HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Fan coil systems, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	119.5	1.7	13.7	0.1	26.2	2.43	3.99	2.88	5.27
	Notional	149.5	2.9	14.9	0.3	26.6	2.78	2.84	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	0	594.4	0	46.5	9.6	2.8	3.55	3	5
	Notional	0	801.5	0	48.1	7.2	2.78	4.63	----	----
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	0	----	----

Key to terms

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

Appendix C – Energy & Carbon Proforma

Energy and Carbon Proforma
Non-residential

Major development *(+1,000m^2)*

Version 1.0

GMCA GREATER MANCHESTER COMBINED AUTHORITY

Project Name: Maybrook House

Application ref:

Date: 22.05.2026

		Ref. name	New construction (L06	Whole building (refurbishme
		Area (m^2 GIA)	2126	7873
		Target values	**Building 1**	**Building 2**
Minimise energy demand	**Space heating demand (kWh/m^{2}GIA/yr)**	***≤ 15***	36.2	23.12
	Space cooling demand (kWh/m^{2}GIA/yr)	***≤ 15***	5.85	1.16
	Calculation methodology used to calculate space heating demand and confirmation that this covers all homes/blocks	*Predictive energy model*	TM54 model	Compliance model
	Form factor per building	*≤ 2*	1.3	0.96
	Average external wall U-value (W/m^{2}K)	*≤ 0.15*	0.18	0.26
	Average window U-value (W/m^{2}K)	*≤ 1 (triple)*	1.2	1.5
	Air permeability rate (m^3/h/m^2 @ 50 Pa)	*≤ 1*	5	5
Maximise energy efficiency	**BREEAM Ene 01 rating**	***Excellent***	0.801 EPRnc	N/A
	Energy use intensity (kWh/m^{2}GIA/yr)	-	143.7	150
	Calculation methodology used to calculate energy use intensity and confirmation that this covers all homes/blocks	*Predictive energy model*	TM54 model	Compliance model
Use renewable energy	**PV footprint area (% of ground floor space)**	**-**	3.80%	3.80%
	Annual renewable energy generation (kWh/m^2 building footprint/yr)	-	4.8	4.8
	Renewable energy balance (%)	-	2.24	0.58
	Total energy used (kWh/yr)	-	305606	1180950
	Total energy generated on-site (kWh/yr)	-	6831	6831
Use low carbon energy	**Fossil fuel free (yes/no)**	***Yes***	Yes	Yes
	Heat source	*Electric*	Electric	Electric
	Low Carbon Heat Appraisal completed	*Yes*	Yes	Yes
	Heat network suitability	-	No	No
	Exemption requested	-	No	No
	Efficiency of heating system (SCOP)	*≥ 3.5*	2.88	2.88

	Carbon content of heat (gCO_2/kWh)	*≤ 100*	136	136
Reduce overheating risk	**Has CIBSE TM52 been used to calculate overheating and does the building pass?**	***Yes***	Yes	Yes
	What percentage of spaces are cooled? (% of GIA)	-	74%	65.80%
	Has a CIBSE TM52 assessment been carried out using DSY2 and DSY3 weather files? Have any additional passive measures been included as a result?	*Yes*	Yes	Yes
Minimise embodied carbon	**Upfront embodied carbon ($kgCO_2e/m^2GIA$)**	**-**		
	List top three materials with the highest upfront embodied carbon emissions ($kgCO_2e/m^2GIA$): Material 1	-	TBA	TBA
	Material 2	-	TBA	TBA
	Material 3		TBA	TBA
	Lifecycle embodied carbon ($kgCO_2e/m^2GIA$) - *for large major developments only*	-	TBA	TBA
Offsets	**Offset contribution (£)**	**-**	NA	NA

Appendix D – BREEAM Ene01 Modelling

D.1 BREEAM v7 New Construction Ene 01 Modelling

The new build elements require a separate Part L assessment which is also what is required for the v7 Ene 01 assessment.

The BREEAM v7 output is 8 credits. This would achieve the prerequisite credits to achieve BREEAM Outstanding if the client decided to pursue.

D.2 BREEAM 2014 RFO Ene01 Modelling

The existing portion of the building will be assessed under the BREEAM 2014 Refurb & Fitout while the new build elements are assessed under the BREEAM New Construction v7.

In modelling the Ene01 credits for the refurb and fitout, the following has been included in the assessments:

- Proposed building
  - The new top floors are included in the model but removed from the assessment
  - All other proposed activities, fabric and systems are included
- Existing building
  - The new floors are removed to more accurately represent the heat loss through the existing roof
  - The NCM activities are the same as the proposed building
  - It is understood that the existing office was mainly served by VRF for heating and cooling, and gas boiler DHW; modelled parameters are given below
    - VRF with SCoP of 2.5, SEER of 2.6 and SFP of 1.6
    - DHW gas boiler 81% efficient with 85% distribution
    - Lighting with an efficacy of 60lm/cw
    - No PV

The BREEAM RFO 2014 output is 15 Ene 01 credits. This would achieve the prerequisite credits to achieve BREEAM Outstanding if the client decided to pursue.

Appendix E - Glazing Ratios