



Form D – Research Findings Report

Guidance notes for completion

This Report Form is to be completed by Research lead as authorised by the **BECCI** project.

After completion, the fully signed **ORIGINAL** should be sent to the **BECCI** project office for retention as EU evidence.

BECCI
University of Wolverhampton
ML046 - City Campus Molineux
Wolverhampton
WV1 1LY

Reference Number	BECCI	2167C	Name of Beneficiary (Company)	ECO Insulation Ltd
Report Compiled By	Rajiv Dhanjal		Report Date	11th June 2021

(C26) Number of enterprises cooperating with research entities

This focuses on collaborations which are about transferring good ideas, research results and skills between the knowledge base and business to enable innovative new products and services to be developed and includes:

- *Research collaborations and free dissemination of research*
- *Joint and long term development of new business or services*
- *Formation of joint ventures and spin-out companies*

Collaborations are intended to be long-term and sustained, and are distinct from Enterprise Support. Benefit must be conditional on some form of formal cooperation. Form D outlines the basis of the formal cooperation between the parties.

Verification evidence:

For SMEs: Name, registered address including post code, company number. If there is ambiguity in public private status, evidence of profit making intentions is required.

For the collaboration: Letter or other form of agreement - Form D - explains what each party's role is in the collaboration, including shared objective and aims. Evidence of outcomes during the operation.

For research entity: Name, address, including post code, evidence of primary activity, i.e. charter.



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Section 1: Agreed Scope and aims of work undertaken

The Collaboration



The product – Hatch Thatch

ECO Insulation Limited and the **University of Wolverhampton's BECCI** project (**Built Environment Climate Change Innovations**, part of the **Faculty of Science and Engineering**) have been collaborating through the BECCI Innovation Incubator Programme. The two parties agree to continue their collaboration and evaluate the **Hatch Thatch** product.



The test property

Company (ECO Insulation Limited) Commitment

- To make the Hatch Thatch product(s) available for evaluation in a test property.
- To provide details of how the product should/should not be used in the properties that it is targeted at (especially in the test property).
- To assist with determining the suitability of properties offered by a local housing association.
- To provide an example of fitting the product in the test property to the parties involved.
- To work with BECCI to analyse the test results and determine how they demonstrate the performance of the Hatch Thatch product.

University (BECCI) Commitment

- To work with a local housing association, to identify one of their vacant properties that would be suitable for testing the performance of the Hatch Thatch product.
- To work with a local housing association to prepare the property so that it is suitable for the following testing (e.g. re-connecting services such as gas).
- To test/measure the performance of the ceiling and the loft hatch in terms of energy losses via:
 - Loss of energy by conduction into the loft space by the movement of heat energy through the material of the ceiling into the loft space
 - Loss of energy by convection of energy into the loft space by the movement of air from the inside of the property into the loft space
- To make any adjustments to the results of the above tests so that they are applicable for assessing the performance of the Hatch Thatch product.
- To provide a report to the client containing details/results of the individual tests and any explanations of the methodology used to demonstrate the performance of the Hatch Thatch product.



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Section 2: Implementation Report, description of the work undertaken and outcomes

Work undertaken

- Wolverhampton Homes (an Arm’s Length Management Organisation which manages approximately 30,000 homes on behalf of Wolverhampton City Council) agreed to work with BECCI and ECO Insulations Limited to evaluate the Hatch Thatch product.
- Having inspected several properties, 35 Thrushall Walk (WV11 1XJ) was selected due to it having no insulation in the loft or on the loft hatch.
- The property was fitted with new electric and gas meters and these services were reconnected.
- The gas central heating system was serviced and restarted.
- A temporary internet service was provided using an EE dongle (to allow remote monitoring of temperature and humidity within the property).
- Unfortunately, due to a hole in one of the central heating pipes in the ceiling between the two storeys, the pipe had to be replaced and the ceiling re-decorated.
- The central heating system was also found to be defective and therefore had to be replaced.
- The property was now ready for the testing to commence.
- U-Values measurement tests were performed on the uninsulated ceiling and on the bare loft hatch. It should be noted that these tests take a minimum of three days (72 hours) and can take longer if conditions are not stable (see ISO 9869-1:2014). In fact, the ceiling test took more than three days.
- New insulation was installed at the property to a depth of 300 mm and a bag-of-bits was installed onto the loft hatch. This local building company has regularly been used by Wolverhampton Homes and laid the insulation and bag-of-bits in the standard industry fashion.



- U-Values measurement tests were performed on the insulated ceiling and on the loft hatch with its bag-of-bits. Note: The insulation material was Knauf Loft Roll 44, which has a lambda of 0.044 W/mK
- The bag-of-bits was removed and replaced with the Hatch Thatch product. The product was fitted by the ECO Insulation Limited director, Mr Shaun Grimes. The installation demonstration was shown to a representative of Wolverhampton Homes.
- A U-Value measurement test was performed on the loft hatch; fitted with the Hatch Thatch product (there was no need to re-test the ceiling). Note: the base material has a Lambda of 0.389 W/mK.
- Thermal imaging was taken of the property early in the morning (6:30 am) to help determine where



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heat was escaping (under normal circumstances, i.e. without covering normal air vents or leaky windows). A blower door was also fitted over the back door to reduce the pressure inside the property. The thermal imaging camera was then used to determine where air was entering the property (i.e. air bricks, fans, leaky windows, leaky doors and the loft hatch).

- A temporary hood was fitted around the loft hatch enclosure so that the air escaping around the loft hatch could be measured more accurately using an anemometer (a device for measuring air speed). The Hatch Thatch product was then removed and the air speed measurements were taken again.
- After all testing had been completed, the Hatch Thatch product was re-installed and the property was returned to Wolverhampton Homes. This property would then go through the usual process of preparation, in readiness for a tenant.

Results report

- The following table is a summary of the U-Value results:

Name of Test	U-Value (Watts Per Metre Squared Degree Kelvin)
Ceiling Uninsulated	3.676 W/m ² K
Loft Hatch Uninsulated	3.402 W/m ² K
Ceiling Insulated	0.189 W/m ² K
Loft Hatch with Bag-of-Bits	0.890 W/m ² K
Loft Hatch with Hatch Thatch	0.149 W/m ² K

It is sufficient to say, in this summary report, that the Hatch Thatch product demonstrated that energy savings (which would lead to carbon reductions) could be made at the test property (35 Thrushall Walk) by:

- Reducing the energy conducted through the material of the loft hatch by way of insulating the loft hatch better than using the bag-of-bits technique.
- Reducing the energy lost through the gaps around the loft hatch by providing a better cover over the edges of the loft hatch. The bag-of-bits did not provide any barrier to warm air escaping from the inside of the house into the cold loft space.

Section 3: Recommendations and Long Term Objectives

Recommendation

ECO Insulation Limited has concluded its activities with the BECCI Innovation Incubator to develop the Hatch Thatch product and the business. These however are collective observations that can be pursued by Eco Insulation:

1. Contact OFGEM (<https://www.ofgem.gov.uk/publications-and-updates/eco3-measures-table>) to clarify whether the Hatch Thatch is an eligible energy efficiency measure under Energy Company Obligation 3 (loft insulation is an eligible measure (https://www.ofgem.gov.uk/system/files/docs/2021/06/eco3_measures_table_v3.8.pdf))
2. (If the Hatch Thatch is an eligible measure under ECO3 then) Contact Energy Company Obligation Obligated suppliers (<https://www.ofgem.gov.uk/environmental-programmes/eco/energy-suppliers>) to see if they are interested in installing Hatch Thatch



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3. Make contact with the National Insulation Association to explore members' interest in Hatch Thatch
4. Contact other councils, social landlords and housing associations to gauge interest in Hatch Thatch
5. Explore the University of Wolverhampton's Smart Concept Fund as a route to secure additional funding. <https://www.wlv.ac.uk/business-services/funding-and-support/the-smart-concept-fund/what-is-smart-concept-fund/>

Section 4: Researcher Time Log

Please complete the following table detailing time spent and activities undertaken in compiling this report.

Name of project staff	Dates	Hours worked	Activity description
Rajiv Dhanjal	December 2020	5	Started analysing the requirements and discussing how to find a property suitable for evaluating the Hatch Thatch product.
Rajiv Dhanjal	January 2021	10	Work with Wolverhampton Homes to identify and then inspect properties for suitability as the property for the Hatch Thatch testing.
Rajiv Dhanjal	February 2021	25	Work with Wolverhampton Homes to prepare 35 Thrushall Walk for the Hatch Thatch testing including reconnecting services, preparing the central heating system and installing remote monitoring. Start the first set of U-Value tests.
Rajiv Dhanjal	March 2021	30	Continue with the U-Value tests after installation of the insulation and the bag-of-bits and then after the Hatch Thatch. Conduct thermal imaging and de-pressurisation. Perform air leakage measurements.
Rajiv Dhanjal	April 2021	10	Analyse the results of the tests/measurements and start writing up the summary report for the company.
Rajiv Dhanjal	May 2021	10	Further measurements on the product and preparation of the main report.
Rajiv Dhanjal	June 2021	5	Complete all reports.



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Section 5: SME/Project Sign-off/Declaration

- I understand that the **BECCI** project is part funded by European Regional Development Fund and therefore that the value of the assistance provided is covered by 'State Aid' regulations.
- I agree that any information provided may be used towards impact assessment of the overall **BECCI** project.
- I understand that if deliberate false information is given I may be liable to prosecution and any assistance received will be recovered.
- Please sign below to confirm receipt of this service.

On behalf of the SME:

Name	Shaun Grimes	SME Name	ECO Insulation Ltd
Position	Director		
Authorised Signatory		Date	

On behalf of the BECCI Project:

Name	Rajiv Dhanjal	Name	Glenn Barrowman
Knowledge Transfer Manager	<i>R. K. Dhanjal</i>	BECCI Project Manager	<i>Glenn Barrowman</i>
Date	11th June 2021	Date	11th June 2021

Please note: Please keep this document for at least three years from the above date, as evidence for future de Minimis aid declarations that you may make.