to be insulated. Electric 3kW dual-Immersion heater fitted.

SECONDARY HEATING

Wood-burning stove to be fitted to rear living room: Aduro 9-1 with minimum efficiency of 83.1, installed with room sealed flue to internal chimney. Installation to be HETAS certified. Balanced flue real flame gas fire to be fitted to front lounge (not Plot 1).

ABOVE GROUND DRAINAGE

Sinks and wash hand basins to have deep seal bottle traps (anti vac to basin). Waste Sizes :-

W.C 100mm, Bath 40mm, Shower 40mm,Basin 40mm, Sink 40mm, SVP 100mm .

Soil and vent pipe is to be fitted with a suitable terminal and must extend not less than 900mm above the highest window or ventilation opening.

BELOW GROUND DRAINAGE

All works to be to the satisfaction of Approved Inspector. New drainage runs comprise typically of 100mm diameter PVC-u pipework by Hepworth or similar, laid on Class N bedding to a 1:40 fall. All new pipework and accessories to comply with BS5414.

Any drainage passing beneath any solid ground bearing slabs (not beam and block suspended floors)to be encased in 150mm concrete, and adequately protected where passing through walls. Drainage encased in concrete to have movement joints formed with compressible board at each socket or sleeve joint face. If drain penetrates wall, opening to be provided with a lintel to give 50mm space all around the pipe. Opening to be masked both sides with rigid sheet material to prevent entry of fill or vermin.

SPECIAL ENERGY SAVING MEASURES & NEW TECHNOLOGIES
Solar PV to be installed of capacity 0.55 kWp on SE facing roof, approximately 2 panels 1650mm x 992 mm. No wind turbine installed. No small scale hydro or other energy saving measures installed.

THERMAL BRIDGING CONSTRUCTION DETAILS
Thermal bridging details to conform to Accredited Construction Details throughout the building fabric.

AIR PERMEABILITY TESTING
Air permeability testing will be required on completion. The maximum permitted Q50 test value for each plot will be set by the SAP Assessor. Every plot must be tested and a test certificate supplied.

Appendix 2

Code for Sustainable Homes Reports for each of 4 properties

CODE FOR SUSTAINABLE HOMES
Calculation Type: New Build (As Built)

Design SAP
elmhurst energy

Property Reference	102-P4	Issued on Date	29/11/2017
Survey Reference	AB1	Prop Type Ref	
Property	194, Palatine Road, MANCHESTER, M20 2WG		

SAP Rating	87 B	DER	12.53	TER	12.82
Environmental	87 B	% DER<TER	2.25		
CO_2 Emissions (t/year)	2.95	DFEE	49.21	TFEE	49.85
General Requirements Compliance	Pass	% DFEE<TFEE	1.30		

Surveyor	Mark Pickles, Tel: 07770428579	Surveyor ID	a500-0001
Client			

ENE 1 - Dwelling Emission Rate calculation

Total floor area	276.6	m^2	
DER	12.53	$kgCO_2/yr/m^2$	
TER	12.82	$kgCO_2/yr/m^2$	
CO_2 emissions offset from additional allowable electricity generation	0.00	$kgCO_2/yr/m^2$	(ZC7)
Residual CO_2 emissions offset from biofuel CHP	0.00	$kgCO_2/yr/m^2$	(ZC5)
Total CO_2 emissions offset from SAP Section 16 allowances	0.00	$kgCO_2/yr/m^2$	
DER accounting for SAP Section 16 allowances	12.53	$kgCO_2/yr/m^2$	
Reduction DER/TER	2.25	%	
CfSH ENE1 credits achieved	0.3		
CfSH ENE1 level achieved	3		

ENE 2 – Fabric Energy Efficiency calculation

Dwelling type	House, Detached	
Fabric energy efficiency (F.E.E.)	49.21	$kWh/m^2/yr$
CfSH ENE2 credits achieved	5.9	
CfSH ENE1 and 2 overall level achieved	3	

CODE FOR SUSTAINABLE HOMES
Calculation Type: New Build (As Built)

Design SAP
elmhurst energy

Property Reference	102-P3	Issued on Date	18/03/2018
Survey Reference	P3-AB1	Prop Type Ref	
Property	198, Palatine Road, MANCHESTER, M20 2WG		

SAP Rating	87 B	DER	12.37	TER	12.74
Environmental	87 B	% DER<TER	2.89		
CO_2 Emissions (t/year)	2.73	DFEE	48.05	TFEE	48.62
General Requirements Compliance	Pass	% DFEE<TFEE	1.19		

Surveyor	Mark Pickles, Tel: 07770428579	Surveyor ID	a500-0001
Client			

ENE 1 - Dwelling Emission Rate calculation

Total floor area	257.6	m^2	
DER	12.37	$kgCO_2/yr/m^2$	
TER	12.74	$kgCO_2/yr/m^2$	
CO_2 emissions offset from additional allowable electricity generation	0.00	$kgCO_2/yr/m^2$	(ZC7)
Residual CO_2 emissions offset from biofuel CHP	0.00	$kgCO_2/yr/m^2$	(ZC5)
Total CO_2 emissions offset from SAP Section 16 allowances	0.00	$kgCO_2/yr/m^2$	
DER accounting for SAP Section 16 allowances	12.37	$kgCO_2/yr/m^2$	
Reduction DER/TER	2.89	%	
CfSH ENE1 credits achieved	0.4		
CfSH ENE1 level achieved	3		

ENE 2 – Fabric Energy Efficiency calculation

Dwelling type	House, Detached	
Fabric energy efficiency (F.E.E.)	48.05	$kWh/m^2/yr$
CfSH ENE2 credits achieved	6.3	
CfSH ENE1 and 2 overall level achieved	3	

CODE FOR SUSTAINABLE HOMES
Calculation Type: New Build (As Built)

Design SAP
elmhurst energy

Property Reference	102-P2	Issued on Date	06/04/2017
Survey Reference	P2-AD1	Prop Type Ref	
Property	200, Palatine Road, MANCHESTER, M20 2WG		

SAP Rating	87 B	DER	12.32	TER	12.35
Environmental	87 B	% DER<TER	0.25		
CO_2 Emissions (t/year)	3.07	DFEE	47.88	TFEE	48.53
General Requirements Compliance	Pass	% DFEE<TFEE	1.35		

Surveyor	Mark Pickles, Tel: 07770428579	Surveyor ID	a500-0001
Client			

ENE 1 - Dwelling Emission Rate calculation

Total floor area	292	m^2	
DER	12.32	$kgCO_2/yr/m^2$	
TER	12.35	$kgCO_2/yr/m^2$	
CO_2 emissions offset from additional allowable electricity generation	0.00	$kgCO_2/yr/m^2$	(ZC7)
Residual CO_2 emissions offset from biofuel CHP	0.00	$kgCO_2/yr/m^2$	(ZC5)
Total CO_2 emissions offset from SAP Section 16 allowances	0.00	$kgCO_2/yr/m^2$	
DER accounting for SAP Section 16 allowances	12.32	$kgCO_2/yr/m^2$	
Reduction DER/TER	0.25	%	
CfSH ENE1 credits achieved	0.0		
CfSH ENE1 level achieved	3		

ENE 2 – Fabric Energy Efficiency calculation

Dwelling type	House, Detached	
Fabric energy efficiency (F.E.E.)	47.88	$kWh/m^2/yr$
CfSH ENE2 credits achieved	6.3	
CfSH ENE1 and 2 overall level achieved	3	

CODE FOR SUSTAINABLE HOMES
Calculation Type: New Build (As Built)

Design SAP
elmhurst energy

Property Reference	102-P1	Issued on Date	29/11/2017
Survey Reference	AB1	Prop Type Ref	
Property	202, Palatine Road, MANCHESTER, M20 2WG		

SAP Rating	87 B	DER	12.80	TER	12.97
Environmental	86 B	% DER<TER	1.34		
CO_2 Emissions (t/year)	3.05	DFEE	51.12	TFEE	51.37
General Requirements Compliance	Pass	% DFEE<TFEE	0.49		

Surveyor	Mark Pickles, Tel: 07770428579	Surveyor ID	a500-0001
Client			

ENE 1 - Dwelling Emission Rate calculation

Total floor area	278.6	m^2	
DER	12.80	$kgCO_2/yr/m^2$	
TER	12.97	$kgCO_2/yr/m^2$	
CO_2 emissions offset from additional allowable electricity generation	0.00	$kgCO_2/yr/m^2$	(ZC7)
Residual CO_2 emissions offset from biofuel CHP	0.00	$kgCO_2/yr/m^2$	(ZC5)
Total CO_2 emissions offset from SAP Section 16 allowances	0.00	$kgCO_2/yr/m^2$	
DER accounting for SAP Section 16 allowances	12.80	$kgCO_2/yr/m^2$	
Reduction DER/TER	1.34	%	
CfSH ENE1 credits achieved	0.2		
CfSH ENE1 level achieved	3		

ENE 2 – Fabric Energy Efficiency calculation

Dwelling type	House, Detached	
Fabric energy efficiency (F.E.E.)	51.12	$kWh/m^2/yr$
CfSH ENE2 credits achieved	5.3	
CfSH ENE1 and 2 overall level achieved	3	

Appendix 3

Photographic Records - Various Aspects Common to Each Property



Photo 1: Solar PV Panels – 194 – December 2017



Photo 2: Solar PV – 200 – December 2017



Photo 3: Wood burning Stove – March 2018



Photo 4: Supafil Blown Cavity Wall Insulation- Plot 1 – April 2017



Photo 4: Worcester Greenstar 30CDi Gas Boiler- Plot 2 – December 2017

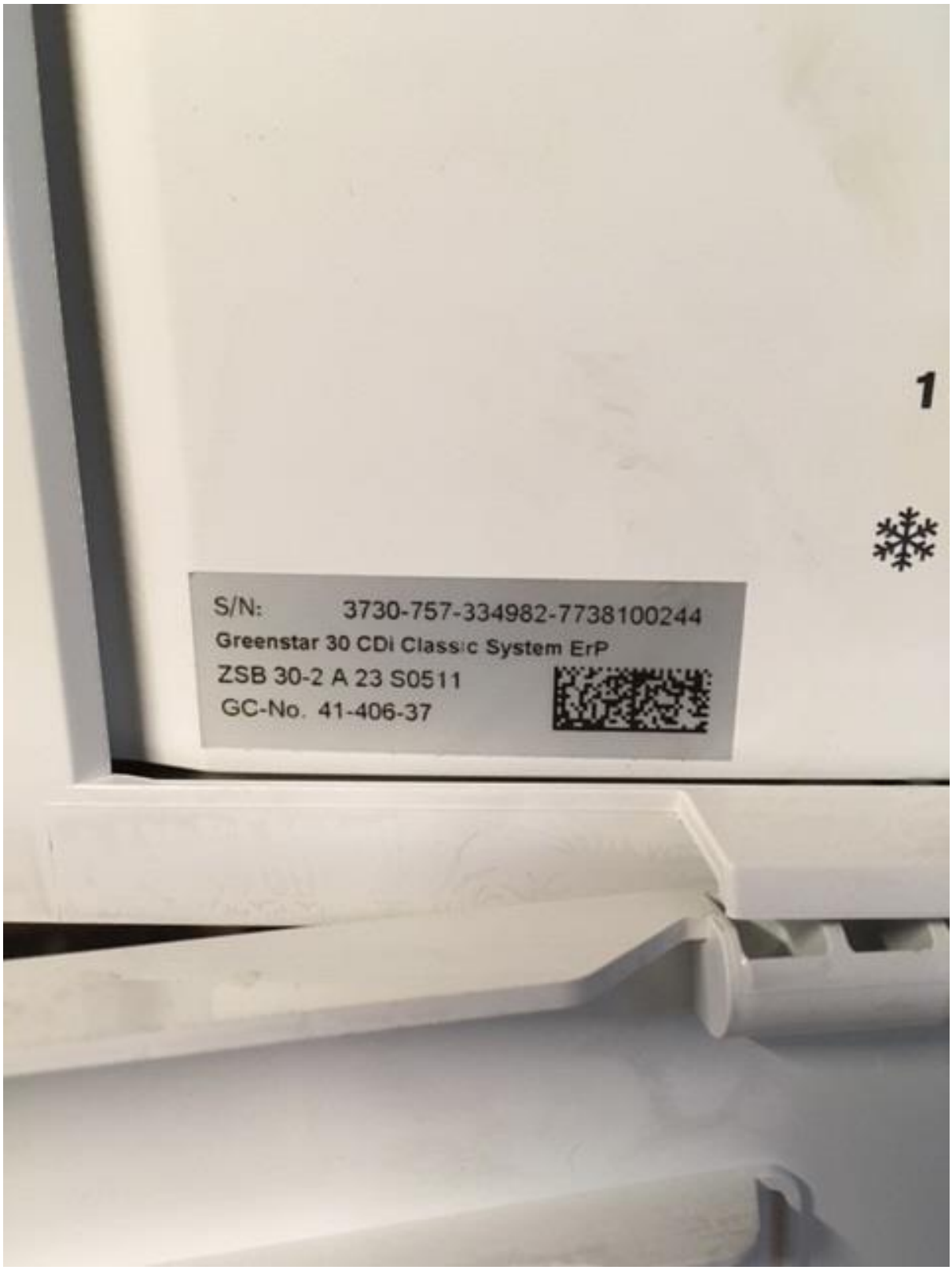


Photo 5: Worcester Greenstar 30 CDi Boiler Identification- December 2017



Photo 6: Insulated Hot Water Cylinder – Plot 1 – November 2017



Photo 7: Insulated Hot Water Cylinder Identifiction- November 2017



Photo 8: Hot Water and Space Heating Smart Controller- Plot 3 – December 2017



Photo 9: Howarth Windows – Argon Filled Double Glazed – Plot 2 – July 2017

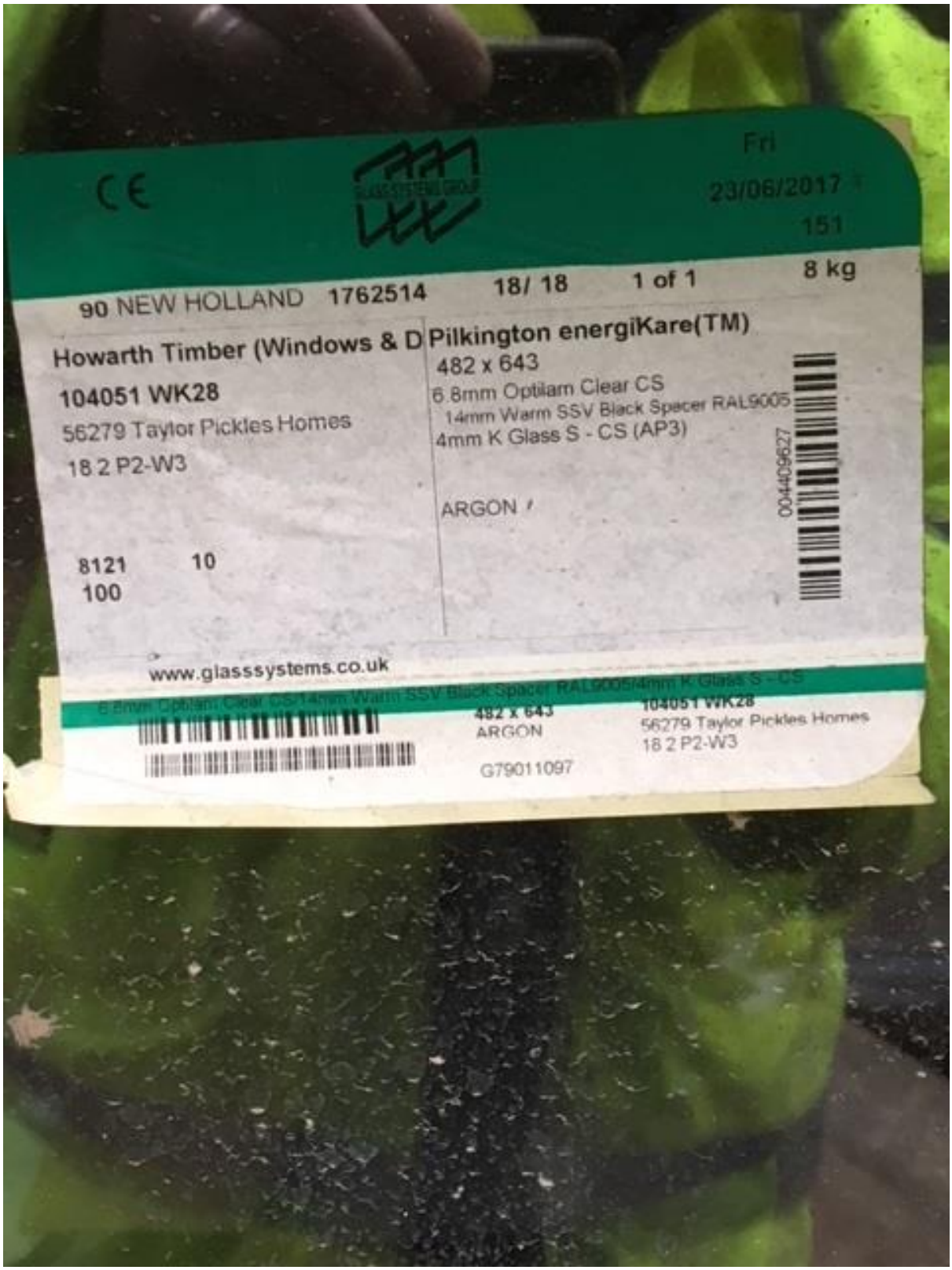


Photo 10: Howarth Windows – Argon Filled Double Glazed Units Identification- June 2017



Photo 11: Roof Insulation- February 17



Photo 12- Loft Insulation – November 17



Photo 13- LED Low Energy Downlight



Photo 14: LED Low Energy Pendants - February 18



Photo 15: LED Low Energy External Space Lighting – February 18



Photo 16: Daylight Sensor for External Lighting Control – February 18

Appendix 4

Building Control – Final Certificates Each Property

Building Standards

Final Certificate

Issued Pursuant to Section 51 of the Building Act 1984 ("the Act") and the Building (Approved Inspectors Etc.) Regulations 2010 ("the 2010 Regulations")

To:
Taylor Pickles Homes
5300 Lakeside, Cheadle Royal Business Park
Stockport, SK8 3GP

This certificate relates to the following work:

Description of work: **Construction of Detached Dwelling House**

Location: **Plot 4, No. 194, at The Rookery, Didsbury, 196 Palatine Rd, Manchester, M20 2WG**

***Pt* Building Standards Limited** are the approved inspector and the work described above was the whole of the work described in the Initial Notice given by the company dated 10/09/2015

Subject to what is stated below, the work described above has been completed and the Company have performed the functions assigned by Regulation 8 of the 2010 regulations.

Final certificates have now been issued in respect of all work described in the Initial Notice, reference **B/4651/14.**

With this certificate is a declaration signed by the insurer that a named scheme of insurance approved by the state applied in relation to the work to which this certificate applies.

The work is not minor work.

Pt Building Standards Limited had no professional or financial interest in the work described above since giving the Initial Notice.

Signed: _____

Stuart Miller
***On behalf* of *pt* Building Standards Limited**

Dated: **01/12/2017**

Building Standards

Final Certificate

Issued Pursuant to Section 51 of the Building Act 1984 ("the Act") and the Building (Approved Inspectors Etc.) Regulations 2010 ("the 2010 Regulations")

To:

Taylor Pickles Homes
5300 Lakeside, Cheadle Royal Business Park
Cheadle, Stockport, SK8 3GP

This certificate relates to the following work:

Description of work: **Construction of Detached Dwelling House**

Location: **Plot 3, No. 198, at The Rookery, 196 Palatine Road, Didsbury, Manchester, M20 2WG.**

***Pt* Building Standards Limited** are the approved inspector and the work described above was the whole of the work described in the Initial Notice given by the company dated 10/09/2015

Subject to what is stated below, the work described above has been completed and the Company have performed the functions assigned by Regulation 8 of the 2010 regulations.

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Signed:

Mr Stuart Miller

***On behalf* of *pt* Building Standards Limited**

Dated: 01/06/2018

Building Standards

Final Certificate

Issued Pursuant to Section 51 of the Building Act 1984 ("the Act") and the Building (Approved Inspectors Etc.) Regulations 2010 ("the 2010 Regulations")

To:
Taylor Pickles Homes
5300 Lakeside, Cheadle Royal Business Park
Cheadle, Stockport, SK8 3GP

This certificate relates to the following work:

Description of work: **Construction of Detached Dwelling House**

Location: **Plot 2, No. 200, at The Rookery, 196 Palatine Road, Didsbury, Manchester, M20 2WG.**

***Pt* Building Standards Limited** are the approved inspector and the work described above was the whole of the work described in the Initial Notice given by the company dated 10/09/2015

Subject to what is stated below, the work described above has been completed and the Company have performed the functions assigned by Regulation 8 of the 2010 regulations.

Final certificates have now been issued in respect of all work described in the Initial Notice, reference **B/4651/14.**

With this certificate is a declaration signed by the insurer that a named scheme of insurance approved by the state applied in relation to the work to which this certificate applies.

The work is not minor work.

Pt Building Standards Limited had no professional or financial interest in the work described above since giving the Initial Notice.

Signed:

Mr Stuart Miller

***On behalf* of *pt* Building Standards Limited**

Dated: 24/01/2018

Building Standards

Final Certificate

Issued Pursuant to Section 51 of the Building Act 1984 ("the Act") and the Building (Approved Inspectors Etc.) Regulations 2010 ("the 2010 Regulations")

To:
Taylor Pickles Homes
5300 Lakeside, Cheadle Royal Business Park
Cheadle, Stockport , SK8 3GP

This certificate relates to the following work:

Description of work: Construction of Detached Dwelling House

Location: **Plot 1, No. 202, at The Rookery, 196 Palatine Road, Didsbury, Manchester, M20 2WG.**

***Pt* Building Standards Limited** are the approved inspector and the work described above was the whole of the work described in the Initial Notice given by the company dated 10/09/2015

Subject to what is stated below, the work described above has been completed and the Company have performed the functions assigned by Regulation 8 of the 2010 regulations.

Final certificates have now been issued in respect of all work described in the Initial Notice, reference **B/4651/14.**

With this certificate is a declaration signed by the insurer that a named scheme of insurance approved by the state applied in relation to the work to which this certificate applies.

The work is not minor work.

Pt Building Standards Limited had no professional or financial interest in the work described above since giving the Initial Notice.

Signed:

(Mr Stuart Miller)

***On behalf* of *pt* Building Standards Limited**

Dated: **11/12/2017**