



# Boiler Design

## Greenstar Boilers

6373.1.1 - Plot 1 (Rev 1)






6373 - Hartley Old Road Limited, Purley, Croyden

# Design Standard Notes

## Flow Systems

Cold Balanced Feed	
Cold Water	
Hot Water	
Warm Water	
Gas	
Primary Heating	
Underfloor Heating	
Sanitary Plumbing	
Heating Zone 1	
Heating Zone 2	
Heating Zone 3	
Heating Zone 4	

## Symbols

Flow Source	
Riser	
Ball Valve	
Balancing Valve	
Thermostatic Control Valve	
Check Valve	
Pressure Relief Valve	
PRV	
Custom Valve	

## Line Types

Below Floor (N/A, N/A) Low	
Level (N/A, 1.500 m) High	
Level (1.500 m, 3.000 m)	
Above Ceiling (3.000 m, N/A)	

### GENERAL

- I) The Services provided by Bosch are a suggested heating design specification. It is strictly the responsibility of the Client to check the designs prior to installation on site to ensure their needs are satisfied.
- II) It is the responsibility of the installer to comply with current statutory regulations, British Standards, CIBSE Guides, Codes of Practice and the manufacturers installation instructions.
- III) Installation of gas fired boilers must comply with the requirements of BS 6798.
- IV) Installation of oil fired boilers must comply with the requirements of BS 5410 and OFTEC technical literature books 1, 2, 3 & 4.
- V) Installation of low carbon technologies should comply with relevant MCS Standards .
- VI) Installation of low carbon technologies should comply with minimum standards set by the building warranty provider.
- VII) The design and layouts provided remain the property of Bosch Thermotechnology Ltd. They are provided in good faith and must not be reproduced or supplied to any third party without prior written permission.

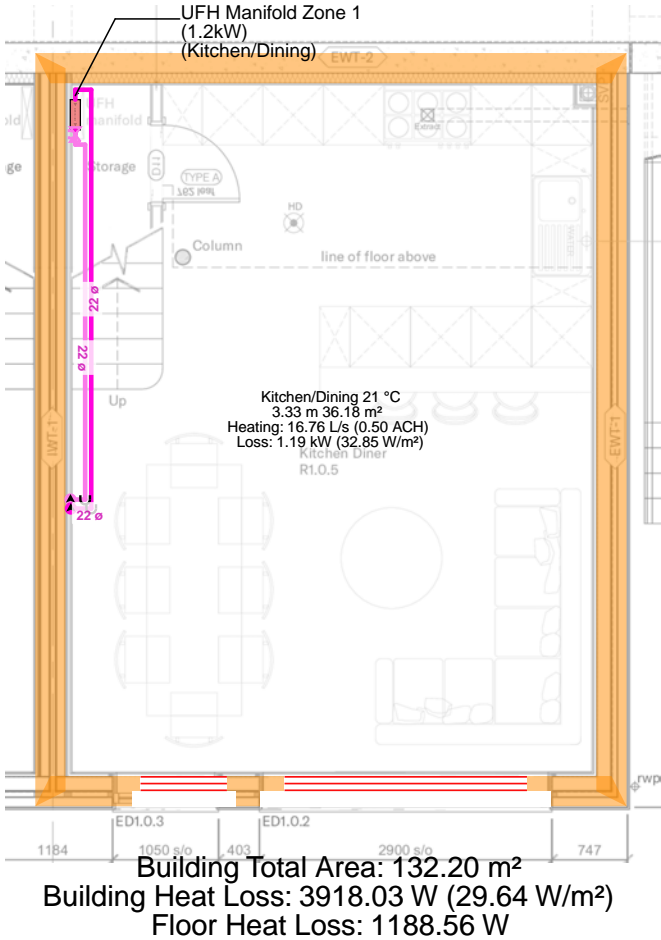
### HEATING



- I) The system has been designed with reference to the parameters given in BS EN 12831, BS EN 12828, BS EN 14336, relevant regional building regulations and supporting guidance.
- II) Heat losses have been calculated using Client agreed U-values. The external temperature is selected at 99.6% of the Meteonorm data set (2000-2019) at Client agreed location. Room temperatures and natural air change rates are set according to the CIBSE domestic heating design guide for new dwellings (unless otherwise specified and agreed). Ventilation air change rates have been increased in rooms where open flues or fireplaces are shown (it is assumed that throat restrictors are installed as default).
- III) Radiator systems have been designed with an operating temperature of 50°C flow temperature or the lowest feasible temperature that will meet the heating needs of the dwelling, as agreed with the Client.
- IV) For heating systems operated intermittently, a maximum of 20% heating capacity has been added to radiator outputs as recommended in the CIBSE Domestic Heating Design Guide.
- V) All pipe work has been designed in Hep2O to BS7291 unless otherwise indicated. Pipe sizes have been selected with a maximum pressure loss of 250 Pa/m (in accordance with CIBSE guidance) and with fluid velocity limited to 1.5 m/s. Any deviation from indicated pipe routes should be considered carefully to ensure impact on system performance is minimised.
- VI) 15mm flow and return pipe work unless otherwise indicated.
- VII) Thermostatic Radiator Valves (TRV's) & Lock Shield Valves (LSV's) to all radiators except those in room/s containing a room thermostat.
- VIII) Top and bottom opposite ends radiator configuration is recommended.
- IX) When specifying an underfloor heating system a bifilar configuration is recommended.
- X) An automatic bypass providing a 3-metre circuit must be fitted for systems using a fixed speed pump with two-port motorised valves installed. A system with a modulating pump may not require a system bypass.
- XI) For zoned or intermittently heated spaces, in-built product frost protection may be insufficient to protect parts of the system exposed to low external temperatures e.g. pipe work in unheated roof spaces, voids, garages etc. In this scenario, additional third party frost protection should be installed
- XII) An additional expansion vessel may be required. In the case of underfloor heating, assumptions regarding the water volume shall be made where underfloor heating designs are not provided by the Client.
- XIII) Underfloor heating with an integrated pump pack and hydraulic separation should be used.

### PLUMBING

- I) The system has been designed with reference to the parameters given in BS 8558, BS EN 806 and the building warranty provider's technical standards where requested or appropriate.
- II) Balanced cold connections – In order to minimise pressure differences between the hot and cold connections on mixer shower units etc. it may be preferable to provide balanced cold water supplies. For advice with regard to systems incorporating unvented Green Storage cylinders, please refer to Technical Bulletin TB0067\*. Similarly, the distance between the cold mains entry and supply for combination boilers should be kept to as short a distance as practical.
- III) Combination isolation and flow restrictor valves must be installed on all services to sanitary ware with particular emphasis to the bath and shower to ensure balanced supplies and adequate simultaneous performance.
- IV) All pipe work has been designed in Hep2O to BS7291 unless otherwise indicated. Pipe sizes have been calculated with reference to BS 806 with fluid velocity limited to 3 m/s. Any deviation from indicated pipe routes should be considered carefully to ensure impact on system performance is minimised.
- V) 15mm hot and cold pipe work unless otherwise indicated.
- VI) Dead legs – In order to balance energy efficiency and comfort during a hot water demand, it may be necessary to limit the amount of cold water drawn off through pipe work before hot water is available. Where domestic Hot Water Secondary - Recirculation (HWS-R) is specified, all pipe work must be copper (Refer to TB 0050\* for more information regarding Hot Water Secondary – Recirculation). HWS-R is not applicable for hot water systems supplied by a combination boiler - trace heating should therefore be considered as an alternative when required.
- IX) Boosted mains cold water supplies can be achieved through the use of an accumulator.

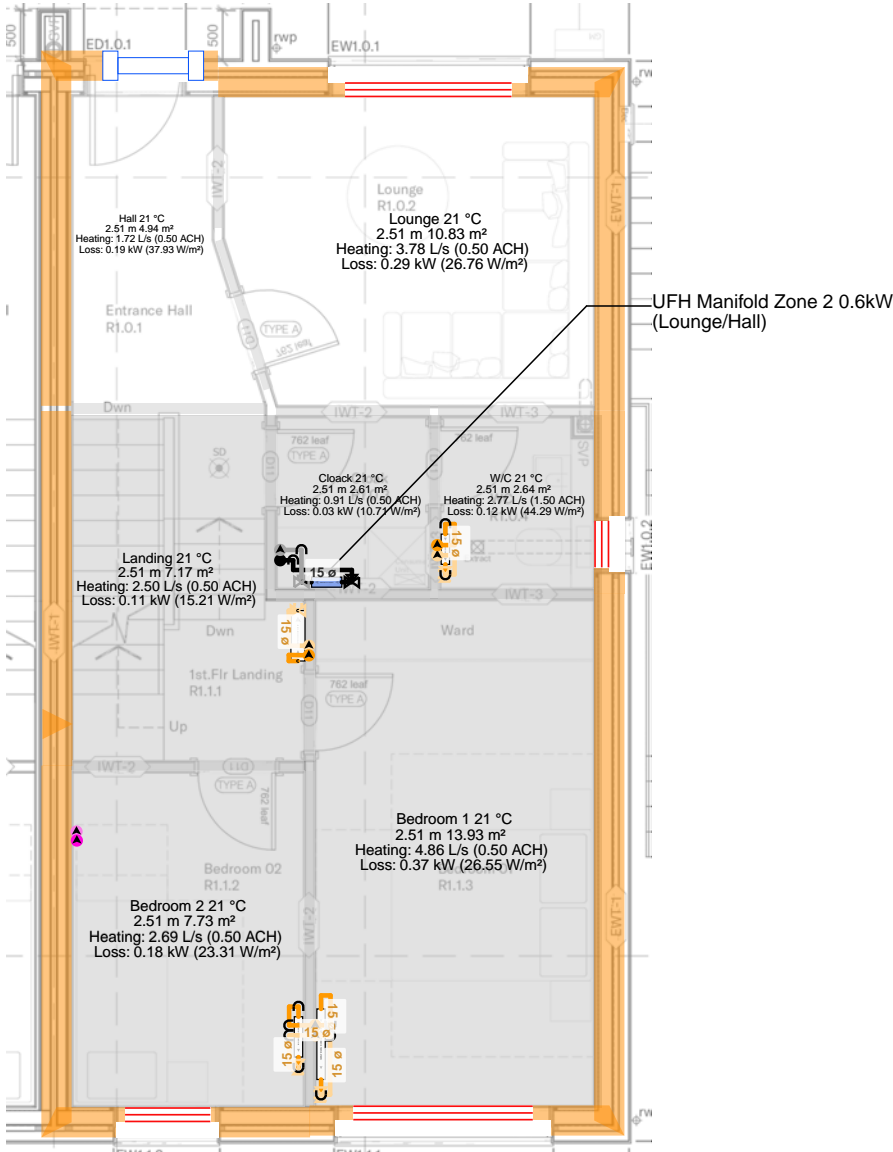
\*Please note: Technical Bulletins can be downloaded from the Worcester website ( [HYPERLINK](http://www.worcester-bosch.co.uk) "http://www.worcester-bosch.co.uk" www.worcester-bosch.co.uk)



1	Moved Cylinder to Loft Moved Bed 4 rad under window Added rad in GF WC Moved WM to Kitchen Moved Zone 2 RT to FF Landing Moved bedroom 2 radiator	
REVISION:	DESCRIPTION:	DATE:
<div> </div>		
CLIENT:  MLA Architecture		
PROJECT:  6373.1.1 - Plot 1 (Rev 1)		
Lower Ground Floor		
PROJECT NO.:	6373 - Hartley Old Road Limited, Purley, Croyden	
DESIGNER:	IMM1WO	
REVIEWER:	GER1WO	
APPROVER:	GER1WO	
SCALE:	1:75 @A3	



Name	Dimensions	Design Rating	50°C dT Rating	Room	Room Heat Loss
Stelrad - Compact K1 - 143746	400mm x 600mm	0.216kW	0.392kW	Bedroom 2	180.138W
Stelrad Compact K2 300 H x 500 W	500mm x 300mm	0.266kW	0.491kW	Landing	109.115W
Stelrad - Compact K1 - 143749	700mm x 600mm	0.378kW	0.686kW	Bedroom 1	369.885W
Stelrad - Compact K1 - 143646	300mm x 600mm	0.162kW	0.294kW	W/C	117.127W



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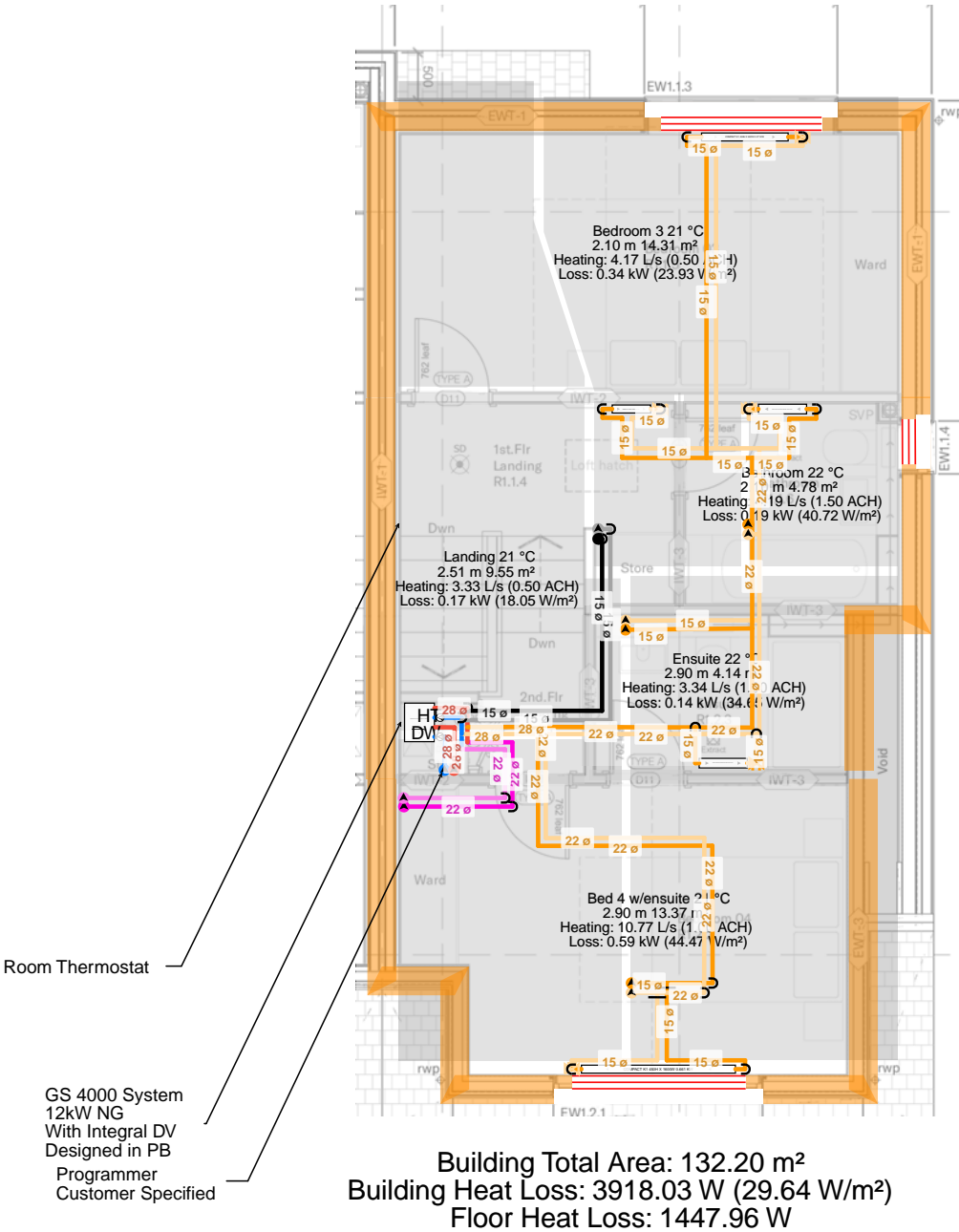
6373.1.1 - Plot 1 (Rev 1)

Ground

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DESIGNER:	IMM1WO
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SCALE:	1:75 @A3



Name	Dimensions	Design Rating	50°C dT Rating	Room	Room Heat Loss
Stelrad	500mm x 760mm	0.205kW	0.376kW	Ensuite	143.602W
Stelrad	500mm x 760mm	0.205kW	0.376kW	Bathroom	194.758W
Stelrad - Compact K1 - 143685	900mm x 450mm	0.371kW	0.680kW	Bedroom 3	342.475W
Stelrad - Compact K1 - 143746	400mm x 600mm	0.216kW	0.392kW	Landing	172.416W
Stelrad - Compact K1 - 143690	1600mm x 450mm	0.661kW	1.210kW	Bed 4 w/ensuite	594.714W



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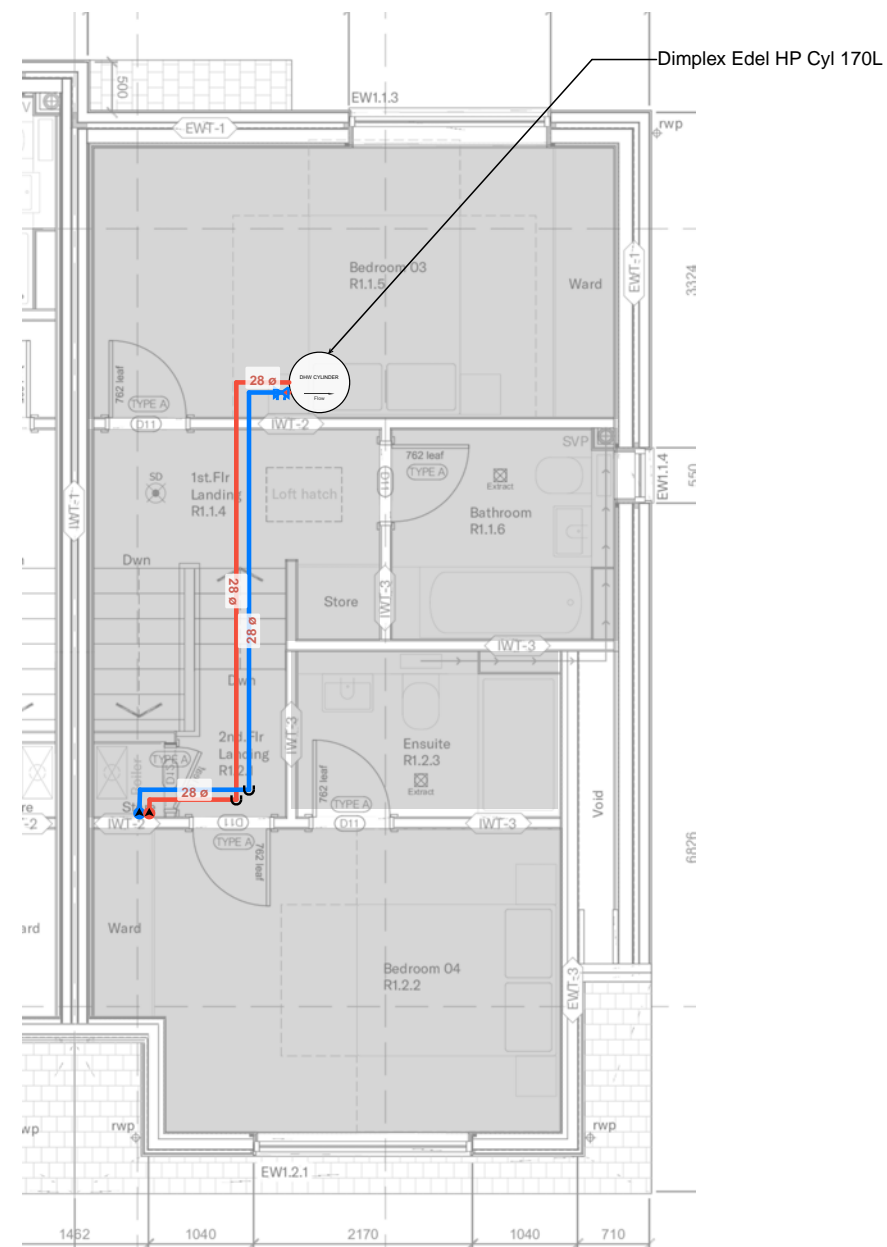
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First Floor

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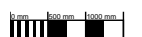
## MLA Architecture

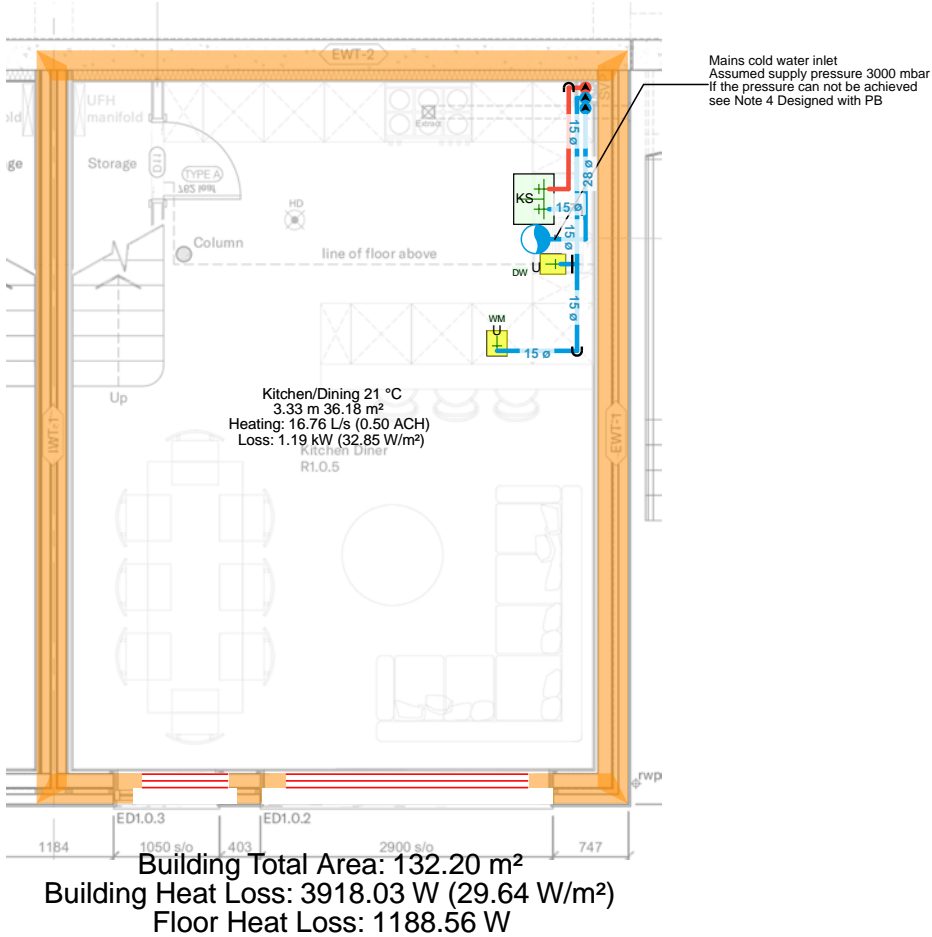
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**6373.1.1 - Plot 1 (Rev 1)**

Loft

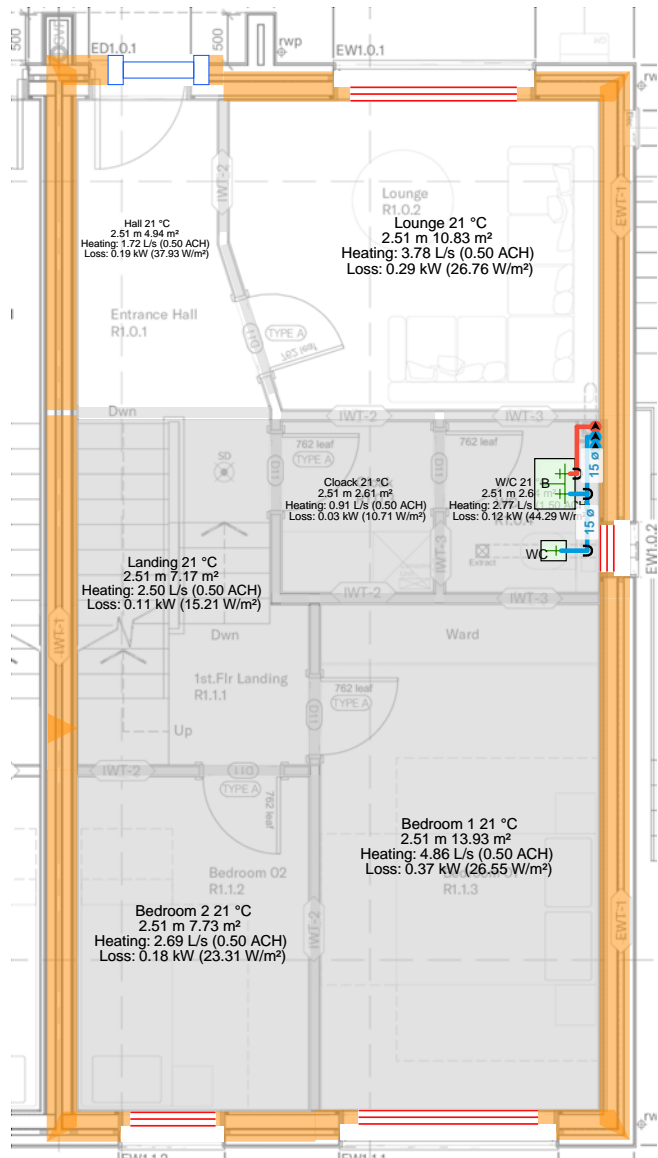
PROJECT NO.:	6373 - Hartley Old Road Limited, Purley, Croyden
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REVIEWER:	GER1WO
APPROVER:	GER1WO
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Lower Ground Floor		
PROJECT NO.:	6373 - Hartley Old Road Limited, Purley, Croyden	
DESIGNER:	IMM1WO	
REVIEWER:	MOA4WO	
APPROVER:	MOA4WO	
SCALE:	1:75 @A3	





Building Total Area: 132.20 m<sup>2</sup>  
Building Heat Loss: 3918.03 W (29.64 W/m<sup>2</sup>)  
Floor Heat Loss: 1281.51 W

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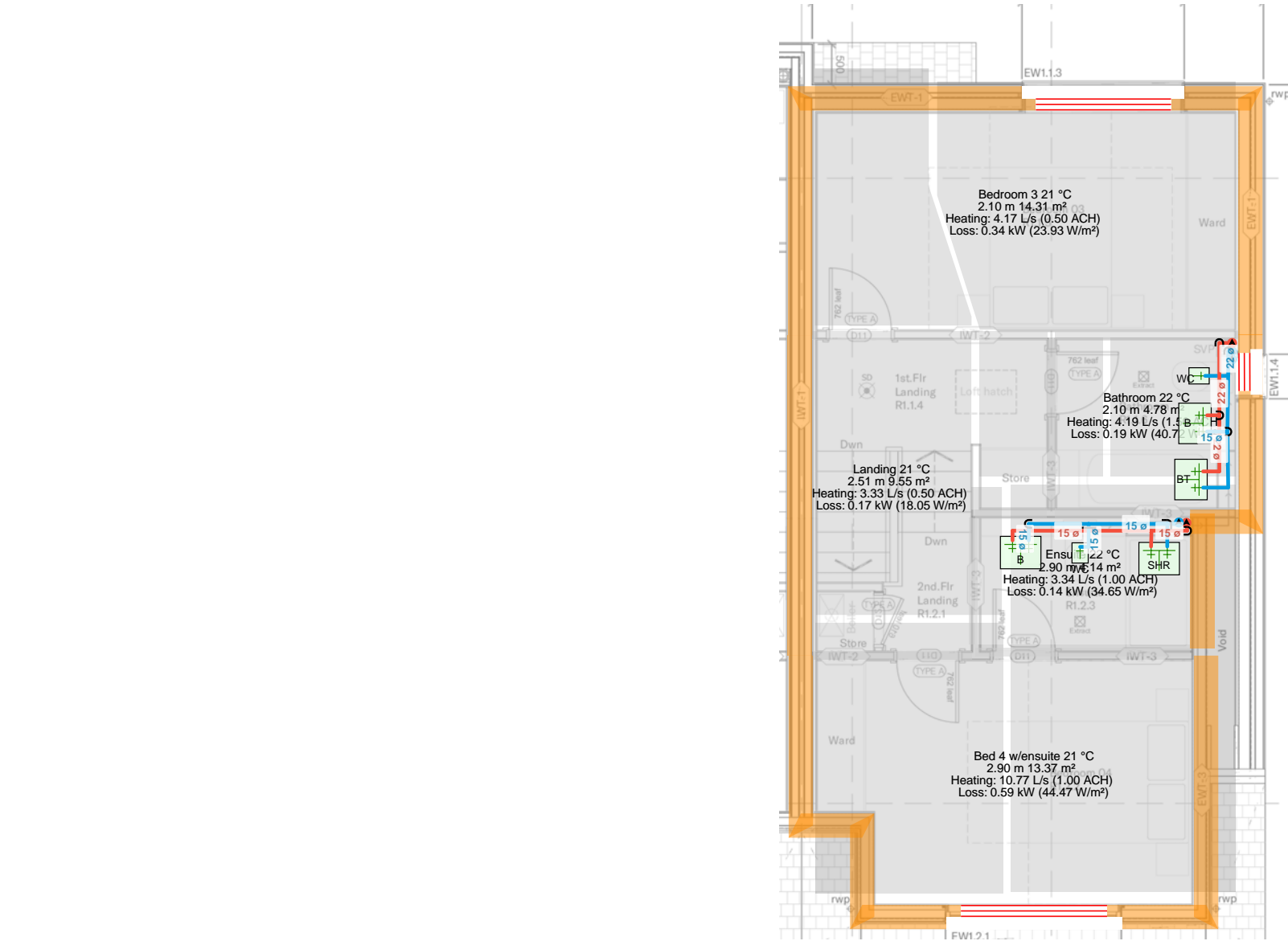
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Ground

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REVIEWER:	MOA4WO
APPROVER:	MOA4WO
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Building Total Area: 132.20 m<sup>2</sup>  
Building Heat Loss: 3918.03 W (29.64 W/m<sup>2</sup>)  
Floor Heat Loss: 1447.96 W

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**MLA Architecture**

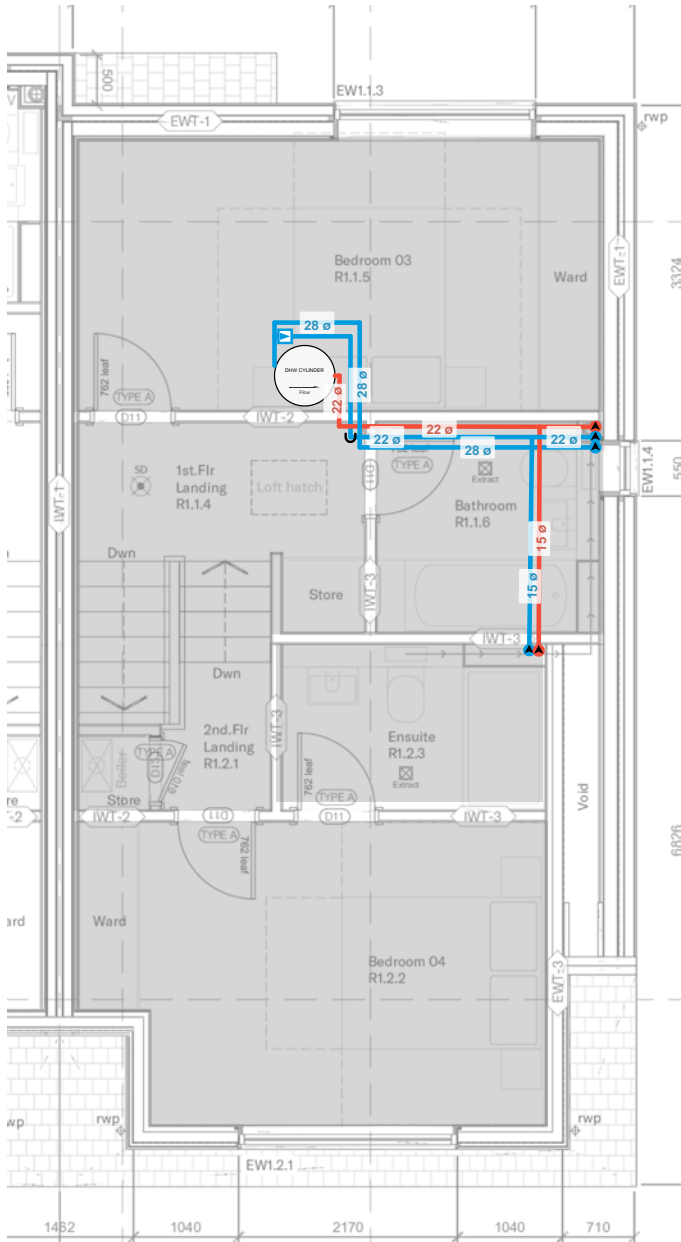
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**First Floor**

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**Loft**

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