

Loop Engineering Design Note

Job Title	Ferry Island
Project No.	LE481
Date	28/05/2026
Client	Midgard
Subject	Planning Condition B38 Compliance
Loop Ref. No.	LE481-DDN-210

1 Introduction

This document aims to demonstrate compliance with planning condition B38 for the Ferry Island development. A VRF system serves the non-residential amenity areas and under planning condition B38, should demonstrate that a **Seasonal Energy Efficiency Ratio (SEER) of 7.0** can be achieved.

B38	CO2	Prior to the occupation of each non-residential unit within Plot B, details demonstrating that a Seasonal Energy Efficiency Ratio (SEER) of 7.0 can be achieved shall be submitted in writing to and for approval by the Local Planning Authority. The development shall be occupied in accordance with the approved details.
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SEER is a metric used to measure the energy efficiency of air-conditioning systems and is the ratio of cooling load to the energy used. The higher the SEER figure, the more efficient the system is.

2 Manufacturer Information

Summary of all VRF systems are as follows:

Ref. No	Model	Cooling Capacity [kW]
VRF-B1-19-01	PURY-P300YNW-A2	30.0
VRF-B1-19-02a	PURY-P600YSNW-A2	60.0
VRF-B1-19-02b	PURY-P350YNW-A2	35.8
VRF-B1-19-03	PURY-P1000YSNW-A2	100.2
VRF-B1-19-04	PUMY-P250YBM2	22.1
VRF-B1-19-05	PUMY-P140VKM6	12.2
VRF-B1-19-06	PUMY-P140VKM6	12.2
VRF-B1-B-01	PUZ-ZM35VKA	3.3
VRF-B2-GF-01	PUMY-P112YKM	10.0

SEER figures for the VRF systems are obtained from the manufacturer (Mitsubishi) and the ones installed highlighted:

R410A VRF Heat Recovery - Standard Efficiency				
Seasonal Efficiency	Ecodesign		Part L	
	SEER (C)	SCOP	SEER (C)	SCOP
PURY-P200YNW-A2	7.25	4.00	13.18	6.73
PURY-P250YNW-A2	6.85	4.00	12.87	7.15
PURY-P300YNW-A2	6.33	4.00	13.52	7.35
PURY-P350YNW-A2	5.98	3.53	10.40	7.22
PURY-P400YNW-A2	5.80	3.50	11.01	5.79
PURY-P400YSNW-A2	7.05	4.01	12.07	6.55
PURY-P450YNW-A2	6.38	3.50	11.30	5.70
PURY-P450YSNW-A2	6.85	4.01	12.30	6.91
PURY-P500YNW-A2	6.23	3.50	11.23	6.18
PURY-P500YSNW-A2	6.64	4.01	12.54	7.21
PURY-P550YNW-A2	6.25	3.50	9.06	5.17
PURY-P550YSNW-A2	6.40	4.01	11.05	7.20
PURY-P600YSNW-A2	6.15	4.01	9.61	6.83
PURY-P650YSNW-A2	5.98	3.53	9.61	6.83
PURY-P700YSNW-A2	5.80	3.53	9.58	6.78
PURY-P750YSNW-A2	5.72	3.51	9.54	6.17
PURY-P800YSNW-A2	5.65	3.51	9.33	5.37
PURY-P850YSNW-A2	5.92	3.51	9.61	5.42
PURY-P900YSNW-A2	6.19	3.51	9.82	5.52
PURY-P950YSNW-A2	6.19	3.51	9.60	5.35
PURY-P1000YSNW-A2	6.12	3.51	9.36	5.29
PURY-P1050YSNW-A2	6.05	3.51	9.14	5.07
PURY-P1100YSNW-A2	6.06	3.51	8.94	4.89
R410A Mini VRF Heat Pump - Twin Fan				
Seasonal Efficiency	Ecodesign		Part L	
	SEER (C)	SCOP	SEER (C)	SCOP
PUMY-P112V(Y)KM6(5)	6.75	4.30	6.58	4.01
PUMY-P125V(Y)KM6(5)	6.65	4.40	6.65	4.24
PUMY-P140V(Y)KM6(5)	7.65	4.44	6.46	3.87
PUMY-P200YKM3	7.15	3.66	6.11	3.91
PUMY-P250YBM2	6.51	4.22	7.01	3.83
PUMY-P300YBM2	6.76	4.35	7.13	3.87

PKA-M INDOOR UNITS		PKA-M35LA2
CAPACITY (kW)	Heating (nominal)	4.1 (1.6-5.2)
	Cooling (nominal)	3.6 (1.6-4.5)
	Heating (UK)	3.5 (1.35-4.4)
	Cooling (UK)	3.3 (1.45-4.15)
SHF (nominal)		0.74
COP / EER (nominal)		3.94 / 4.20
SCOP (η _{sh}) / SEER (η _{sc}) (BS EN14825)		4.0 / 6.5
ErP ENERGY EFFICIENCY CLASS Heating/Cooling		A+ / A++
AIRFLOW (l/s)	Lo-Mi2-Mi1-Hi	125-137-153-182
PIPE SIZE mm (in)	Gas	12.7 (1/2")
	Liquid	6.35 (1/4")
SOUND PRESSURE LEVEL (dBA) Lo-Mi2-Mi1-Hi		34-37-40-43
SOUND POWER LEVEL (dBA)		60
DIMENSIONS (mm) Width x Depth x Height		898 x 237 x 299
WEIGHT (kg)		12.6
ELECTRICAL SUPPLY		Fed by Outdoor Unit
FUSE RATING (BS88) - HRC (A)		6
INTERCONNECTING CABLE No. CORES		4
WIRED REMOTE CONTROLLER REFERENCE		PAR-41MAA
WIRELESS REMOTE CONTROLLER REFERENCE		PAR-SL101A-E / PAR-FL32MA

PUZ-ZM OUTDOOR UNITS		PUZ-ZM35VKA2
SOUND PRESSURE LEVEL (dBA) Heating/Cooling		46 / 44
SOUND POWER LEVEL (dBA) Cooling		65
WEIGHT (kg)		46
DIMENSIONS (mm) Width x Depth x Height		809 x 300 x 630
ELECTRICAL SUPPLY		220-240v, 50Hz
PHASE		Single
SYSTEM POWER INPUT (kW)	Heating/Cooling (nominal)	1.040 / 0.869
	Heating/Cooling (UK)	0.81 / 0.84
STARTING CURRENT (A)		4.3
SYSTEM RUNNING CURRENT (A) Heating/Cooling [MAX]		4.97 / 4.31 [13.4]
FUSE RATING (BS88) - HRC (A)		16
MAINS CABLE No. CORES		3
MAX PIPE LENGTH (m)		50
MAX HEIGHT DIFFERENCE (m)		30
CHARGE REFRIGERANT (kg) / CO ₂ EQUIVALENT (t) - R32 (GWP 675)		2.00 / 1.35 (30m)
MAX ADDITIONAL REFRIGERANT (kg) / CO ₂ EQUIVALENT (t) - R32 (GWP 675)		0.30 / 0.20

3 Analysis

While a few systems have SEER values slightly below 7.0, the overall performance has been assessed using a capacity-weighted average methodology to ensure that larger capacity systems contribute proportionally to the overall efficiency of the system.

Methodology:

The weighted average SEER has been calculated using the following formula:

$$\begin{aligned}
 \text{Weighted SEER} &= \frac{\Sigma(\text{Cooling capacity} \times \text{SEER})}{\Sigma(\text{Cooling capacity})} \\
 &= \frac{2692.187}{285.8} \\
 &= 9.42
 \end{aligned}$$

4 Conclusion

Based on the capacity-weighted average of all installed VRF systems, the overall SEER of the development exceeds 7.0.

Therefore, the installed VRF system complies with planning condition B38.