From: Awa Sarr
Sent: 24 September 2021 18:02
To: Jill Bastow
Subject: Re: NYM2021/0543/FL West Ayton Caravan Site

Dear Jill,

Please find the attached documents with the proposed renewable energy sources in compliance with the LPA Policy ENV8.

Pitch numbers, there is no anticipation in regards to additional pressure onto the existing sewer system as people with serviced pitches use their own facilities instead of toilet blocks.

Pitch Types	Existing	Proposed
Hardstanding	129	104
Standard serviced	0	35
Grass	35	16
Premium pitch	0	11
Total	**164**	**166**

The tree proposal and tree root protection plan will be submitted to you on Monday if that's okay, I am aware that the final report will be finalised on this date.

Do not hesitate to contact me if you require further information or clarity. #

Kind Regards,

Awa Sarr

Lead Architectural Designer

BSc(Hons), ACIAT
Estates
Caravan and Motorhome Club

W: www.camc.com

On Thu, 9 Sept 2021 at 12:46, Jill Bastow wrote:

Dear Awa

Further to our telephone conversation earlier today I write as promised to confirm that as the Parish Council have objected to the application, and did so within their statutory consultation period, the application needs to be determined by our Planning Committee. Unfortunately the next meeting is not until 14 October 2021. We discussed whether there would be any benefit in withdrawing the most contentious part of the application as far as the Parish Council are concerned so that the improvement works to the existing site could be approved and work started; a fresh application would then need to be submitted for the additional pitches in place of the caravan storage and the new play area. I agreed to go through all the consultation responses and come back to you to advise on the best course of action.

The Parish Council have confirmed they have no objection in principle to the improvement works within the existing caravan site, however they do raise the question as to why renewable energy sources have not been incorporated into the development. This is supported by Policy ENV8 of our Local Plan which requires all new development of 200 sq.m or more to generate energy on site from renewable sources to displace 10% of predicted CO^2 emissions. You have provided a BRUKL Output Document to confirm compliance with Building Regulations Part L 2013 and an "As Predicted" Energy Performance Asset Rating Certificate for each of the toilet blocks confirming energy rating B. Compliance with Building Regulations does not necessarily mean compliance with our Policy ENV8 and as far as I can see with the application no renewable energy sources are proposed. This does need to be addressed before we can look favourably on the replacement toilet blocks.

The submitted Tree Survey does appear to be a general one for the site and is not referenced to the proposed development. The rebuilding and repositioning of the lower toilet block will certainly involve the loss of a number of trees and construction within the root protection area of any trees to be retained but this has not been clearly identified. In support of the application we would normally expect in addition to the tree survey, a tree constraints plan which shows those trees to be felled and those retained along with their RPAs, a tree protection plan showing location protective fencing etc. and possibly also a Arboricultural Method Statement if works are proposed

within the RPAs of retained trees. I have chased our Woodland Officer for his comments on the proposals and hope to have his response next week but I suspect he will confirm the need for the above information. Furthermore our Ecologist has commented that the tree survey identifies a large number of trees to be felled and asks whether consideration has been given to compensatory planting within the existing site to maintain the wooded nature of the site and enhance biodiversity. Indicative tree planting is proposed for the premium pitches but not within the existing site. This was raised in my letter of 24 June 2021 at pre-application stage. I also think it would be beneficial if additional native hedgerow and trees planting could be incorporated along the eastern as well as southern boundaries of the quarry field to address the Parish Council's concerns regarding the visibility of the proposed premium pitches, play equipment and MUGA.

The Parish Council have also raised concerns about the impact of improved facilities and additional pitches on the village sewerage system. We did originally consult Yorkshire Water on the application but I have not received any comments. I have chased them for a response today and also sent a copy of the Parish Council concerns so that they can be specifically addressed. Concerns have also been raised by the Parish Council regarding the additional traffic that the proposal would generate but the Highway Authority has no objection to the proposals. It would however be helpful if you could confirm the total number of existing and proposed pitches and provide a breakdown of the various types of pitches as existing and proposed. I am aware that with the creation of more service pitches within the existing site there will potentially be a reduction in number and as such, even with the extra 7 premium pitches proposed, overall the increase in total number will be negligible.

In view of the above, additional information is required in support of the proposed improvement works to the existing site and as such there may not be any benefit to splitting the application and withdrawing the additional premium pitches, MUGA and play area elements from the current submission. However I shall leave that with you to determine.

Kind regards,

Jill Bastow
Senior Planning Officer

North York Moors National Park Authority
Old Vicarage
Bondgate
Helmsley

YO62 5BP

www.northyorkmoors.org.uk

Please note my working hours are Tuesday, Thursday & Friday 9.15am – 2.15pm, Wednesday 9am - 5pm

CAMC SCARBOROUGH WEST AYTON. 23/9/2021

APPENDIX 4 CALCULATING THE 10% REQUIREMENT

See Section 7 for detailed guidance on how to undertake the calculations.

Stage 1. Work out the annual CO_2 emissions of the buildings

Complete either calculations 1, 2, 3 or 4

1. Calculations where there is no Standard Assessment Procedure or Simplified Building Energy Model data

Where there is more than one type of building you will need to undertake this calculation separately for each building type.

Building type 1:			
	Annual benchmark CO_2 emissions per m^2 (a)		$kgCO_2/yr$
	x floor area (b)		m^2
	= annual CO_2 emissions (c)		$kgCO_2/yr$

Building type 2:			
	Annual benchmark CO_2 emissions per m^2 (a)		$kgCO_2/yr$
	x floor area (b)		m^2
	= annual CO_2 emissions (c)		$kgCO_2/yr$

Building type 3:			
	Annual benchmark CO_2 emissions per m^2 (a)		$kgCO_2/yr$
	x floor area (b)		m^2
	= annual CO_2 emissions (c)		$kgCO_2/yr$

Total CO_2 emissions (c) + (c) + (c) = (d)		$kgCO_2/yr$

OR

2. Annual CO_2 emissions from SAP assessment

CO_2 emissions (d)		$kgCO_2/yr$

OR

3. Annual CO_2 emissions from SBEM assessment

350.4 kg/CO_2/m^2 × (307.7m^2 × 2)	CO_2 emissions (d) 215,636.16	$kgCO_2/yr$

OR

4. Annual CO_2 emissions from Act on CO_2 website

CO_2 emissions (d)		$kgCO_2/yr$

Stage 2. Work out 10% of the annual CO_2 emissions

10% of CO_2 emissions **((d)/100) x 10** = (e) 21,564		$kgCO_2/yr$

Stage 3. Select the renewable technology (or technologies) you wish to incorporate and work out the annual CO_2 savings

Electricity generating technologies

	Electricity generating renewable energy (f)		kWh/yr
	x 0.422[21] (g)		$kgCO_2/yr$

Heat generating technologies

VIA SBEM CALCULATON, SEE REPORT.	Heat generating renewable energy (h)		kWh/yr
	x 0.194 or **x** 0.265[22] (i)		$kgCO_2/yr$

[21] Standard conversion factor for kWh electricity to $kgCO_2$
[22] Standard conversion factors - use x 0.194 if displacing gas or x 0.265 if displacing oil

38·6 kg/CO_2/m^2 × (307·7m^2 × 2) Total CO_2 savings (g) + (i) = (j) 23,754 $kgCO_2/yr$

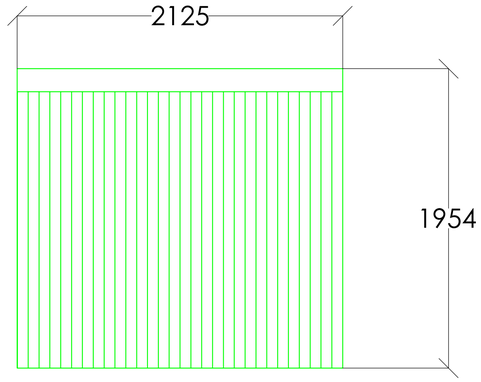
Stage 4. Check that your chosen technology will provide enough CO_2 savings

(j) should be equal to or greater than (e) to ensure that at least 10% of predicted CO_2 emissions are offset through renewable energy.

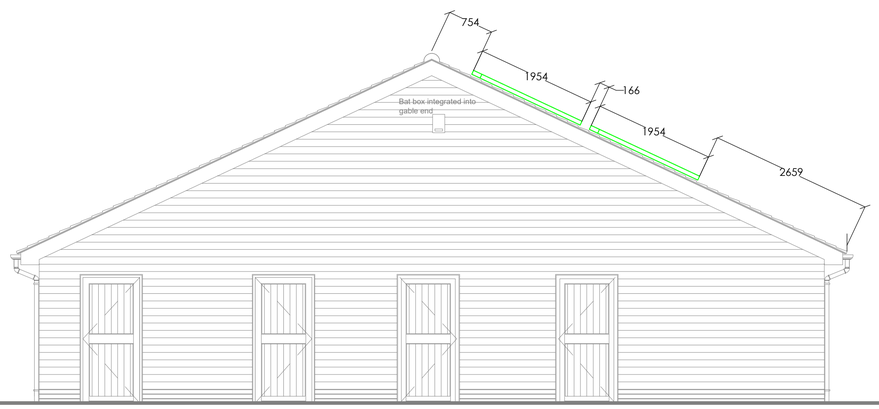
% of CO_2 emissions which will be offset by renewable energy (j) / (d) 11 %

If this figure is less than 10%, look at increasing the size / capacity of the installation, try other technologies or look at using a mix of technologies.

PLAN



SOLAR THERMAL PANEL 3M2



END ELEVATION

SIDE ELEVATION

general notes

LOW CARBON CONSULTANTS
REGISTRATION No. – LCCD44932

This drawing is to be read in conjunction with all relevant specifications.

Do not scale from this drawing.

All dimensions are to be checked on site prior to work commencing or preparation of shop working drawings - any discrepancies should be notified immediately.

REV No	REVISION DETAILS	AUTH

1:20 1:100 1:50 1:5
0 200mm 400mm 600mm 800mm 1000mm 1200mm 1400mm 1600mm
0 1m 2m 3m 4m 5m 6m 7m 8m
0 1m 2m 3m 4m
0 100mm 200mm 300mm 400mm
TO SCALE @ A1

revision

P2	PRELIMINARY ISSUE	J.D.	18.08.21	D.P.
P1	PRELIMINARY ISSUE	J.D.	30.07.21	D.P.
N°	Revision	By	Date	Ck'd

contact

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DA2 7SN
Tel: 01322 277844
info@energyengineeringltd.com
www.energyengineeringltd.com

drawing status

PRELIMINARY

client

SINCE 1907
CARAVAN AND MOTORHOME CLUB

EEL project number

20112

project title

PROPOSED STANDARD
80 PITCH TOILET BLOCK

drawing

drawing title

TOILET BLOCK
SOLAR THERMAL
SERVICES LAYOUT

scale (A1)	date	drawn	checked
1:50	JUL 2021	J.D.	D.P.

reference

drawing no. 21070-EEL-80TB-ZZ-DR-PH-2000

revision P2

CARAVAN AND MOTORHOME CLUB

ENERGY | ENGINEERING

CAMC WEST AYTON

AT

SCARBOROUGH WEST AYTON CAMC,
COCKRAH ROAD,
SCARBOROUGH,
YO13 9JD

RENEWABLE TECHNOLOGY REPORT

FOR

PLANNING REQUIREMENTS

Date: Sept 2021

EE Project Ref: 21051 – CAMC West Ayton
Document ref: 21051-West Ayton Energy Report
Edition: V01

REVISION SCHEDULE

Rev	Revision Details	Date	Prepared by	Reviewed by	Approved by
V01	INITIAL ISSUE	Sept 2021	Danny Pounds	John Jarvis	Jose Villalta

DESCRIPTION OF PROJECT

1.1 PURPOSE OF THE DOCUMENT

- This renewable technology report has been requested by the Estates department for the project West Ayton Caravan Club Site.
- The estates department has been requested within the planning (NYM/2021/0543/FL) documentation to comply with Policy ENV8 of the local plan to displace 10% of CO2 emissions.

1.2 PROJECT ADDRESS

Scarborough West Ayton Caravan and Motorhome Club Site,

Cockrah Road,

Scarborough,

YO13 9JD

1.3 SUMMARY OF PROJECT

The project consists of:

- Demolition of 2No existing toilet blocks
- Creation of 2No toilet blocks
- Demolition of existing Shed/Workshop
- Creation of new shed/workshop
- Pitch improvements
- Creation of warden utility building

1.4 CURRENT SITE

the current site has low efficiency gas fired hot water cylinders, space heating provided by wall mounted boiler and radiators, low efficiency lighting and no water efficiency devices.

PLANNING REQUIREMENTS

2.1 PLANNING DOCUMENTATION

From letter reference NYM/2021/0543/FL
"1. Policy ENV8 of the NYM Local Plan states that where a proposal creates over 200 square metres of useable floor space, details are to be provided of how it is intended to displace 10% of predicted CO2 omissions. A form titled 'Calculating the 10% Requirement' can be found at page 65 of the Authority's Renewable Energy Supplementary Planning Document. If the proposed building only has minimal energy use please provide a breakdown of the number of lights and detail of any heating and any other energy uses within the building."

Renewable Energy Supplementary Planning Document - April 2010 page 1

"• Providing guidance on implementing the requirement for 10% of predicted CO2 emissions to be displaced by renewable energy for developments of over 5 houses or other uses over 200sqm, including a template for performing the associated calculations;"

Renewable Energy Supplementary Planning Document - April 2010 page 65-67

Calculations are provided within appendices

PROPOSALS

3.1 OPTIONS

There have been calculations carried out to assess multiple renewable technologies, however technologies such as ground source heat pumps and wind turbines have been ruled out following trials on other sites proving the technologies were not viable for the client and did not provide the energy savings calculated.

Following the initial calculations it has been shown most of the CO2 generated by site is through hot water generation, therefore to achieve the 10% production, options are limited to renewable technology implemented on the hot water production or production of electricity.

3.2 PV

Photovoltaic installation was assessed as the first option, to offset the CO2 required would account for a PV array 3 times the feasible size to fit on the roof of each toilet block, therefore this option was ruled out.

3.3 ASHP

Air source can provide good efficiencies combined with the underfloor heating on the project, this would suit the installation and the client, however this would not generate the CO2 savings required for the planning application. ASHP can be used to heat the hot water, however due to the low temperature differences we would not recommend directly heating the hot water with an air source heat pump due to the possibility of low hot water temperatures leading to an increased legionella risk. To complete a design for the client with a minimal legionella risk, would mean a completely different hot water system utilising a LTHW storage buffer and alternative hot water heat exchangers, this equipment would not be feasible for this size of toilet block due to the volume of storage required.

3.4 GSHP

GSHP would not be suitable for this project due to the ground conditions making the project not financially viable.

3.5 WIND TURBINE

CAMC have a micro wind turbine installed on a site, however monitoring of this have shown it to be completely inefficient. Large scale wind turbines would not be suitable for the site from a member aesthetic and noise issues which are heightened with the caravans.

3.6 SOLAR THERMAL

A solar thermal system can generate the CO2 savings required for the project, downsizing the buffer vessel and utilising this as a preheat would enable high temperatures to be achieved by the solar thermal system for the purposes of limiting the legionella risk.

CALCULATIONS

4.1 CALCULATION INFORMATION

Calculations have been carried out using iSBEM software to achieve existing and proposed building energy usage

These results will be used to carry out the calculations required in page 65-67 of the Renewable Energy Supplementary Planning Document - April 2010

4.2 CALCULATION SUMMARY

There have been two iSBEM calculatiuons run, one to give a baseline CO2 emmissions figure of a toilet block without Solar thermal and one to give a CO2 emmissions figure with 10m2 of soler thermal.

4.2.1 BASELINE

The Baseline summary show an actual CO2 emissions rate of 350.4kg/m2

A toilet block has an area of 307.7m2

Total baseline CO2 emissions are 107,818.08kg or 107.8 t/CO2/yr

4.2.2 SOLAR CALCULATION

The 18m2 solar summary show an actual CO2 emissions rate of 311.8kg/m2

A toilet block has an area of 307.7m2

Total baseline CO2 emissions are 95,940.86kg or 96.9 t/CO2/yr

4.2.3 SOLAR SAVINGS

The above shows an actual CO2 emissions saving rate of 38.6kg/m2

A toilet block has an area of 307.7m2

Total baseline CO2 emissions are 11,877.22kg or 11.9 t/CO2/yr

4.3 ADDITIONAL SAVINGS

There are also additional carbon savings from efficiency methods described elsewhere that are not taken into account on the calculations, this is seen from the notional CO2 efficiency given on the iSBEM calculation. This shows a total CO2 saving of 16%.

CONCLUSION

5.1 PLANNING REQUIREMENTS

From the planning documentation, this referred to the Renewable Energy Supplementary Planning Document – April 2010. Within this document under the solar heading is the below planning checklist of items.

5.2 DETAILS OF THE DESIGN OF THE INSTALLATION

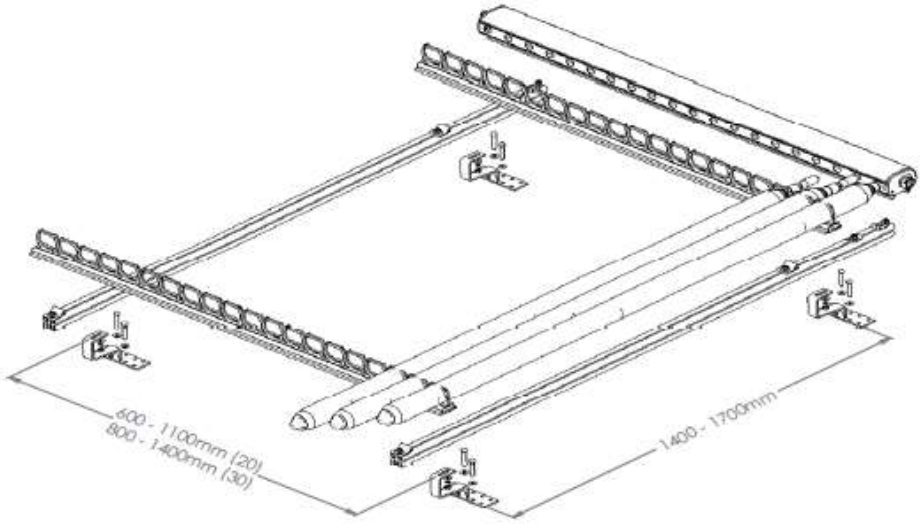
The standard toilet block design implements the use of gas fired instantaneous water heaters. On this project we will implement a solar thermal system to supplement the hot water production, therefore reducing the boiler usage whilst still maintaining the hot water production for the client.

5.3 PHOTOGRAPHS OF THE EXISTING BUILT ENVIRONMENT

Above is a typical photo of the existing toilet blocks which will be demolished.

5.4 DETAILS OF THE ROOF MOUNTING ARRANGEMENT, IF APPLICABLE

Final design proposals are still being currently formatted. However below is a photo of previous project completed with a solar thermal system.



5.5 INDICATIVE DRAWINGS OF THE INSTALLATION IN PLACE

Indicative drawings are given in appendices.

5.6 A PHOTOMONTAGE OF THE PROPOSED INSTALLATION COULD BE USEFUL, PARTICULARLY IF THE SCHEME IS IN A CONSERVATION AREA OR ON A LISTED BUILDING

N/A

5.7 DETAILS OF THE POWER FROM THE INSTALLATION

The solar thermal system will produce 147.24 kWh/m2/yr.

5.8 CONNECTION DETAILS TO THE BUILDING OR GRID IF RELEVANT

The solar thermal system shall connect into the hot water system transferring the heat into the hot water via a solar coil.

5.9 A BRIEF DESCRIPTION OF THE VISUAL AMENITY ISSUES AND THE BUILDING MATERIALS

The solar thermal system would be mounted on the roofs with a south facing orientation to maximise the solar thermal efficiency.

5.10 DETAILS OF THE POWER FROM THE INSTALLATION AND ANTICIPATED EFFICIENCY

From details input into the iSBEM calculations, the solar thermal system will produce 147.24kWh/m2. This gives a total of 90,611.5 kWh over both toilet blocks.

5.11 DETAILS OF WHAT THE ENERGY WILL BE USED FOR

The solar energy will be used to heat the hot water within the toilet blocks. This will lead to savings in CO2 as the solar system will displace the energy required from the instantaneous gas fired hot water heaters. The heated water will either run straight through the boilers if the solar thermal system has heated the water to set temperature, or the water will be preheated meaning the water heater will have a small temperature differential to achieve the hot water setpoint, therefore increasing the efficiency and lowering the gas used.

5.12 DETAILS OF EXISTING ENERGY EFFICIENCY MEASURES IN THE BUILDING

Current installations have minimal energy efficiency measures in place due to the age of the buildings.

Proposals will have low energy LED lighting, MVHR ventilation, High Efficiency boilers and water saving devices to minimise water usage.

APPENDICES

APPENDIX A ISBEM CALCULATIONS

APPENDIX B PLANNING CALCULATIONS (APPENDIX 4)

APPENDIX C INDICATIVE DRAWINGS

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

CAMC AYTON - YO13 9JD

As designed

Date: Thu Sep 23 11:51:52 2021

Administrative information

Building Details

Address: Scarborough West Ayton C.C Site - TB1, The Caravan Club Limited, Cockrah Road, West Ayton, North Yorkshire, YO13 9JD

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.8

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Steve Williams

Telephone number: 01202 067043

Address: 30 Wentworth Close Bournemouth, Dorset, BH5 2DZ

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	372.6
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	372.6
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	350.4
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.35	0.35	"TB1 + SES System - z14-F-WCs_W_6"
Floor	0.25	0.18	2.93	"TB1 + SES System - z12-PlantRm_F_10"
Roof	0.25	0.15	0.15	"TB1 + SES System - z12-PlantRm_R_13"
Windows***, roof windows, and rooflights	2.2	-	-	"No external windows/rooflights"
Personnel doors	2.2	0.81	0.81	"TB1 + SES System - z01-F.Lobby_D_7"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

* There might be more than one surface where the maximum U-value occurs.

** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

*** Display windows and similar glazing are excluded from the U-value check.

N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
$m^3/(h.m^2)$ at 50 Pa	10	15*

* Buildings with less than 500 m² total useful floor area may avoid the need for a pressure test provided that the air permeability is taken as 15 $m^3/(h.m^2)$ at 50 Pa.

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- x2 Rinnai LPG Systems

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	-	-	-
Standard value	0.93*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for LPG single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.87. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.

1- x2 Rinnai LTHW Boilers as per HVAC

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	-
Standard value	N/A	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
TB1 + SES System - z14-F-WCs	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z04.Acc.Shwr	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z07-Amb.Shwr	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z13-F-Amb.Shwr1	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z06.Laundry+Dish	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z09-M-Amb.Shwr1	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z08-M-WCs	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z11-M-Amb.Shwr2	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z05-Uni-wash	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z10-M-Lobby	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z02-Acc.WC	0.1	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			
	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
TB1 + SES System - z03-Ext.CCEP	-	200	-	8

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
TB1 + SES System - z14-F-WCs	-	196	-	119
TB1 + SES System - z01-F.Lobby	-	281	-	16
TB1 + SES System - z04.Acc.Shwr	-	110	-	33
TB1 + SES System - z07-Amb.Shwr	-	133	-	18
TB1 + SES System - z13-F-Amb.Shwr1	-	136	-	17
TB1 + SES System - z06.Laundry+Dish	-	317	-	40
TB1 + SES System - z12-PlantRm	84	-	-	594
TB1 + SES System - z09-M-Amb.Shwr1	-	133	-	18
TB1 + SES System - z08-M-WCs	-	97	-	122
TB1 + SES System - z11-M-Amb.Shwr2	-	136	-	17
TB1 + SES System - z05-Uni-wash	-	101	-	49
TB1 + SES System - z10-M-Lobby	-	282	-	16
TB1 + SES System - z02-Acc.WC	-	313	-	13

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

There are no zones in the building where the solar gain check is applicable.

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m²]	307.7	307.7
External area [m²]	528.2	528.2
Weather	LEE	LEE
Infiltration [m³/hm²@ 50Pa]	15	3
Average conductance [W/K]	125.09	164.64
Average U-value [W/m²K]	0.24	0.31
Alpha value* [%]	21.9	14.77

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
75	**D2 General Assembly and Leisure, Night Clubs, and Theatres**
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
25	**Others: Stand alone utility block**

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	13.48	17.45
Cooling	0	0
Auxiliary	2.04	4.84
Lighting	12.19	14.81
Hot water	1409.8	1487.26
Equipment*	207.91	207.91
TOTAL**	**1437.51**	**1524.36**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	80.92	91.63
Primary energy* [kWh/m²]	1595.05	1698.97
Total emissions [kg/m²]	350.4	372.6

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

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] No Heating or Cooling										
	Actual	549.9	21.6	0	0	0	0	0	0	0
	Notional	724.7	38.2	0	0	0	0	0	----	----
[ST] Central heating using water: floor heating, [HS] LTHW boiler, [HFT] LPG, [CFT] Natural Gas										
	Actual	44.1	33.3	13.6	0	2.1	0.9	0	0.96	0
	Notional	51.8	35	17.6	0	4.9	0.82	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

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.3	"TB1 + SES System - z14-F-WCs_P_7"
Floor	0.2	0.11	"TB1 + SES System - z12-PlantRm_S_3"
Roof	0.15	0.15	"TB1 + SES System - z12-PlantRm_R_13"
Windows, roof windows, and rooflights	1.5	-	"No external windows/rooflights"
Personnel doors	1.5	0.81	"TB1 + SES System - z01-F.Lobby_D_7"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = Minimum individual element U-values [W/(m²K)]

* There might be more than one surface where the minimum U-value occurs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	15

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

CAMC AYTON - YO13 9JD

As designed

Date: Thu Sep 23 13:32:32 2021

Administrative information

Building Details

Address: Scarborough West Ayton C.C Site - TB1, The Caravan Club Limited, Cockrah Road, West Ayton, North Yorkshire, YO13 9JD

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.8

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Steve Williams

Telephone number: 01202 067043

Address: 30 Wentworth Close Bournemouth, Dorset, BH5 2DZ

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	372.6
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	372.6
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	311.8
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.35	0.35	"TB1 + SES System - z14-F-WCs_W_6"
Floor	0.25	0.18	2.93	"TB1 + SES System - z12-PlantRm_F_10"
Roof	0.25	0.15	0.15	"TB1 + SES System - z12-PlantRm_R_13"
Windows***, roof windows, and rooflights	2.2	-	-	"No external windows/rooflights"
Personnel doors	2.2	0.81	0.81	"TB1 + SES System - z01-F.Lobby_D_7"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

* There might be more than one surface where the maximum U-value occurs.

** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

*** Display windows and similar glazing are excluded from the U-value check.

N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
$m^3/(h.m^2)$ at 50 Pa	10	15*

* Buildings with less than 500 m² total useful floor area may avoid the need for a pressure test provided that the air permeability is taken as 15 $m^3/(h.m^2)$ at 50 Pa.

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- x2 Rinnai LPG Systems

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	-	-	-
Standard value	0.93*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for LPG single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.87. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.

1- x2 Rinnai LTHW Boilers as per HVAC

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	-
Standard value	N/A	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
TB1 + SES System - z14-F-WCs	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z04.Acc.Shwr	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z07-Amb.Shwr	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z13-F-Amb.Shwr1	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z06.Laundry+Dish	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z09-M-Amb.Shwr1	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z08-M-WCs	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z11-M-Amb.Shwr2	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z05-Uni-wash	0.1	-	-	-	-	-	-	-	-	-	N/A
TB1 + SES System - z10-M-Lobby	-	-	-	0.3	-	-	-	-	-	0.8	0.5
TB1 + SES System - z02-Acc.WC	0.1	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			
	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
TB1 + SES System - z03-Ext.CCEP	-	200	-	8

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
TB1 + SES System - z14-F-WCs	-	196	-	119
TB1 + SES System - z01-F.Lobby	-	281	-	16
TB1 + SES System - z04.Acc.Shwr	-	110	-	33
TB1 + SES System - z07-Amb.Shwr	-	133	-	18
TB1 + SES System - z13-F-Amb.Shwr1	-	136	-	17
TB1 + SES System - z06.Laundry+Dish	-	317	-	40
TB1 + SES System - z12-PlantRm	84	-	-	594
TB1 + SES System - z09-M-Amb.Shwr1	-	133	-	18
TB1 + SES System - z08-M-WCs	-	97	-	122
TB1 + SES System - z11-M-Amb.Shwr2	-	136	-	17
TB1 + SES System - z05-Uni-wash	-	101	-	49
TB1 + SES System - z10-M-Lobby	-	282	-	16
TB1 + SES System - z02-Acc.WC	-	313	-	13

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

There are no zones in the building where the solar gain check is applicable.

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m²]	307.7	307.7
External area [m²]	528.2	528.2
Weather	LEE	LEE
Infiltration [m³/hm²@ 50Pa]	15	3
Average conductance [W/K]	125.09	164.64
Average U-value [W/m²K]	0.24	0.31
Alpha value* [%]	21.9	14.77

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
75	**D2 General Assembly and Leisure, Night Clubs, and Theatres**
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
25	**Others: Stand alone utility block**

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	13.48	17.45
Cooling	0	0
Auxiliary	2.6	4.84
Lighting	12.19	14.81
Hot water	1248.35	1487.26
Equipment*	207.91	207.91
TOTAL**	**1276.62**	**1524.36**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	147.24	0

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	80.92	91.63
Primary energy* [kWh/m²]	1420.79	1698.97
Total emissions [kg/m²]	311.8	372.6

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

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] No Heating or Cooling										
	Actual	549.9	21.6	0	0	0	0	0	0	0
	Notional	724.7	38.2	0	0	0	0	0	----	----
[ST] Central heating using water: floor heating, [HS] LTHW boiler, [HFT] LPG, [CFT] Natural Gas										
	Actual	44.1	33.3	13.6	0	2.1	0.9	0	0.96	0
	Notional	51.8	35	17.6	0	4.9	0.82	0	----	----

Key to terms

Heat dem [MJ/m2] = Heating energy demand
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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
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Key Features

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Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = Minimum individual element U-values [W/(m²K)]

* There might be more than one surface where the minimum U-value occurs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	15