Innovation & Energy Efficiency considerations:-

Ithaca

Land to the rear of The Greenland Cottage, High Hoyland Lane, High Hoyland

prepared by

Phi Architecture Ltd.

for

PAUL BUTLER

BP Planning

20.06.22

Barnsley Council - Reducing carbon emissions

“We want to protect Barnsley for future generations. A key part of this is reducing carbon emissions to help limit the effects of climate change.

In September 2019 Barnsley Cabinet declared a climate emergency to bring these issues to everyone's attention.

To help Barnsley to reduce its carbon emissions we have the following two programmes:

Zero 40

We'll become net carbon zero by 2040, or earlier if possible.

Zero 40 will focus on improvements in the council’s environmental performance. This will be measured by reducing our carbon emissions against agreed milestones. The end result will see us being net zero carbon in our work by 2040.

Zero 45

Where the borough will become net zero carbon by 2045.

Zero 45 is a programme where we’ll help the whole of Barnsley including its residents, communities, partners and businesses to support Barnsley’s changeover to be net zero carbon by 2045.”

The purpose of this report is to offer some comparisons on energy efficiency and other sustainable factors, when considering the Ithaca proposal with other properties that have acquired the support of the Barnsley Council Planning department over recent years.

Ithaca is to be a Passivhaus as demonstrated by the design stage PHPP submitted to the Barnsley Council Planning department (Document 20210795 Design Stage Assessment PHPP) to be capable of meeting Passivhaus standards comfortably. The project will be developed with a final construction stage PHPP and submitted for Certification with the Passivhaus Institut.

This in parallel with it's ability to exceed the RIBA 2030 Climate Challenge Target metrics for residential, with Embodied Carbon being restricted to <625kg$CO_{2e/m2}$ - & Ithaca actually estimated to achieve 50% less than this target; Operational energy for Ithaca being estimated at <10kWh/m^2 /annum - & actually 1/3rd of the target value of this RIBA document of 35kWh/m^2 /annum; and Potable water use <75L/person/day meeting those 2030 targets.

According to the Passivhaus database, there are currently only 6 certified Passivhaus New build detached dwellings in the whole of Yorkshire & the Humber.
https://passivehouse-database.org/index.php?lang=en#s_2d48d36bbbdc6e9315f85b46464bbb27

Huddersfield	-2
Harrogate	-1
Leeds	-1
Preston under Scar	-1
York	-1

And 2 Certified EnerPHit detached dwellings in the whole of Yorkshire & the Humber
https://passivehouse-database.org/index.php?lang=en#s_2638a9b0a83bd79eac5b6b5b24efc8c5

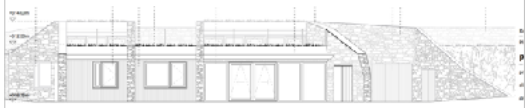
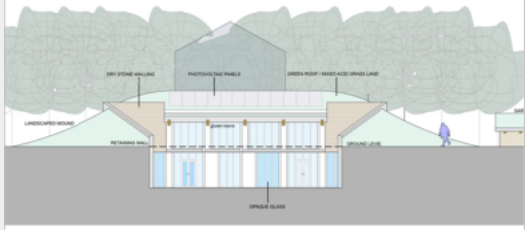
Sheffield	-1
Ripon	-1

The database does not have a record of any certified Passivhaus projects, either commercial, medical, educational or residential at all in the Barnsley Borough, the nearest being Huddersfield. It is therefore a matter of significance that this proposal for Ithaca is presented as a Passivhaus & that we will be applying for Certification. Accepting that there can be no absolute guarantees at this stage of attaining such accreditation, the early steps have been taken, the full PHPP will be developed as the construction is finalised and the documents will represent every effort to construct and record the build to this highest standard of construction for energy efficiency and minimal carbon footprint.

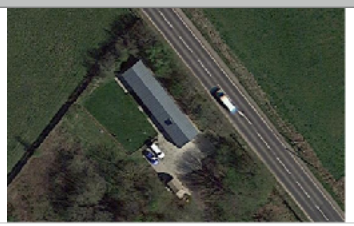
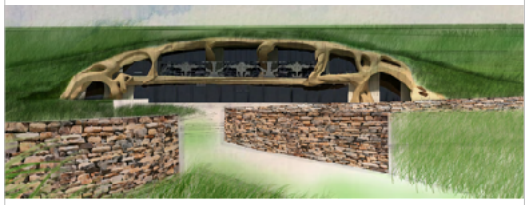
It is worthy of note that The Burrows was proposed as a Passivhaus in 2012 and this was actually included as a condition in the Barnsley Council decision notice, it being an influential factor in the granting of permission. The project is a self build and not yet complete, thus still pending application for certification with the Passivhaus Institut. It remains therefore, that at this current time, there are no projects at all that meet the stringent energy standards of <15kWh/m^2 /annum in the Barnsley Borough.

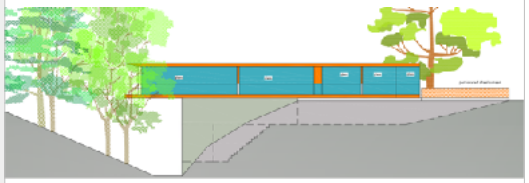
If we are to consider this in broader terms we now in 2022, ten years on, have a pressing urgency to address Climate Change & to eliminate our dependence on Gas. It is easy to lean on renewables and indicate a "green" approach yet Ithaca does not need to lean heavily on energy sources at all. As a Passive approach the primary energy demands become hot water and plug loads. These are to be addressed by a combination of technologies including Photovoltaics, thermodynamics & battery storage. There will be no gas supply to the site.

The noted projects below range in approval dates from September 2012 to December 2015 as examples of innovative or exceptional designs which have satisfied Barnsley Planning department in terms of Policy criteria. None of these have Passivhaus Certification

Project	Ref	Site location/ relevance		Extracts from Design & Access Statements	Excerpts from Planning conditions	
The Burrows, Hunshelf Hall Lane, Hunshelf Bank S36 2BS	2012/0697 Approved 28.09.2012	GREEN BELT PASSIVHAUS STANDARD (likely to be first in south Yorkshire) but not on Passivhaus database so not certified to date.	Rain water run off to new pond; Waste water to domestic water treatment plant on site; MVHR assumed	"The western area of Barnsley has seen some interest in developing earth sheltered dwellings since Arthur Quarmby submitted the first in 2005. Since then, to my knowledge, there have been only four applications in seven years for this type of development, three of which were granted planning permission. As far as I am aware only two schemes are under construction, one in a small quarry at Upper Maythorn Lane and one at Racecommon Quarry. Neither scheme is being built to the Passivhaus standard of energy efficiency proposed in this application, which would be a first for Barnsley and South Yorkshire."	Prior to commencement of use of the dwelling, written confirmation and details shall be provided to the Local Planning Authority to show that the dwelling has achieved the requirements of the Passivhaus Building Certification. Thereafter the development shall be carried out in accordance with the approved details. The dwelling shall achieve Code Level 3- Code for sustainable homes	
Crabtree Area, Hoylandswaine S36 7JG	2010/1271 Approved 23.04.2013	GREEN BELT Net impact on Green belt is less than existing & net reduction in height of said buildings Carbon Neutral	Code for Sustainable homes 6*; Wind turbine	The development proposes the removal of a number of existing buildings from the site, the majority of which take the form of low quality redundant agricultural buildings. These are to be removed from the site to allow for the erection of a single eco home located to the centre of the site and, which is to be partly created beneath ground level.	"In accordance with the plans and thermal design strategy, the dwelling shall be constructed to Level 6 - Code for Sustainable Homes. "	

Project	Ref	Site location/ relevance		Extracts from Design & Access Statements	Excerpts from Planning conditions	
Guyder Bottom Farm, Hoylandswaine	2013/0745 Approved 25.10.2013	GREEN BELT New single storey home in same site as family home -to Code Level 5 Sustainable Homes	Solar for DHW; Pv; fireplaces to living & dining rooms Rain water butts Air source or ground source; Green roof	"The very highest standards of materials are to be employed in the construction of the building, ensuring that high levels of insulation and thermally efficient materials are incorporated into the building fabric. Materials will be carefully selected from sustainable sources and with low environmental impact in accordance with the Green Guide ratings system. Reclaimed stone will be used where possible. The building will be constructed to stringent air-tightness standards to minimise loss of energy through junctions in the external envelope."	Condition to achieve Code Level 5	The land has been maintained in residential use for approximately 30 years as part of Guyder Bottom Farm. Prior to this, when the site was farmland, much of the site was occupied with large single-storey agricultural outbuildings and stables  The main house at Guyder Bottom farm was the family home for the applicant for 30 years - strong connection to the site and area- wishing to attain a single storey home for life
Racecommon Quarry, Oxspring Road, Penistone S36 9FR	2010/1092 Approved 08.12. 2010	GREEN BELT	Solar PV & gas condensing boiler Rain water butts Sedum roof		Condition to achieve Code Level 3	
Highfield, Rockside Road, Thurlstone (Property: Stonehill)	2014/0057 Approved 11.03.2014	NOT IN GREEN BELT OR CONSERVATIO N AREA In a housing policy area of Thurlstone; high level of insulation and airtightness to exceed Code 3 Sustainable Homes	Solar PV; solar thermal; passiv stack ventilation; Rain water butts air source heat pump & MVHR ; 'high level' of airtightness; suggests built to passive measures - no figures or facts given Sedum roof		Condition to achieve Code Level 3	

Project	Ref	Site location/ relevance		Extracts from Design & Access Statements	Excerpts from Planning conditions	
Scout Dike Reservoir, Penistone (Adj. Scout Dike Centre) S36 7EX	2014/0454 Approved 24.09.2014	GREEN BELT Reusing existing concrete slab and ensure low carbon embodied energy.	A small eco dwelling to be built to Passivhaus standards	"….the building shell will be prefabricated off site as a series of cassettes insulated with recycled newspaper"	Unable to view decision notice but Approved with conditions	
Lakeside View, Penistone (Adj. Former Stanhope Hospital) S36 7EX	2014/0293 Approved 21.01.2015	GREEN BELT Code 6 Sustainable Homes	Wind turbine - QR5; Rain water harvesting; Talks loosely of air source heat pump & MVHR	"…ICF "unique" Amvic solution (superior spanning capabilities) + Green roof…Passively heated by the sun, with supplementary heating being provided by a ground source heat pump, the building will be innovative in its environmental operation. …..Because of its architectural aspirations, the proposed building will become a research project for the Manchester School of Architecture. Student learning will be encouraged through involvement in the scheme."	No reference made in the decision notice to energy efficiency criteria	

Project	Ref	Site location/ relevance		Extracts from Design & Access Statements	Excerpts from Planning conditions	
Cantilever House, BlackerGreen Lane, Silkstone S75 4NF	2016/0538 Approved 22.12.2016	GREEN BELT Code 6 Sustainable Homes	Hydro power; Surface water discharged back into the beck ; Water consumption limited to 80 Litres per day;	"…The house will be designed to Passivhaus standards Low or zero carbon technologies – further information to follow in respect of ground source heat pump and pv systems once a full passivhaus assessment is complete"	The development shall be constructed to achieve the following sustainable design credentials set out within the application:- • Specifications equivalent to level 6 of the Code for Sustainable Homes • Ultra-low energy consumption combined with very good internal air quality which is equivalent to Passivhaus standards • The generation of a minimum 2KW of electricity achieved through the hydro electric power plant and turbine that shall be utilised on site to contribute to the energy needs of the development	

There is a "theme" running through this selection of "innovative or exceptional" designs. That of subtle integration with the landscape, an element of absorption and enveloping by the terrain and thus a discreet, and sometimes hidden form. Unfortunately what hasn't necessarily been ensured, in parallel is construction to Passivhaus standards to totally minimise the impact and demand for energy from planet earth.

Extensive analysis & development has been pursued with the design of Ithaca, by architects, Peter Dimberline Ltd. All possible factors have been addressed to ensure a mutual respect and honouring of the Green Belt and the unique setting of the site. In addition there has never been any question as to the dedication and commitment that the client Mr Warsop has shown to ensure that the justification is there for him to be able to build his home for life, as a self build, to Passivhaus standards, in a place that he has deep rooted connections to.

We would invite consideration for the fact that, given this brief demonstration of historical cases that Barnsley Council has supported, the proposal at Ithaca far exceeds any other project energy reduction intent at this time and also far exceeds the Carbon Emission intent that Barnsley Council proposes.

Thank you