



ENERGY STRATEGY REVIEW

43 LONDON STREET, READING RG1 4PS

ME7 LTD

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ASSESSMENT INFORMATION

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Date:

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DISCLAIMER

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ME7 Ltd have been appointed to provide this report as a supplemental document to the original Energy Statement and subsequent Technical addendum produced by Envision in April 2020. Reason for updating the energy statement are recent changes in the heating strategy, more recent and more detailed information on building fabric and also substantial changes in carbon emission factors introduced in 2021 building regulations.

Baseline and all estimated energy consumptions have been calculated using SAP 2012 assessment of all proposed flats in accordance with 2013 Part L procedures. CO2 emissions are reported using SAP10.2 emission factors. The main difference is a significant decrease in the CO2 emission factor for grid electricity, caused by substantial de-carbonisation of grid electricity sources in recent years. This makes electricity-driven heat sources more viable and more carbon-efficient than previously proposed gas boilers.

The tables below show a summary of changes in the heating strategy and resulting energy requirements for baseline scheme and reduction proposed achieved by passive measures, efficient services and on-site renewable energy sources. Results for the previously proposed heating strategy, calculated using new SAP10.2 emission factors are included for information

Table 1: Changes in the specification

Specification	Original proposal	New proposal
Space Heating and DHW	Gas combi boilers, SEDBUK2009 efficiency 89.5%,	Exhaust air MVHR heat pump Nilan Compact P, providing space heating through warm air and hot water through integrated hot water cylinder
Solar Photovoltaic	15.18 kWp output, panels facing south at 30° pitch	-
CO2 emission tonnes CO2/year	17.1	3.2

All other specification (fabric, air permeability, ventilation etc.) is identical in both scenarios, as shown in the appendix

Results comparison

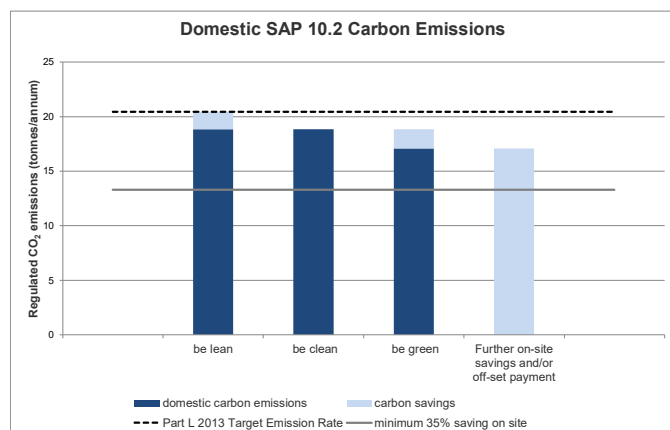
Calculation results using specification from the original proposal, with SAP10.2 emission factors

Carbon Dioxide Emissions after each stage of the Energy Hierarchy for domestic buildings

	Carbon Dioxide Emissions for domestic buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	20.4	6.6
After energy demand reduction	18.9	6.6
After renewable energy	17.1	6.6

Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for domestic buildings

	Regulated domestic carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Savings from energy demand reduction	1.6	8%
Savings from renewable energy	1.8	9%
Cumulative on site savings	3.4	17%



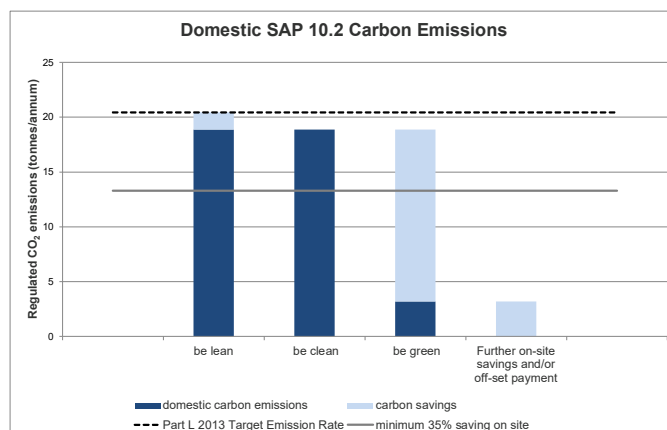
Calculation results using specification from the new proposal, with SAP10.2 emission factors

Carbon Dioxide Emissions after each stage of the Energy Hierarchy for domestic buildings

	Carbon Dioxide Emissions for domestic buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	20.4	6.6
After energy demand reduction	18.9	6.6
After renewable energy	3.2	6.6

Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for domestic buildings

	Regulated domestic carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Savings from energy demand reduction	1.6	8%
Savings from renewable energy	15.7	77%
Cumulative on site savings	17.2	84%



Detailed **Proposed** energy consumption and CO2 emission

DOMESTIC ENERGY CONSUMPTION AND CO ₂ ANALYSIS											
Unit identifier (e.g. plot number, dwelling type etc.)	Model total floor area (m ²)	REGULATED ENERGY CONSUMPTION PER UNIT (kWh p.a.) - 'BE GREEN' SAP DER WORKSHEET					SAP 10.2 REGULATED CO ₂ EMISSIONS PER UNIT				
		Space Heating (Heat Source 1)	Domestic Hot Water (Heat Source 1)	Electricity generated by renewable (-)	Lighting	Auxiliary	Space Heating	Domestic Hot Water	Lighting	Auxiliary	SAP 10.2 CO ₂ emissions (kgCO ₂ p.a.)
FLAT 02	40	1119	1180	-379	193	84	152	160	26	11	299
FLAT 03	38	580	1162	-360	201	80	79	158	27	11	226
FLAT 04	48.3	1415	1259	-457	225	101	192	171	31	14	346
FLAT 05	60.2	1894	1375	-570	274	137	258	187	37	19	423
FLAT 06	73	2275	1486	-691	321	166	309	202	44	23	484
FLAT 07	60.2	1404	1375	-570	273	137	191	187	37	19	356
FLAT 08	75.1	1471	1502	-711	329	171	200	204	45	23	376
FLAT 09	57.3	1978	1347	-543	262	128	269	183	36	17	431
FLAT 10	68.2	2375	1447	-646	304	152	323	197	41	21	494
FLAT 11	86.2	2778	1571	-816	365	197	378	214	50	27	557
FLAT 12	56	1715	1335	-530	256	118	233	182	35	16	394
FLAT 13	55.7	919	1332	-528	255	117	125	181	35	16	285
FLAT 14	59.5	1344	1369	-564	270	125	183	186	37	17	346
FLAT 15	58.2	953	1356	-551	265	122	130	184	36	17	292
FLAT 16	61.3	1963	1386	-581	277	126	267	188	38	17	431
FLAT 17	51.9	1218	1294	-492	240	109	166	176	33	15	322
FLAT 18	76	2573	1508	-720	332	173	350	205	45	24	526
FLAT 19	55.7	1441	1332	-528	255	117	196	181	35	16	356
FLAT 20	55.7	1441	1332	-528	255	117	196	181	35	16	356
FLAT 21	55.6	1828	1331	-527	255	117	249	181	35	16	409
FLAT 22	84.5	3130	1562	-800	360	250	426	212	49	34	612
Sum	1,277	35,816	28,842	-12,091	5,767	0	4,871	3,923	784	387	8,321

Conclusion

Using the new SAP10.2 emission factors, CO₂ reduction achieved by the original proposal is only 17% (although it was achieving a 35.54% reduction using old SAP2012 emission factors in the original energy statement). Even with solar PV system removed, the new proposal achieves 84% reduction using SAP10.2 emission factors.

Currently proposed heating strategy is proving to be more efficient in terms of CO₂ reduction that the originally proposed gas boilers, when new SAP10.2 carbon factors are used.

Appendix – SAP calculation specification for the current proposal

Building fabric	Thermal element	U-value (W/m ² K)	Source of U-value	Notes
	Pitched roof	0.11	Assumed design stage specification	Build up TBC
	Party walls	0.00	Assumed design stage specification	Flat/Flat party walls fully filled with insulation
	All other walls, roofs and floors		Calculated from architect design drawings	All constructions to be insulated in accordance with Brookes Architects construction drawings
	Windows and glazed doors	1.1	Design stage specification provided by client	Double glazed
	Glass block walls	0.92	Design stage specification provided by client	Pilkington Profilit™ triple glazed
	Roof windows	1.30	Assumed design stage specification	Double glazed
	Specification		Source of information	
M&E	Ventilation	MVHR integrated in NILAN Compact P heat pump unit, insulated ducts to and from exterior;	Design stage specification provided by client	
	Space heating and hot water	Exhaust air MVHR heat pump Nilan Compact P, providing space heating through warm air and hot water through integrated hot water cylinder	Design stage specification provided by client	
	PV system	Not required to achieve the targets		
	Low energy lights	100% LED lighting	Recommended, required to achieve the targets	
	Specification		Source of information	
Other	Air permeability rate: 5 m3/h.m2		Recommended, required to achieve the targets	
	Thermal bridging - custom Psi-values calculated using architect details		Calculated from architect design drawings	