

# EuroPHit


## D3.4\_PHPP Result Sheets

**DRAFT**

**CS14**

**Wilmcote House, Portsmouth**

**INTELLIGENT ENERGY – EUROPE II**

Energy efficiency and renewable energy in buildings

IEE/12/070

**EuroPHit**

[Improving the energy performance of step-by-step refurbishment and integration of renewable energies]

Contract N°: SI2.645928



Co-funded by the Intelligent Energy Europe  
Programme of the European Union

## Technical References

Project Acronym	EuroPHit
Project Title	Improving the energy performance of step-by-step refurbishment and integration of renewable energies
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Project Duration	1 April 2013 – 31 March 2016 (36 Months)

Deliverable No.	D3.4
Dissemination Level	PU
Work Package	WP3_Practical Implementation
Lead beneficiary	04_MosArt
Contributing beneficiary(ies)	14_BRE
Author(s)	Adam Robinson
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Date	24 11 14
File Name	EuroPHit_D3.4_CS14_20141124_BRE_WilmcoteHouse_Portsmouth.doc

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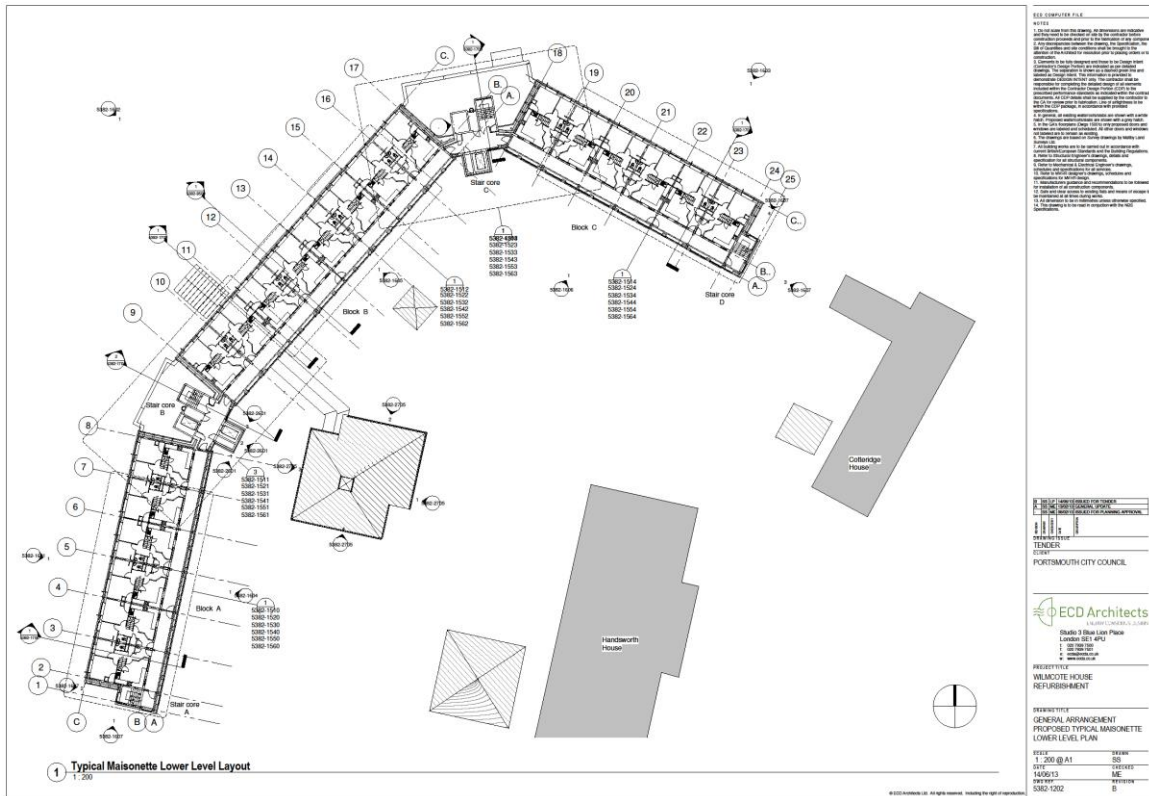
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# Abstract

This document provides a short overview of the efficiency improvement of a step-by-step refurbishment to EnerPHit standard to be undertaken for the project 14, Wilmcote House in Portsmouth, UK.

First, the result sheet of the project’s current status will present the calculated energy consumption of the existing building.

The PHPP result sheet of the completed EnerPHit retrofit will present the energy demand estimated for the completion of the project according to the overall refurbishment plan



# 1 Existing building: PHPP Result Sheet

## 1.1 PHPP Result sheet of the existing building

### EnerPHit verification

Building:	Wilmcote House Block B		
Street:	Tyseley Road		
Postcode/City:	Portsmouth		
Country:	England		
Building Type:	Residential Refurbishment		
Climate:	South England		
Home Owner(s) / Client(s):	PCC		
Street:	Isambard Brunel Road		
Postcode/City:	Portsmouth		
Architect:	ECD Architects		
Street:	Blue Lion Place, Long Lane		
Postcode/City:	London SE1 4PU		
Mechanical System:			
Street:			
Postcode/City:			
Year of Construction:		Interior Temperature:	20.0 °C
Number of Dwelling Units:		Internal Heat Gains:	2.1 W/m <sup>2</sup>
Enclosed Volume V <sub>e</sub> :			
Number of Occupants:	87.6		

Specific building demands with reference to the treated floor area		use: Monthly method	
	Treated floor area	Requirements	Fulfilled?*
<b>Space heating</b>	Annual heating demand	178 kWh/(m <sup>2</sup> a)	25 kWh/(m <sup>2</sup> a) <b>no</b>
	Heating load	75 W/m <sup>2</sup>	-
	Overall specific space cooling demand	kWh/(m <sup>2</sup> a)	-
<b>Space cooling</b>	Cooling load	W/m <sup>2</sup>	-
	Frequency of overheating (> 25 °C)	0.0 %	-
	<b>Primary Energy</b>	Space heating and cooling, dehumidification, household electricity	kWh/(m <sup>2</sup> a)
DHW, space heating and auxiliary electricity		kWh/(m <sup>2</sup> a)	-
Specific primary energy reduction through solar electricity		kWh/(m <sup>2</sup> a)	-
<b>Airtightness</b>	Pressurization test result n <sub>50</sub>	8.0 1/h	1 1/h <b>no</b>

\* empty field: data missing; '-': no requirement

Figure 1: Specific energy efficiency values of the existing building modelled with PHPP

## 2 Retrofit steps

### 2.1 Overall refurbishment Plan

#### 2.1.1 Retrofit steps:

Wilmcote house will be enclosed in an insulated self-supporting steel skeleton to improve the thermal performance of the walls, roof, windows and doors. New heat recovery ventilation systems will be provided for each flat. Existing heating systems will be retained for the time being.

Step	Year	Measure	Specific Heating Demand	Specific Heating Load
0	2013	Existing Building	178 kWh/m <sup>2</sup> /yr	75 W/m <sup>2</sup>
1	2014/15	Walls, Windows, Doors, Roof, Ventilation	17 kWh/m <sup>2</sup> /yr	12 W/m <sup>2</sup>
2	2020	Heating*	17 kWh/m <sup>2</sup> /yr	12 W/m <sup>2</sup>
3	2025	Ground floor insulation	14 kWh/m <sup>2</sup> /yr	11 W/m <sup>2</sup>
4	2025	PV?	n/a	n/a

\*Changing the current electric heating system will not improve the energy efficiency of the building however it will improve controllability and comfort of residents

**Figure 2: Overview refurbishment steps**

## 2.1.2 Efficiency Improvements

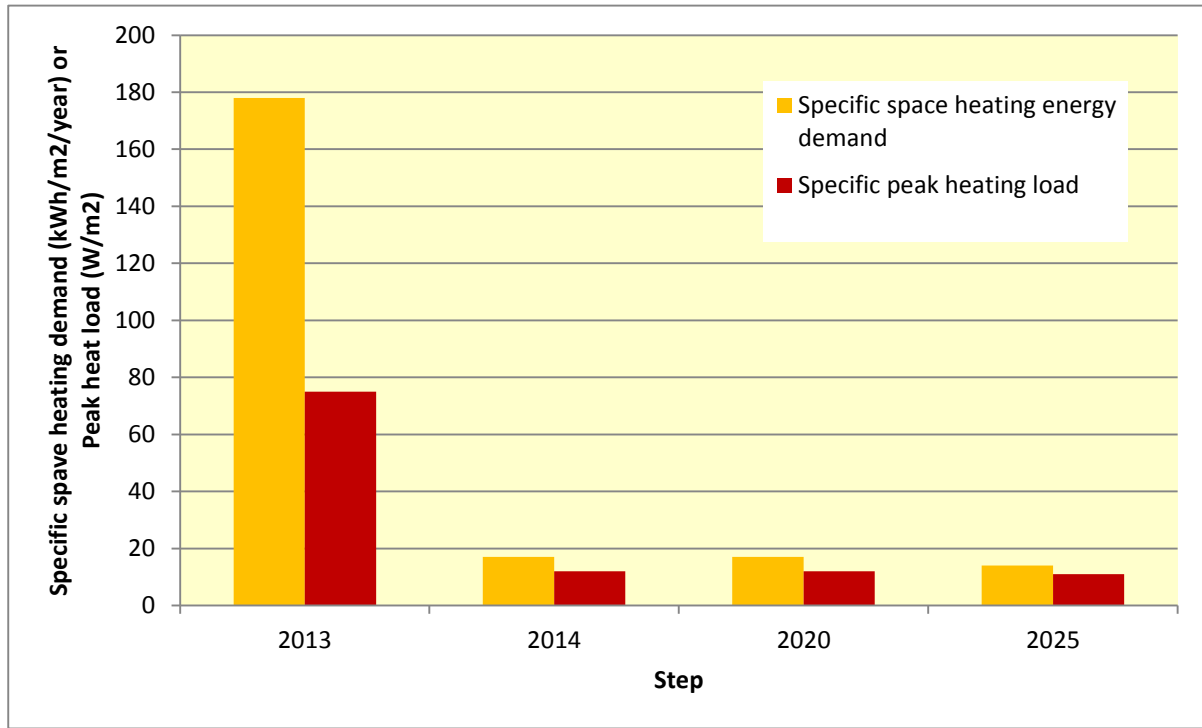



Figure 3: Overview energy efficiency improvement according to the overall refurbishment plan

### 3 Completion of step-by-step refurbishment to EnerPHit

#### 3.1 PHPP Result Sheet of the completed EnerPHit standard

EnerPHit verification			
			
Building:	Wilmcote House Block B		
Street:	Tyseley Road		
Postcode/City:	Portsmouth		
Country:	England		
Building Type:	Residential Refurbishment		
Climate:	South England		
Home Owner(s) / Client(s):	PCC		
Street:	Isambard Brunel Road		
Postcode/City:	Portsmouth		
Architect:	ECD Architects		
Street:	Blue Lion Place, Long Lane		
Postcode/City:	London SE1 4PU		
Mechanical System:			
Street:			
Postcode/City:			
Year of Construction:		Interior Temperature:	20.0 °C
Number of Dwelling Units:		Internal Heat Gains:	2.1 W/m <sup>2</sup>
Enclosed Volume V <sub>e</sub> :			
Number of Occupants:	87.6		
Specific building demands with reference to the treated floor area <span style="float: right;">use: Monthly method</span>			
	Treated floor area	3064.3 m <sup>2</sup>	
<b>Space heating</b>	Annual heating demand	17 kWh/(m <sup>2</sup> a)	25 kWh/(m <sup>2</sup> a) <b>yes</b>
	Heating load	12 W/m <sup>2</sup>	-
<b>Space cooling</b>	Overall specific space cooling demand	kWh/(m <sup>2</sup> a)	-
	Cooling load	W/m <sup>2</sup>	-
	Frequency of overheating (> 25 °C)	1.3 %	-
<b>Primary Energy</b>	Space heating and cooling, dehumidification, household electricity	kWh/(m <sup>2</sup> a)	122 kWh/(m <sup>2</sup> a)
	DHW, space heating and auxiliary electricity	kWh/(m <sup>2</sup> a)	-
	Specific primary energy reduction through solar electricity	kWh/(m <sup>2</sup> a)	-
<b>Airtightness</b>	Pressurization test result n <sub>50</sub>	1.0 1/h	1 1/h <b>yes</b>

\* empty field: data missing; '-': no requirement

Figure 4: Specific energy efficiency values of the completed project modelled with PHPP