The Planning Department
Three Rivers District Council
Three Rivers House
Northway
Rickmansworth
WD3 1RL



30th November 2017

Energy Statement

Dear Sirs,

Re: Proposed new house at Windmill Drive, Croxley Green..

We have prepared this energy statement with regard to policy DM4 of the DMPLDD and to support the planning application for the new house.

We have prepared SAP calculations as per the following report. This shows a TER of 18.44 and a DER of 17.33. This is an improvement of 6.04 % over the requirements of Part L1A 2013 which proves compliance with policy CP4.

Yours sincerely

Keith Grace









Unitek House, Churchfield Road, Chalfont St Peter SL9 9EW Phone

www.merlinpropertyservices.com

BUILDING REGULATION COMPLIANCE Calcula**6**on Type: New Build (As Designed)



Survey Reference Property SAP Raeng	Droporty Deference Windmill Drive					Issued on Data	20/11/2017
SAP Raeng	Property Reference Windmill Drive Survey Peference 001			Dro	on Typo-Pof	Issued on Date	30/11/2017
SAP Raeng				PIC	op Type Rei		
Environmental 86 B % DER-TER 6.04			0.4.0	0.50	47.00	TED	10.44
1.37 DFEF 47.17 TFEF 56.92 Surveyor Sam Green, Tel: Surveyor Surveyor Sam Green, Tel: Surveyor Sam Green, Tel: Surveyor Sam Green, Tel: Surveyor Sam Green, Tel: Surveyor Sam Green, Tel: Sam Green,	<u>`</u>				17.33		18.44
Surveyor Sam Green, Tel. Surveyor ID					47.17		F/ 02
Surveyor Sam Green, Tel: Surveyor ID 8881-0002					47.17		56.92
Criterion 1 - Achieving the TER and TFEE rate 1a TER and DER Fuel for main hea@ng Target Carbon Dioxide Emission Rate (TER) Dwelling Carbon Dioxide Emission Rate (DER) Target Fabric Energy Ex ciency (DFEE) Dwelling Fabric Energy Ex ciency (DFEE) Limiton Fabric Standards 2 Fabric U-values Element External wall 0.19 (max. 0.30) 0.14 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass 2 Target Bridging Thermal bridging Thermal bridging Thermal bridging calculated from linear thermal transmix ances for each junc@on 3. Air permeability Air permeabil			Pass	% DFEE <ifee< td=""><td></td><td>_,</td><td></td></ifee<>		_,	
SUMARY FOR INPUT DATA FOR New Build (As Designed) Criterion 1 - Achieving the TER and TFEE rate 1a TER and DER Fuel for main heaeng Mains gas Fuel factor 1.00 (mains gas) Target Carbon Dioxide Emission Rate (TER) 18.44 kgCO ₂ /m² Dwelling Carbon Dioxide Emission Rate (DER) 17.33 kgCO ₂ /m² Pass 1.111 (-6.0%) kgCO ₂ /m² Pass 47.17 kWh/m²/yr Dwelling Fabric Energy Ex cliency (TFEE) 56.92 kWh/m²/yr Dwelling Fabric Energy Ex cliency (DFEE) 47.17 kWh/m²/yr Pass 1.110 1.11 1.11 Description 2 - Limits on design Nexibility LimiOng Fabric Standards 2 Fabric U-values Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.25) 0.14 (max. 0.35) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass 2 a Thermal bridging Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 2 a Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 2 a Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 2 a Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 2 a Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 2 a Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 2 a Thermal bridging calculated from linear thermal transmit ances for each junc\(\text{OO}\) Pass 3 Air permeability Air permeability						Surveyor ID	8881-0002
Criterion 1 — Achieving the TER and TFEE rate 1a TER and DER Fuel for main hea@ng Fuel factor Target Carbon Dioxide Emission Rate (TER) Dwelling Carbon Dioxide Emission Rate (DER) Target Carbon Dioxide Emission Rate (DER) Target Carbon Dioxide Emission Rate (DER) Target Fabric Energy Ex clency (TFEE) Dwelling Fabric Energy Ex clency (TFEE) Dwelling Fabric Energy Ex clency (DFEE) Target Fabric External Exter	Client						
Tend Fee Fue For main heaeng Mains gas Fue Fue Fue For main heaeng Fue Factor 1.00 (mains gas) Fue Factor Factor 1.00 (mains gas) Fue Factor F	SUMARY FOR INPUT DATA FOR New Bui	ld (As Desig	ned)				
Fuel for main heaeng Mains gas 1.00 (mains gas) 1.00 (mains g	Criterion 1 – Achieving the TER and TFEE	rate					
Fuel factor 1.00 (mains gas) 1.00 (mains gas	1a TER and DER						
Target Carbon Dioxide Emission Rate (TER) Dwelling Carbon Dioxide Emission Rate (DER) 17.33 kgCO ₂ /m² Pass 15.TFEE and DFEE Target Fabric Energy Ex ciency (TFEE) Dwelling Fabric Energy Ex ciency (DFEE) 47.17 Swh/m²/yr 1-9.7 (-17.0%) Element External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Roof 0.14 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) 0.25 Thermal bridging Thermal bridging Thermal bridging calculated from linear thermal transmiz ances for each junceon 3. Air permeability Air permeability at 50 pascals Maximum 10.0 Pass Limieng System Ex ciency Main hea@ng system Boiler system with radiators or underÑoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ex ciency: 89.1% SEDBUK2009 Minimum: 88.0%	Fuel for main hea@ng	Fuel for main hea 9 ng		jas			
Dwelling Carbon Dioxide Emission Rate (DER) 17.33 kgCO ₂ /m² 10. TFEE and DFEE Target Fabric Energy Ex clency (TFEE) Dwelling Fabric Energy Ex clency (DFEE) 47.17 kWh/m²/yr -9.7 (-17.0%) Element External wall 0.19 (max. 0.30) 1.03 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) 0.29 and Pass 2a Thermal bridging Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3. Air permeability Air per	Fuel factor		1.00 (m	nains gas)			
1.11 (-6.0%) kgCO ₂ /m ² Target Fabric Energy Eκ ciency (TFEE) 56.92 kWh/m²/yr Dwelling Fabric Energy Eκ ciency (DFEE) 47.17 kWh/m²/yr -9.7 (-17.0%) kWh/m²/yr Pass	Target Carbon Dioxide Emission Rate	(TER)	18.44			kgCO₂/m²	
1b TFEE and DFEE Target Fabric Energy Ex ciency (TFEE) Dwelling Fabric Energy Ex ciency (DFEE) 47.17 -9.7 (-17.0%) Whhm²/yr Pass	Dwelling Carbon Dioxide Emission Rat	te (DER)	17.33			kgCO₂/m²	Pass
Target Fabric Energy Ex ciency (TFEE) Dwelling Fabric Energy Ex ciency (DFEE) 47.17 -9.7 (-17.0%) RWh/m²/yr Pass Criterion 2 – Limits on design Nexibility Limi@ng Fabric Standards 2 Fabric U-values Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each junceon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass Limi@ng System Ex ciencies 4 Hea@ng ex ciency Main hea@ng system Boiler system with radiators or underÑoor - Mains gas Data from database Vaillant eco FIEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ex ciency: 89.1% SEDBUK2009 Minimum: 88.0%			-1.11 (-	6.0%)		kgCO₂/m²	
Dwelling Fabric Energy Ek ciency (DFEE) 47.17 9.7 (-17.0%) kWh/m²/yr Pass Criterion 2 – Limits on design Ňexibility Limieng Fabric Standards 2 Fabric U-values Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging Thermal bridging calculated from linear thermal transmi∑ ances for each junceon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass Limieng System Ex ciencies 4 Hea@ng ex ciency Main hea@ng system Boiler system with radiators or underÑoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ex ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
Timieng Fabric Standards 2 Fabric U-values Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Roof 0.14 (max. 0.25) 0.13 (max. 0.70) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2 a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass Limieng System Eκ ciencies 4 Heaeng eκ ciency Main heaeng system Boiler system with radiators or underÑoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
Criterion 2 – Limits on design Nexibility Limiong Fabric Standards 2 Fabric U-values Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncon 3 Air permeability Air permeability Air permeability at 50 pascals Maximum 10.0 Pass Limiong System Ex ciencies 4 Heaong ex ciency Main heaong system Boiler system with radiators or under Noor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ex ciency: 89.1% SEDBUK2009 Minimum: 88.0%	Dwelling Fabric Energy Ек ciency (DFE	EE)		7.00()			
LimiOng Fabric Standards 2 Fabric U-values Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each junceon 3 Air permeability Air permeability Air permeability at 50 pascals Maximum 0.0 Pass LimiOng System Ex ciencies 4 HeaOng ex ciency Main heaOng system Boiler system with radiators or underNoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ex ciency: 89.1% SEDBUK2009 Minimum: 88.0%	Critarian 2 Limita an dasign Navihility		-9.7 (-1	7.0%)			Pass
Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Ex ciencies 4 HeaΘng ex ciency Main heaΘng system Boiler system with radiators or under Noor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ex ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
Element Average Highest External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging aclculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Εκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Εκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
External wall 0.19 (max. 0.30) 0.19 (max. 0.70) Pass Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each junceon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass Limieng System Εκ ciencies 4 Heaeng eκ ciency Main heaeng system Boiler system with radiators or under Noor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Εκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%		A	_	1.15	-1		
Floor 0.13 (max. 0.25) 0.13 (max. 0.70) Pass Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Eκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underÑoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%		Ü	•		•	2)	Door
Roof 0.14 (max. 0.20) 0.14 (max. 0.35) Pass Openings 1.53 (max. 2.00) 3.00 (max. 3.30) Pass 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Eκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%		•	,		•	•	
Openings 1.53 (max. 2.00) 3.00 (max. 3.30) 2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each junceOn 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiOng System Eκ ciencies 4 HeaOng eκ ciency Main heaOng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%		•	,		`	,	
2a Thermal bridging Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Eκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
Thermal bridging calculated from linear thermal transmiΣ ances for each juncΘon 3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Eκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underÑoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%	, ,	1.00 (11	idx. 2.00)	0.0	00 (max. 0.0	5)	1 433
3 Air permeability Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Eκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%		linear therm	nal transmi	Σ ances for each iun	nc O on		
Air permeability at 50 pascals Maximum 10.0 Pass LimiΘng System Εκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Εκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%	0 0	iiiicai tiiciii	iai transiini	z ances for each jun	100011		
Maximum 10.0 Pass LimiΘng System Eκ ciencies 4 HeaΘng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%			6.00.(d	esinn value)			
Limiθng System Eκ ciencies 4 Heaθng eκ ciency Main heaθng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%	·			osigii varac)			Pass
4 Hea Θ ng eκ ciency Main heaΘng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Eκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%			10.0				
Main heaθng system Boiler system with radiators or underŇoor - Mains gas Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Εκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
Data from database Vaillant ecoTEC pro 24 H combi A VUW 246/5-3 A Combi boiler Ek ciency: 89.1% SEDBUK2009 Minimum: 88.0%			Boilers	vstem with radiator	rs or underŇ	oor - Mains gas	Pass
Combi boiler Εκ ciency: 89.1% SEDBUK2009 Minimum: 88.0%	Wall fleading System				3 OF GIRGOIN	oor manis gas	1 033
Eк ciency: 89.1% SEDBUK2009 Minimum: 88.0%							
Minimum: 88.0%			I		000		
					007		
	Secondary hea⊕ng system						



Regs Region: England Elmhurst Energy Systems SAP2012 Calculator (Design System) version 4.04r08

BUILDING REGULATION COMPLIANCE Calcula**6**on Type: New Build (As Designed)



<u>5 Cylinder insula9on</u>			
Hot water storage	No cylinder		
<u>6 Controls</u>			
Space hea⊖ng controls	Programmer, room thermostat and TRVs		Pass
Hot water controls	No cylinder		
Boiler interlock	Yes		Pass
7 Low energy lights			
Percentage of Į xed lights with low-energy Įţ ngs	100	%	
Minimum	75	%	Pass
8 Mechanical ven e la e on			
Not applicable			
Criterion 3 – Limi e ng the eī ects of heat gains in su	mmer		
9 Summer 9 me temperature			
Overhea o ng risk (Thames Valley)	Slight		Pass
Based on:			
Overshading	Average		
Windows facing North	8.25 m², No overhang		
Windows facing South	13.46 m ² , No overhang		
Windows facing West	2.10 m², No overhang		
Air change rate	8.00 ach		
Blinds/curtains	None		
Criterion 4 – Building performance consistent with	DER and DFEE rate		
Air permeability and pressure tes e ng			
3 Air permeability			
Air permeability at 50 pascals	6.00 (design value)		
Maximum	10.0		Pass
10 Key features			
Floor U-value	0.12	W/m²K	
Thermal bridging y-value	0.018	W/m²K	

