

## A Sustainable Future for YHA Pen-y-Pass – England & Wales

### SUMMARY

#### **Project Description:** YHA Pen-Y-Pass

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 Pen- y- Pass 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 Pen-y-Pass could prove to be a life changing experience for these young people; a stay will certainly live long in the memory.



When refurbished the improved facilities coupled with a great location and excellent customer service will ensure the site becomes a flagship operation for YHA in Wales. It will be popular with all YHA's key markets visiting Snowdonia – groups, families and individuals, including traditional outdoor enthusiasts and travellers from overseas. Through YHA Pen-y-Pass, people are able to explore Snowdon and the Snowdonia National Park, an experience that encourages and enhances the growth of all.

Completion of the development will see a variety of measures aimed at improving environmental and financial sustainability, energy saving, utility cost reduction and carbon footprint. Installation of the biomass boiler is an integral part of the major redevelopment of the site planned to take place this winter.

**Project Type:** Energy Efficiency, Education in Sustainability & Other

**National Association:** YHA England & Wales

**Project Location:** YHA Pen-Y-Pass

**Estimation of number of reduced tonnes of CO<sub>2</sub>:** The project will save at Successful implementation of this project will reduce carbon emissions by ~92.2 CO<sub>2</sub>e tonnes annually (~86% reduction). This is the equivalent of emissions from an average car travelling 444,478km.

**Total Funds Requested:** £ 25,000

**Total Project Cost:** £ 167,000

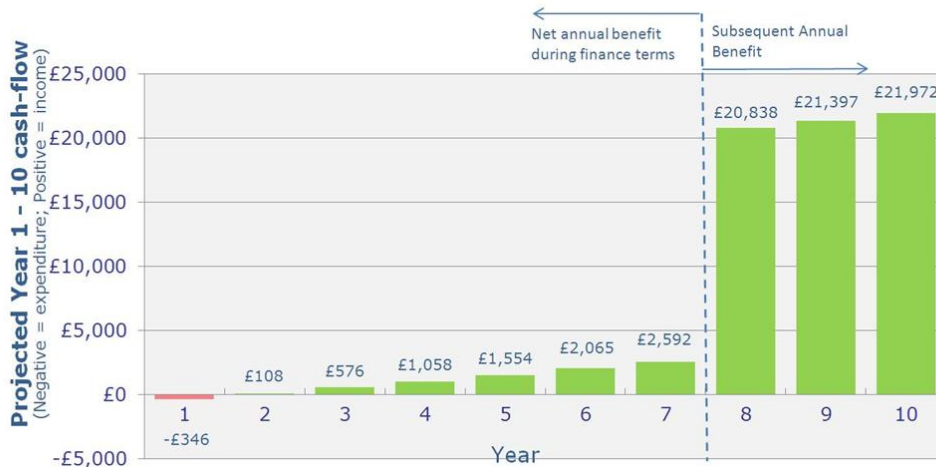
**Annual £ saves and ROI (return of investment):** See graphic below

## Carbon Trust engineer's commentary on proposed project



### Financial merits of project

Under the current finance arrangements the project is expected to become revenue positive at Year 2. Over the expected 20 year estimated project life, the revenue generation potential is projected to exceed £327k\*



### 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 Pen-Y-Pass has the highest spent on heating oil across the entire YHA England and Wales network at £21,000 per annum.
- The hostel currently has the 4th highest KWH per overnight across the entire YHA England and Wales network at 27.85 KWH/on
- The hostel currently has the 8th highest KWH per M2 across the entire YHA England and Wales network at 237 KWH/M2

YHA Pen-Y-Pass is an iconic site in a high profile location. Over 500,000 people climb to the summit of Snowdon each year from this site. 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.

This installation is currently being funded by a loan to YHA from the Siemens Carbon Trust. The £25,000 contribution from the HI Sustainability Fund would offset the loan and enable £25,000 to be used to support another renewable energy installation, less high profile, but none the less important project elsewhere in the YHA.

## **DETAILED PROJECT INFORMATION**

### **Purpose/objectives of the project activity**

In supporting YHA's Green SPIRIT objectives (Appendix 5) of becoming a more sustainable organisation, as well as protecting against rising utility costs, YHA has obtained a £500k unsecured loan from SIEMENS Carbon Trust to invest in renewable energy.

The first phase of this investment was the installation of photovoltaic solar panels at four YHA hostels, completed in July 2012 at a cost of £150k. This was supported by an investment of £65K for a solar installation at YHA's National Office, funded from capital budgets. In October, 2012 a proposed a £100K investment in biomass technology at National Office to complement the solar panels and external insulation cladding and mitigate risk of failure of the boiler which was operating significantly beyond its working life. This was approved and the new facility was installed and commissioned, in December 2012.

This development was a 'pilot' exercise to explore how effectively Peace Marsh, their recommended boilermaker and provider (Hoval) and YHA could collaborate with a view to using this model to manage successful delivery of future investments. The overwhelming feedback from all parties was that the project was successfully delivered - on time, to budget, to desired quality and in a supportive framework.

Earlier feasibility studies carried out by Peace Marsh for installing biomass boiler systems included YHA's Pen-Y-Pass, Hartington and Malham based on annual consumption of mains gas, oil and LPG. Of these, Hartington requires planning permission and Malham requires extensive groundworks both placing financial risks on potential projects which may also impact upon returns on investment. Whilst neither project has been ruled out for further consideration, YHA is to carry out a £1.2M refurbishment of YHA Pen-y-Pass in autumn 2013 and there is synergy in taking the opportunity to introduce renewable energy sources whilst the hostel is closed for refurbishment as well as to eliminate further heavy consumption of oil.

Peace Marsh visited YHA Pen-y-Pass to provide guidance and input on the viability of installing a biomass boiler system in conjunction with the proposed refurbishments which are to be undertaken this Spring. The site visit looked at the existing boiler systems and fuel source, proposed location for the biomass boiler and associated plant, feasibility of using existing outbuildings and plant rooms for pellet storage, the extent of building works and disruption required to undertake these works.

Peace Marsh submitted proposals including a scope of works with associated costs and have been invited to tender for the installation of a biomass system as a subcontractor. In line with the precedent set at National Office, it is proposed to deliver a biomass system based upon European CEN quality standard wood pellets with Hoval boilermakers. They manufacture all of their own equipment, carry out installation, undertake full commissioning and deliver aftersales support.

The main risk relating to a biomass system is surety of wood pellet supply (and at the required quality). Our previous investigation into national suppliers revealed that this type of technology and fuel supply has been expanding annually over the past five years. The suppliers provided comparable information on pricing, delivery requirements and impact of inclement weather on deliveries. This provides assurance that supply of wood pellets will be maintained.

Separately, Peace Marsh has identified the suitability of YHA Pen-y-Pass for a solar photovoltaic installation which will further improve the environmental and financial sustainability of the hostel. Permission will be required from the Snowdonia National Park to install this equipment. Peace Marsh is investigating the processes involved in seeking approval.

### Methodology (How)

The main proposal submitted by Peace Marsh comprises a 110kW biomass boiler (Hoval Biolyt 110) with a TopGas 80 LPG back up boiler, buffer vessel and pellet silo. The scheme was initially calculated to cost £95K. However, proposed changes to the configuration of the hostel through the refurbishment will incur additional build cost of approximately £40K.

The summary of the RHI (renewable head incentive), Savings and Installation Cost is set out below

Summary of Income & Savings	Government Payment & Savings	Total Cash & Savings over 20 Year Term	Cost	Payback	% Cash Return per annum
110kW Biomass System	£24,049	£1M	£135K	5-6 years	17.81%

This meets the minimum return on investment and overall payback % throughout the life of the investment required by the Board. This was based on 2 separate sets of assumptions as follows:

Assumption set	Annual utility price rises	RPI rate	Required payback (years)	Required ROI %
Best	8%	3%	8-9	12%
Base	5%	2.5%	9-10	6%

Furthermore, it is noteworthy that whilst the proposed biomass boiler is the same size as the National Office installation (110kW), the projected 20 year income and savings for YHA Pen-Y-Pass (£1M) is more than double the projections for Matlock due to the forecast savings against rising costs of oil against rising costs of gas.

As with any biomass boiler, a member of staff will need to monitor deposits in the ash bin on a weekly basis and empty when appropriate. This work is not onerous and presents minimal manual handling implications. However, it is critical to ensuring that the system works correctly. The system has an electronic control panel to enable the system to be programmed together with a management system

to guide users if there is a problem. As with any new heating system full training and support will be delivered by Hoval to nominated persons at the hostel. The biomass boiler will also need to be serviced on a 6-12 monthly basis.

The further proposal from Peace Marsh is to install a 20 kW peak array of solar panels at a cost of £32K. The summary of the FIT (feed-in tariff), savings and installation cost is set out below. Again, this meets the minimum return on investment and overall payback percentage throughout the life of the investment required by the Board (See paragraph 11):

Summary of Income & Savings	Government Payment & Savings	Total Cash & Savings over 20 Year Term	Cost	Payback	% Cash Return per annum
20kW Solar Panels	£4,200	£119,292	£32K	6-7 years	13.13%

### 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 Pen-Y-Pass of which the biomass boiler and photovoltaic array installation is part will see the following economic, social and environmental benefits delivered.

#### Economic

- 5.5 FTE jobs will be safeguarded
- 4 new FTE jobs created by year 3 post completion (1.5 FTE year one/2 FTE year 2/4 FTE year 3)
- YHA will seek to recruit the above staff from the local community
- 25 FTE posts will be created during the 6 month development and construction phase (construction/consultants jobs)
- 9 FTE staff (11 individuals) assisted with their skills development
- 9 FTE staff (11 individuals) 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, the future of which is uncertain if the project does not come to fruition
- 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 minimum Visit Wales 4 star rating
- Volume of overnight stays to increase by 98% in 3 years to 20,800 per annum
- Turnover will increase by 104% in 3 years to £505,295 per annum
- Average length of stay increased from 1.5 to 2 nights
- 825m<sup>2</sup> of upgraded employment floor space
- 305m<sup>2</sup> of new employment floor space
- The project will see private sector investment in the tourism infrastructure of Gwynedd totalling £1.2m from YHA.
- There will be increased business sales with local suppliers and tradespeople – recognised impact, though difficult to quantify
- The increased spend of guests in the local community – recognised impact, though difficult to quantify
- The increased spend of employees in the local community - recognised impact, though difficult to quantify

### **Economic - Partnerships with other business & tourism associations**

Doubling the volume of visitor numbers and expansion of the visitor season will have a positive impact and support job creation indirectly in the supply chain, YHA Pen-Y-Pass has a symbiotic relationship with many other businesses locally and regionally; this collaboration will continue to grow as business levels increase post development.

- Plas-y-Brenin –YHA hired instructional staff for 8 weeks to support delivery of the residential element of the National Citizen Service (NCS). This relationship is anticipated to grow as we expand the range of educational and leisure based courses available.
- Independent Activity Providers – YHA’s customers regularly use the services of up to 30 professionally qualified individuals who led groups on activities in the area. Two of the more regularly used companies include; Boulder Adventures of Llanberis and Proactive Adventure of Powys
- Royal Victoria Hotel, Llanberis – All our group’s coach drivers regularly stay as coach parking is available on site

- Other local Hotels /B&B's - A record of bookings unable to be accommodated was kept from April to October 2011; during this period 412 potential guests were referred locally to other accommodation providers.
- Local Campsites - YHA works in conjunction with Llyn Gwynant campsite at Nant Gwynant and Nant Peris Campsite referring customers and supporting D of E groups to complete their assessments.
- The Forestry Commission mountain bike centre at Coed-y-Brenin is popular with groups, families and individuals alike with over 278 referrals from YHA Pen-y-Pass in 2011
- Electric Mountain and Dinorwig Power station received educational visits from 19 schools staying with YHA during the spring and summer term of 2012. In addition many families and individuals staying at YHA Pen-y-Pass also made a visit.
- National Slate Museum in Llanberis received educational visits from 20 schools staying with YHA during the spring and summer term of 2012. In addition many families and individuals staying at YHA Pen-y-Pass also made a visit.
- 36% of YHA's guests at YHA Pen-y-Pass travel without using the car, the Snowdon Sherpa bus service is particularly well used by guests
- Feedback from YHA guests tells us they value sustainability and are keen to use and make a point of supporting local pubs, shops, cafes, tea rooms. The economic impact is tangible but not measurable.
- YHA Pen-y-Pass supports the Llanberis Mountain Rescue Team as an operational base used for storage of equipment and communications equipment and a base from which to launch rescues.
- YHA has working relationships with Tourism Partnership North Wales and North Wales Tourism
- All Youth Hostels in Wales are quality inspected by Visit Wales

### **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 will deliver programmes that enable young Welsh people to do physical activity and develop healthy lifestyles

- YHA will lead or deliver with others activity programmes and provide healthy food at YHA Pen-y-Pass either self-catered to support development of life skills or catered
- Through YHA young people can complete activity programmes, achieve qualifications, be exposed to a diverse range of activities, be introduced to a communal environment and learn self-responsibility skills
- Longer term these opportunities will 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 will be increased participation in physical activity (sports clubs, gyms, clubs, improved diet choices, healthier lifestyles and improved health

### **Social - Providing Learning Opportunities**

- YHA will deliver programs that enable young Welsh people to learn new skills and new topics, these will 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 will 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 Pen-y-Pass reopens

### **Social - Low Social Mobility and Empowerment**

- YHA will enable young Welsh 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 will run summer camps and, provide 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 will experience staying away from home, be introduced to travelling independently, meet a wide variety of people from different backgrounds and 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 will enhance life options and achievement of these young people

### **Environmental Impacts**

- Environmentally friendly building materials used in construction where possible
- New M&E systems including boilers and control systems will reduce operating costs and reduce CO2 emissions
- Improved insulation of the buildings will prevent heat loss plus draught strips in all door frames and double glazing.
- Water use reduced by 35% (per guest) with the installation of ultra-low flush toilets, spray taps and aerated shower heads
- 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 Pen-y-Pass from home using public transport by a further 8% to 44% overall.
- YHA actively encourages car free breaks and promotes the use of public transport as a means of access to rural areas.
- YHA ensures the needs of walkers and cyclists are catered for encouraging the car to remain at home or parked at the hostel whilst enjoying the area.
- 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.
- YHA Pen-y-Pass will attain the Green Dragon Environmental Standard (level to be determined).

The redevelopment of YHA Pen-y-Pass will see quality standards and environmental performance improve significantly. Physical adaptation of the building and the equipment used; coupled with changes to how the site is managed will reduce CO2 emissions per guest making the Youth Hostel more sustainable, both environmentally and financially.

### **Estimations of emission reductions (CO2e tones)**

Successful implementation of this project will reduce carbon emissions by ~92.2 CO2e tonnes annually (~86% reduction). This is the equivalent of emissions from an average car travelling 444,478km.



### **Saved Funds and ROI**

The savings made will contribute to ensuring the future financial sustainability of YHA Pen-Y-Pass. 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.**

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