NHC
Palace House – Case Study

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1. Summary

As a Grade II* Listed Building, Palace House is of national importance and more than special interest. Its origins were witness to the early growth of horseracing in Newmarket, an industry which has since defined the international reputation of the town.

Whilst being of such importance, Palace House has had a relatively modest recent history, having fallen into disrepair and being saved from dereliction in 1992 following compulsory purchase and grant aided repair works.

As a method of demonstrating the sustainable intent of this building, a BREEAM rating of 'Very Good' is targeted for this building, which for refurbishment of Grade II* Listed buildings would be considered best practice. The following text provides a detailed description of the building and the BREEAM accreditation system.

Key Building Facts	
Total Site Area (m2)	1461m2
Gross Floor Area (m2)	682.43m2
Basic Building Cost (£/m2 pro rata across whole site)	£1242.99
Service Cost (£/m2 pro rata across whole site)	£337.85
External works (£/m2)	N/A
Predicted electricity consumption (kWh/m2)	60 kWh/m²
Predicted fossil fuel consumption (kWh/m2)	180 kWh/m²
Predicted renewable energy generated (kWh/m2)	N/A
Predicted water use per person	6 litres/day per person
% Predicted water used to be provided by rainwater or grey water	0%

2. BREEAM

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings.

The aim and objectives of BREEAM are:

- To mitigate the impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To provide market recognition to low environmental impact buildings
- To ensure best environmental practice is incorporated in buildings

- To set criteria and standards surpassing those required by regulations and challenge the market to provide innovative solutions that minimise the environmental impact of buildings
- To raise the awareness of owners, occupants, designers and operators of the benefits of buildings with a reduced impact on the environment.
- To allow organisations to demonstrate progress towards corporate environmental objective

Building projects are assessed at the design and post-construction stages using a system of environmental issues grouped with the following categories:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution
- Innovation

The Palace House Building will be assessed against 'BREEAM 2008' criteria for a building of Museum use, to which a bespoke criteria has been applied. Assessment of the building will see a two stage BREEAM assessment process undertaken by a licensed and qualified BREEAM Assessor and BREEAM Accredited Professional, resulting in a final BREEAM certificate detailing the performance of the assessed building against environmental issues key to the design and construction of a sustainable building.

A building's performance is expressed as a BREEAM rating of PASS, GOOD, VERY GOOD, EXCELLENT or OUTSTANDING, with the VERY GOOD rating being targeted,

A 'BREEAM' accredited professional has been appointed to asses and guide the assessment and from an early stage in the feasibility and design process 'BREEAM' compliance has been discussed and objectives set which are to reviewed at regular intervals in the construction programme.

3. Palace House Building Description

With its origin being part of the 17th Century Palace of Charles II, Palace House is the surviving south-east wing of what was a much larger Palace complex. Listed Grade II* and set largely within its own grounds, in recent years the building has been used as a tourist information and conference centre operated by the local authority.

The building is classically influenced by the design of the Stuart period, and its character is one of polite Georgian symmetry presenting a frontage to Palace Street.

The building underwent substantial refurbishment between 1992 and 1998 which removed 19th Century additions.

Palace House has had a somewhat understated role in the recent history of the town (Pevsner even failed to mention the former Royal Palace in his first edition Buildings of England Suffolk). This will change within the wider context as Palace House fulfils a future role as part of the National Horseracing Museum, which intends to relocate from its current High Street premises to Palace House Stables. Palace House will become a gallery operated by the British Sporting Art Trust, exhibiting its collection and complimenting the new museum as part of a National Heritage Centre

3.1 Layout

The historic plan form of the rooms has been retained, with the key change proposed from the extant consent being the intended circulation route of the visitor. It is the historic plan form was deemed to be of high significance within the Conservation Management Plan and the Heritage Statement.

3.2 Building Design

The impression of the building (and its status) is preserved through careful retention of the period details such as cornice and skirting. The achievement of the proposals is to create a gallery which is well equipped to display the collection of the British Sporting Art Trust and those collections of other lenders, whilst also preserving the status and character of the polite Georgian interior of Palace House.

Function Areas and Sizes	
Circulation Space	177.83m2
Storage	95.23m2
Volunteers Room	26.9m2
Ticket Area/ Reception	36.26m2
Gallery Space	252.97m2

4. Key Low Impact Features

The most simple of sustainable practices are often the most effective, in the case of Palace House a considered approach to retaining and re-using existing building structure and building materials is central to the sustainability strategy. Where new materials are used, they will be responsibly sourced where possible by the building contractor.

The energy systems, primarily the provision of heating and hot water will be upgraded with the provision of a new energy efficient gas boiler and thermal controls through a Building Management System (BMS) as well as an extensive commissioning and testing programme to ensure the systems are operationally efficient.

New, low flush W/C's will be installed in an effort to reduce water consumption from the Palace House building, with proximity sensors installed within toilet areas to reduce water leaks and excessive consumption.

Site waste during the construction period will be monitored and minimised where possible, with procedures put in place the recycle and re-use waste materials where possible. Works to the building and site as a whole will not impact upon the existing ecology present within the boundary of the site.

5. Building Performance

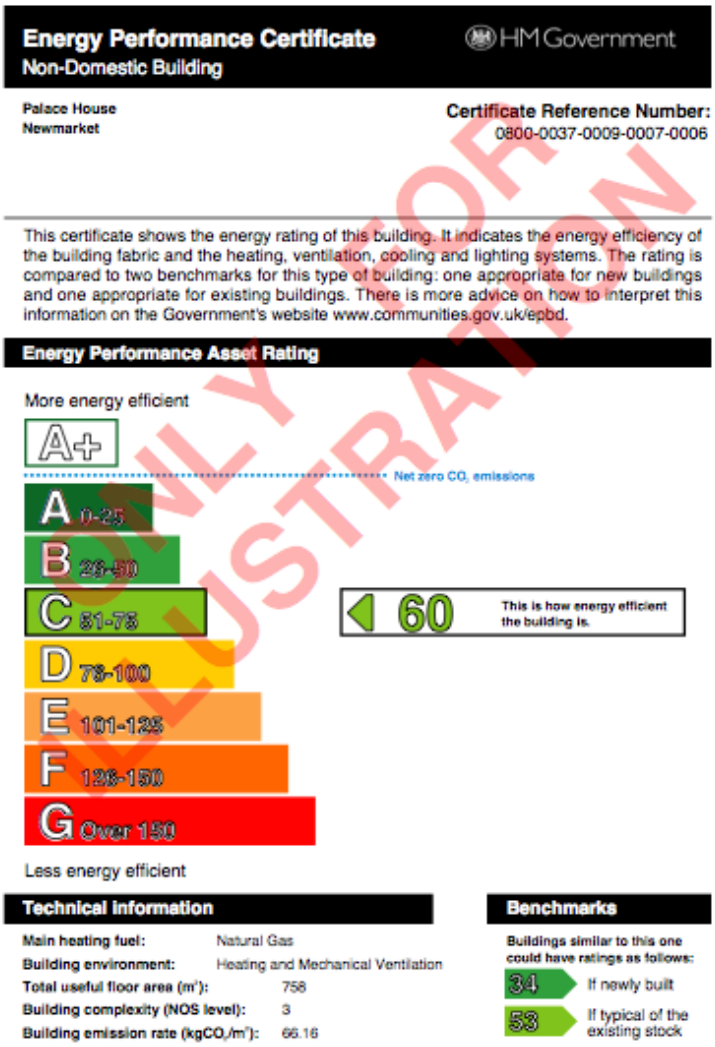
The SBEM calculation and EPC were carried out using Approved software, by Bentley Systems (UK) Ltd, their 'Hevacomp' Design Database v25.02, FI-SBEM class software.

The building is an existing building due to undergo refurbishment. The SBEM calculation used information regarding the existing fabric, i.e., walls, windows roof, as far as possible.

Efficiency data for the newly installed heating boiler has been used. Lighting data has been limited to house lighting only. Display lighting for the museum is by others.

The calculated CO2 index (taken from the EPC Rating) for Palace House is 60.

See below EPC.



Energy Performance Certificate
Non-Domestic Building

HM Government

Palace House
Newmarket

Certificate Reference Number:
0800-0037-0009-0007-0006

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Asset Rating

More energy efficient

A+ Net zero CO_2 emissions

A 0-25
B 26-50
C 51-75
D 76-100
E 101-125
F 126-150
G Over 150

60 This is how energy efficient the building is.

Less energy efficient

Technical information

Main heating fuel:	Natural Gas
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m^2):	758
Building complexity (NOS level):	3
Building emission rate ($kgCO_2/m^2$):	66.16

Benchmarks

Buildings similar to this one could have ratings as follows:

34 If newly built
53 If typical of the existing stock

6. Minimisation of environmental impacts during the construction period.

The main contractor, Graham Construction are obliged to take a responsible view of the environmental impacts, which have been assessed at each stage of the project process to ensure that all work undertaken is sympathetic to the environment and the community. There is a commitment to reducing the environmental impact of construction works during the construction phase and have in place a range of measures that mitigate any negative effects of the construction works.

- Site use of water and electricity is monitored against targets and agreed at the start of the project.
- A site waste management plan (SWMP) has been written and implemented to encourage the reduction of site waste throughout the construction process. Use of BRE Smart Waste tools, which include target setting in accordance with best practice. All works are undertaken in accordance with SWMP.
- The site is registered with the Considerate Constructors Scheme and undergoes regular assessments on a range of criteria, including measures in place to reduce environmental impact.
- Car sharing and public transport use among site and visiting staff is encouraged.
- Energy saving lights and equipment are used where possible,
- Local suppliers used where possible to reduce road traffic and associated pollution from HGVS

7. Social or Economically sustainable measures achieved.

The works are to create an enhanced and vastly upgraded visitor experience for the National Horseracing Museum and the town of Newmarket. The upgrade of Palace House alongside the new NHM directly opposite will create a sustainable and economically viable visitor attraction that will bring commerce to the local community and attract increased numbers to the area.

Efforts were made through the design and into the construction to incorporate social measures including:

- Consultation with local residents and small businesses
- Discussions with heritage organisations to preserve the historic elements of the site and surroundings
- Collaboration with the Local Authorities to ensure a socially inclusive and wide ranging appeal to the community
- Encouragement of involving the local community within the construction works, including school children and members of the local parish.

BECKY HOURIGAN
For and on behalf of GWP Architecture
22nd October 2014