

“ Installation of a marine source heat pump in an area of high nature, landscape and heritage value on Anglesey, Wales”

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Trust**

Le contexte / The context



715 km² low-lying island max 220 m
70,000 population 70% Welsh 1st
Tourism, agriculture, port, industry
Energy 3 wind farms, > 20 off-shore
wind turbines
Anglesey Energy Island Project - first
tidal flow turbine, new nuclear
reactor

UK and European designations for
landscape, heritage and biodiversity
Coast and its hinterland (33% island) is
an 'Area of Outstanding Natural
Beauty'
Climate change, coastal erosion, sea
level rise – National Trust committed
to reducing dependence on fossil fuels

Plas Newydd, Ynys Mon (New House, Anglesey)



Le projet et les actions sur le patrimoine

Project and activities on heritage

Objectives

Reduce dependence on oil and carbon emissions (National Trust pledge)

Reduce cost of heating mansion

Remove pollution risk of storing oil close to sea

Provide better conservation heating for 18th century mansion

Solution

Reduce energy consumption - roof insulation, energy efficient lighting, draught proofing windows and doors, secondary glazing and staff energy training

Generate renewable energy - Marine source heat pump 300kW, PV panels 50kW

Timeline

2009 energy efficiency measures

2010 decision to implement a renewable energy project

2011 installation of PV panels

2013 installation of marine source heat pump

Cost & Financing Marine Source Heat Pump

€693,600 financed by National Trust Renewable Energy Investment







Mise en œuvre et acteurs impliqués

Implementation and actors involved

Actors involved National Trust, Bangor School of Oceanographic Sciences, Royal National Lifeboat Institution (RNLI), Carbon Trust Designers, suppliers and

Regulatory authorities

Environment Agency - Discharge permit + method statement approval

Crown Estates - temporary works licence + easement for position on Menai Straits

Countryside Council of Wales (Natural Resources Wales) ecological & landscape permissions + temporary works licence + method statement approval

Anglesey Council - statutory planning and listed building consent

Navigation authority for implication of using the straits, + updating of coastal navigation charts and almanacs Welsh Government Marine License temporary works licence and licence to leave pipes in the sea

DEFRA - Food and Environment Protection Act 1985 (FEPA) license

Cadw approval for working within a historic listed environment

District Energy Network Operator agreement to install and upgrade voltage management for the heat pumps within their substation

Implementation and funding – 100% NT but business case based on RHI

Cooperation framework – contracts and informal partnerships



Résultats & enjeux persistants

Results & remaining challenges

- Initial investment into building energy efficiency reduced size of heat pump needed from 700Kw to 300Kw
- Net annual savings of CO² emissions is 165 tonnes / year
- Highly designated site can play part in delivering a fossil-free future
- 100% property and tenants heating and hot water provided (626 MWH)
- Easy to operate (but training of staff important)
- Fast installation (16 weeks)
- £40000 cost saving each year
- £44000 income (government energy incentive)
- Payback period of less than 7 years (depreciated over 20 years)
- Many island and coastal communities have learnt from project
- Ensure resources for upkeep & maintenance maintained
- Retain commitment and knowledge of staff

Enseignements Lessons learned

Les points positifs / The positive points

- Time was allowed for 16 statutory permits so did not cause delays
- Project team small and dedicated, intimate knowledge of place, personalities and statutory bodies
- Concise tender documentation and contracts led to success
- Vital evidence base provided by external partners

Les points négatifs / The negative points

- Needed longer lead time for legal and contractor discussions – delays
- Internal capacity stretched at times and caused delays e.g. legal team
- Go ‘higher up’ if encounter ‘blockers’ - Crown Estate difficult initially
- People meddle if possible to do it – all plant now tamper proof
- Uncertainty due to unique combination of circumstances - extreme tenacity required Equipment, legal status, charges



Merci pour votre attention

Thank you for your attention

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