

A Sustainable Future for YHA Boggle Hole, Robin Hoods Bay – England & Wales

SUMMARY

Project Description: Installation of photovoltaic panels to reduce the CO2 emissions of YHA Boggle Hole, an iconic site in a high profile location.

Project Type: Energy Efficiency, Education in Sustainability & Sun

National Association: YHA England & Wales

Project Location: YHA Boggle Hole

Estimation of number of reduced tonnes of CO2:

The project will save at Successful implementation of this project will reduce carbon emissions by 4.1 CO2e tonnes annually (56% reduction).

Total Funds Requested: £ 25,000

Total Project Cost: £ 37,491.53

Annual £ saves and ROI (return of investment): See graphic below

Why should this project be funded ahead of others?

The contribution would have a great impact on improving sustainability both environmentally and financially because:

- YHA Boggle Hole is currently the 2nd highest user of liquid propane gas (LPG) in the entire YHA England and Wales network with £14,250 spent per annum on this fossil fuel
- The hostel is currently in the top 30 users of energy in the YHA England and Wales network consuming 351,000 kWh per annum (£23.46 per overnight)
- The hostel currently is the 11th highest kWh per M2 across the entire YHA England and Wales network at 410 kWh/M2 This evidences the inefficiencies of the present buildings

YHA Boggle Hole is an iconic site in a high profile location. Tens of thousands access Robin Hoods Bay from Boggle Hole each year. Completion of the project will see the site open the public, in doing so we will take the opportunity to engage guests and the wider public with the issue of climate change and what we can do as individuals to minimise our impact on the environment through on site interpretation.





DETAILED PROJECT INFORMATION

Purpose/objectives of the project activity

In supporting the vision of YHA's Environmental Strategy *Green Spirit* to become a more sustainable organisation, as well as protecting the business against rising utility costs, YHA embarked on a 3 year programme to invest in renewable energy systems at sites across its network. Early stages of this programme were funded by a loan from the SIEMENS Carbon Trust and a successful application to the Hostelling International Sustainability Fund. Now these funds have been fully utilised, YHA is seeking to build on this platform by incorporating renewable energy systems into each site it develops where practical and affordable.

YHA's next major redevelopment will take place this coming winter at YHA Boggle Hole.

Opening in 1951 this youth hostel supports the delivery of the YHA's charitable object and mission more than most by playing host to many thousands of disadvantaged young people every year who come to take part the educational and leisure activities available from the site.

For many a visit to YHA Boggle Hole is the only opportunity these children will have to experience a break away from the home environment. A residential trip and activities provides children with a powerful way of developing key life skills, to expand their horizons, build their confidence, self-esteem, and develop important skills in communication and team building. YHA believes that all children should have the opportunity to experience learning beyond their classroom, allowing them to appreciate the countryside. A visit to Boggle Hole could prove to be a life changing experience for these young people; a stay will certainly live long in the memory.

YHA's vision for YHA Boggle Hole is an iconic and inspiring destination for people to experience, study and enjoy some of the most impressive coastal scenery in Northern England. The completed project will primarily benefit visitors, but the expanded operation will support both the local community and the economy of the area.

On completion, Boggle Hole will be one of YHA's key locations for the delivery of activities and learning experiences to young people. Building on our past experience, our vision see's the site being at the forefront of engaging young people from a broad spectrum of backgrounds, both regionally and nationally.

This is a successful 85 bed Youth Hostel situated just off the beach in the middle of Robin Hoods Bay, halfway between the village of Robin Hoods Bay to the north and Ravenscar to the south. It is situated in a SSSI, adjacent to the Cleveland Way National Trail in the North York Moors National Park on the Yorkshire Heritage Coast. It has long been recognised that, as one of YHA's most iconic hostels, Boggle Hole requires significant investment. It has been YHA's long-term vision to refurbish this Youth Hostel to provide the high quality offering deserved of its location and reputation.

The hostel comprises:

- Main hostel in the old mill building with 41 beds, reception, dining, self-catering kitchen, lounge and classroom.
- Annex of 44 beds, classroom/lounge, brew point, 4 toilets and 3 showers and drying room.



Whilst the main hostel does not put YHA at any immediate risk of reputational damage, the annex (accommodating 50% of hostel beds) is a considerable risk. YHA has been seeking to find a suitable, cost effective solution to replace this building. Alongside this, we have also identified the need to replace the classroom (currently located in the annex). Due to the need to provide a better configured space within the same footprint, this will need to be provided elsewhere on site. In addition, due to the high level of summer trading we have developed a project to improve the food and beverage provision.

YHA Boggle Hole currently has a Visit England 3 star hostel rating, though this is under threat if the package of works is not completed in its entirety. This will have a detrimental impact on business levels as expectations are no longer met, and long-term this could lead to the site closing. The Visit England hostel standards report completed in July 2013 highlights the issues that need to be addressed as part of this development. The things staff on site can influence score highly – hospitality, service, and quality of food whereas the building itself – bedrooms, bathrooms, toilets, showers and public areas need improvement to meet quality standards and visitor expectation. Similar conclusions can be drawn from YHA's customer on-line feedback surveys of families and individuals undertaken between March and November 2013 with facilities and the building scoring poorly.

The Annex

The quality of this building is far inferior to the main hostel and the customers experience is vastly compromised with damp being the main issue. Operationally we are managing the standards as best we can but we have a responsibility to address this issue as a matter of priority in order to protect the reputation of the hostel. Doing so will ensure the valuable educational business and family business which returns year on year is retained.

We regularly receive complaints about the quality of the annex and in order to reduce any further reputational damage, a decision will need to be made as to whether we should close the annex, halving the capacity of the hostel, or investment to replace it. Due to the popularity of this hostel and its success as a business, the proposal is to seek a solution for replacement. Due to the largely fixed operational costs if the annex is closed and the bed numbers reduced by 50% the hostel will move from making an annual margin of £60,000 to losses of approximately £5,000 per annum.

The proposal is to demolish the annex building and replace with an alternative timber construction to accommodate 44 beds with some en-suite rooms. It is envisaged that it will be configured to provide a mixture of accommodation in 2 and 4 bed rooms thus providing greater flexibility and enabling the offer to be sold to families as well as school groups.

The new building will accommodate 44 people:

- 2 x 2 bed (en suite)
- 2 x 4 bed (en suite)
- 8 x 4 beds (not en suite)

The layout will allow for 4 wc's and 4 showers, providing facilities for the non en suite rooms at a ratio of 1:8. In addition to the bedrooms, the annex will also contain a lounge area equipped with a small kitchenette. Proposals also include a small drying room.

The specification of the new annex building is primarily geared towards the accommodation of groups providing a self-contained space away from the main hostel building. That said, the configuration of individual rooms will provide greater flexibility and an opportunity to sell to families as well as attract new school groups. This better configured replacement will also open opportunities for Exclusive Hire.

Not to proceed with the project would result in the closure of the annexe, halving the number of beds at this hostel. This would be a negative move for a site which has so much potential and could lead to its closure. We believe there is a strong business case for investment to support growth, safeguarding and creating new jobs. The development of this iconic site will directly boost tourism and the local economy, ensuring this iconic site remains open for future generations to enjoy.

Methodology (How)

In developing the specification for the new building, YHA's M&E consultants, LEDA and Peacemarsh have completed a feasibility study to assess which renewable energy technologies could be incorporated into the new building with a view to reducing both future carbon emissions and operating costs. Lighting, space heating and hot water in the current annex building is provided by an LPG gas boiler.

Having undertaken an extensive review of the options available and site factors such as access, aspect and location, it is proposed the new building will incorporate an 11 kWPeak array of 40 x 275 Watt Solar photovoltaic panels in the roof structure to generate electricity.



Once operational, the array will reduce CO2 emissions from the new building by 56%.

Total project costs of £37,491.53 for the PV system and associated costs have been established by YHA’s M&E consultants based on accumulated prior knowledge of previous installations. In addition to the purchase, installation and commissioning of the PV system, a new high efficiency boiler will be installed to provide supplementary heat, hot water and lighting topping up the energy provided by the PV system. Additionally, high output efficient radiators will be fitted in each room. The existing system is so dated and inefficient the only practical solution is the replace the entire system.

Costs for Renewable Installations			
Description	Number		Cost
Photovoltaic Panels (11kWp)	1	item	£19,360
Commissioning, testing, drawings & documentation	1	item	£2,000
Heating Boiler	1	item	£10,500
Radiators	1	item	£3,000
Professional Fees			
M&E Consultant			£ 2,631.53
Total Cost			£ 37,491.53
Comments			
Professional Fees calculated on percentage of total services installation - 15%			

Extracting the costs of the photovoltaic panels, their installation and commissioning from the total project costs, a payback period of between **7 and 9 years is anticipated.**

Monitoring plan

YHA currently monitors electrical and gas consumption at all sites on a monthly basis. Oil and LPG consumption is monitored annually.

Completion of the installation will see telemetry provide real time data on consumption. This will be used to ensure systems are working efficiently. Data will compile and reported publically on an annual basis.

- Operational efficiency will be measured and benchmarked against all YHA sites using KWH per Overnight
- Building efficiency will be measured and benchmarked against all YHA sites using KWH per M2
- Fuel costs will be measured and benchmarked against all YHA sites

Contribution of the project activity to sustainable development

The wider redevelopment of YHA Boggle Hole of which the photovoltaic array installation is part will see the following economic, social and environmental benefits delivered.

Economic impacts

- 5 FTE jobs created in March – July 2015
- 7 FTE jobs safeguarded in April 2015
- 18 indirect jobs created – supply chain business sales with local suppliers
- 8 job year equivalent construction jobs created late November 2014 – April 2015
- YHA will seek to recruit the directly employed staff from the local community
- 16 staff assisted with their skills development
- 16 staff trained obtaining basic skills qualifications including; induction, foundation food safety, first aid, basic health & safety, safeguarding young people, activity delivery walking group leader and customer care training
- Advanced qualifications include; intermediate food hygiene, catering skills, finance and accounting
- For staff who wish to develop a managerial career with YHA, further training opportunities are available, including management and leadership qualifications
- Defined career ladder with opportunities for career progression
- 1 business safeguarded
- 1 business supported to improve financial and environmental performance
- Increased use of ICT to improve guest satisfaction and business efficiency
- 1 tourism business achieving quality improvement through attainment of yet to be confirmed environmental accreditation
- A minimum of 1,750 additional overnight stays in Boggle Hole per annum (min 11.5% inc)
- 822m² new employment floor space
- The project will see private sector investment in the tourism infrastructure of Robin Hoods Bay totalling £910,000 from YHA
- YHA guest spend in the local economy, each guest staying overnight typically spends £35.48
- Spend of employees in the local community - recognised impact, though difficult to quantify
- Work placement opportunities to be offered to local high school students annually
- Volunteering opportunities to be offered annually

Economic - Partnerships with other business & tourism associations

YHA Boggle Hole has a symbiotic relationship with many other businesses locally and regionally; this collaboration will continue to grow as business levels increase.

- The range of educational packages delivered on site will growth with many delivered by partners locally
- YHA works with independent activity providers to deliver activity packages, these will continue to grow in volume and diversity

- Non-residential day visitors and groups to use the classroom facilities with local primary schools given free access
- Local hotels/B&B's - Our group's coach drivers regularly stay elsewhere as there is limited coach parking available on site
- Local Hotels /B&B's - A record of bookings unable to be accommodated was kept from April to October 2013; during this period 412 potential guests were referred locally to other accommodation providers.
- Local Campsites - YHA works in conjunction with local campsites in the area referring customers and supporting D of E groups to complete their assessments.
- The Forestry Commission mountain bike centre at Dalby Forest is popular with groups families and individuals alike with over 278 referrals from YHA Boggle Hole in 2013
- The Sealife Centre in Scarborough and English Heritage operated Whitby Abbey received educational visits from many schools staying with YHA during 2013. In addition, many families and individuals staying at YHA Boggle Hole also made a visit.
- 54% of YHA Boggle Hole guests travel using coach travel and public transport
- Feedback from YHA guests tells us they value sustainability and are keen to use and make a point of supporting local pubs, shops, cafes, tearooms. The economic impact is tangible but not measurable.
- YHA Boggle Hole supports the local Coastguard Cliff Rescue Team as an operational base used for storage of equipment and communications equipment and a base from which to launch rescues.
- YHA will continue to develop working relationships local tourism businesses and regional tourism bodies
- All YHA Youth Hostels are quality inspected by Visit England

Social - Addressing Unemployment

- In addition to providing jobs directly YHA can help young Welsh people develop vocational and life skills providing work experience that will help them find employment
- YHA can provide training opportunities, volunteering opportunities, and student placements. These opportunities would lead to accredited qualifications, contracts, and individual development plans
- Longer term these opportunities will develop outcomes including sector specific skills, ability to work with others, improved reliability and timekeeping, a greater understanding of the type of work that will suit them, functional skills – literacy, numeracy, IT, improved communication skills.
- Long term this will enable sustainable employment

Social - Addressing Health Issues

- YHA delivers programmes that will enable local young people to do physical activity and develop healthy lifestyles

- YHA leads and delivers with others activity programmes and will provide healthy food at YHA Boggle Hole either self-catered to support development of life skills or catered
- Through YHA young people complete activity programmes, achieve qualifications, are exposed to a diverse range of activities, are introduced to a communal environment and learn self-responsibility skills
- Longer term these opportunities lead to a number of positive outcomes including increasing young people's motivation to do physical activity, setting and achieving personal goals and, increased confidence to try new activities
- Mid and long term outcomes are increased participation in physical activity (sports clubs, gyms, clubs, improved diet choices, healthier lifestyles and improved health

Social - Providing Learning Opportunities

- YHA delivers programs that enable young people to learn new skills and new topics, these support their improved confidence and self esteem
- YHA will provide accredited courses, learning outside the classroom (school trips), summer camps and residential learning using methods that use a range of learning skills and settings to support those who don't engage with traditional teaching methods
- Learning in a different environment, learning and working in a team to complete tasks and activities, learning new subjects and skills and staying away from home are some of the ways young people can benefit
- Outcomes include; increased willingness to try new experiences, increased confidence and self-esteem, improved skills to work in a team, increased understanding of interests and career opportunities providing an enhanced route to employment
- A range of new educational and leisure based packages will be launched once YHA Boggle Hole opens

Social - Low Social Mobility and Empowerment

- YHA enables young people to experience different environments and places, provide a setting to meet new people and help young people travel/explore independently
- To achieve this YHA runs summer camps and provides opportunities for individuals and families to join activity packages
- Accommodation is low in price eliminating cost as a barrier
- YHA's bursary fund, Breaks for Kids supports those who might otherwise miss out on an opportunity to visit
- YHA provides information on travel to hostels in advance of a stay and promotes low cost leisure and recreation opportunities
- People experience staying away from home, are introduced to travelling independently, meet a wide variety of people from different backgrounds and are introduced to the benefits of YHA membership

- Outcomes will include; increased communication skills, confidence in travelling, improved planning and organisational skills, increased confidence in meeting new people, experience of new locations away from home. These could lead to new hobbies/interests, the joining of a club. Long term these benefits enhance life options and achievement for these young people

Environmental Impacts

To reduce energy consumption, operating costs and CO2 emissions the new annex building will contain the following:

- Environmentally friendly building materials used in construction where possible
- Low energy LED lighting throughout
- Low energy use pumps and fans throughout
- New high efficiency LPG boiler with high output radiators
- New M&E systems including boiler control systems
- Very high levels of insulation in floors, walls and roof spaces
- Draft sealing throughout
- Double glazing to all windows
- Spray taps and aerated shower heads to reduce hot water consumption
- Dual flush toilets to reduce water consumption

Other Positive Environmental impacts

- Local food stuffs will be served daily and locally produced ales sold
- Local tradespeople will be employed to support on-going maintenance.
- Through proactive marketing and improved information provided to guests in advance of their stay, we will increase the number of people who travel to YHA Boggle Hole using public transport
- YHA actively encourages car free breaks and promotes the use of public transport as a means of access
- YHA ensures the needs of walkers and cyclists are catered for encouraging the car to remain at home
- YHA will continue to promote cycling and walking through enhanced on site interpretation coupled with improved staff knowledge. Secure storage, repair equipment, bike cleaning facilities and extensive route information will aim to exceed expectations
- Waste from the demolition and construction phase will be recycled in accordance of building regulations.
- When operational, all waste on site will be sorted and removed to be recycled. Food waste will be composted.
- Physical adaptation of the building and the equipment used; coupled with changes to how the site is managed will reduce CO2 emissions per guest when compared with the former operation.

Estimations of emission reductions (CO2e tones)

- Once operational, the array will reduce CO2 emissions from the new annex building by 56%
- Total CO2 savings of 4,118 kg/p.a. or 4.1CO2e tonnes annually will be achieved
- The volume of CO2 saved is equivalent to the emissions from an average new car driving between Lands End and John o' Groats 23 times (the driving distance between Lands End to John o' Groats is at 1,347 km).

CARBON CALCULATIONS

Predicted energy use

FLOOR AREA	252 m2
Lighting load (6W/m2 LED lights)	1,512 watts
annual lighting use (1500 hours/p.a.)	2,268 kWh
Electrical appliances(phone chargers,etc)	2,000 kWh
Pumps & fans (300watts,1500hrs/p.a.)	450 kWh
Total electrical use	4,718 kWk
Associated CO2 emissions	2,265 kg/p.a.
Heating load (35W/m2 at -3.5deg external)	9 kW
Annual equivalent hours	1,750
Annual heating energy use	15,435 kWh
Associated CO2 emissions using LPG boiler	3,602 kg/ p.a.
Hot-water energy use (40% of heating load)	6,174 kWh
Associated CO2 emissions using LPG boiler	1,441 kg/ p.a.
TOTAL PREDICTED CO2 EMISSIONS	7,307 kg/ p.a.
RENEWABLE ENERGY SAVINGS	
Electricity from 11kWp photovoltaics	8,580 kWh
Associated CO2 emissions reduction	4,118 kg/p.a.
TOTAL CO2 SAVINGS	4,118 kg/p.a.
% CO2 SAVINGS	56 %

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Saved Funds and ROI

Extracting the costs of the photovoltaic panels, their installation and commissioning from the total project costs, a payback period of between **7 and 9 years is anticipated**.

The savings made will contribute to ensuring the future financial sustainability of YHA Boggle Hole. The project will be self-sustaining on completion with the hostel generating an improved level of profit from its trading therefore subsequent funding will not be necessary. The development will result in a significant increase in visitor numbers and turnover and this will support expenditure on additional staff costs and other cost headings including a considerably larger maintenance budget than in the past to fund future repairs and renewals. This will ensure the quality and standards achieved at the completion of the building programme are maintained to the same level going forwards.

Additional profits beyond those needed to sustain the hostel will be used to invest in other sites across YHA's network. Ensuring all sites are fit for purpose and meeting guest expectation is an underpinning principle of YHA's business plan.

A proportion of these funds will be used to further our work in line with our charitable objective, supporting young people of limited means.