Institution: University of Kent

Unit of Assessment: C16 Architecture and the Built Environment

Title of case study: Petit Bayle

1. Summary of the impact

Le Petit Bayle is a house in France that was designed by Jef Smith, a member of Kent School of Architecture's Centre for Architecture and Sustainable Environment, as co-designer with Victoria Thornton, completed in 2008, and which is Smith's output JS1. The range and significance of this impact is demonstrated through its dissemination to a broad and international audience of architects; architecture students in general; and architectural technicians / other building and design practitioners through a range of media. Wide coverage of the project already demonstrates impact on the primary dissemination media for architects. In addition, the house has been used as an exemplar project by L'Espace Info Énergie du Conseil d'Architecture d'Urbanisme et de l'Environnement de Midi-Pyrénées (EIE / CAUE) in France which has included study visits and public exhibitions, reaching a wide and international variety of readers and viewers from those with a general interest to specialists working in related fields. The continuing research project consists not only of the design of the house and its execution, but also of observation, post-occupancy assessment, and the formulation for new research and design principles.

Le Petit Bayle has been chosen as a case study by Dr Avi Friedman of the McGill School of Architecture to feature in his forthcoming book *Sustainable Dwellings*.

2. Underpinning research

Jef Smith began work on 'Petit Bayle' in 2006 as an architect in private practice. In January 2007 he became an Assistant Lecturer (without research obligation) at the Kent School of Architecture. From this point onwards he developed his continuing work on the house as a formal, structured research project, the essential elements of which being those developed by Prof Bryan Lawson at the University of Sheffield (outlined, for example, in Jeremy Till's RIBA paper 'What is Architectural Research'). He has taught here continuously ever since, joining the permanent staff as a 0.4 fte Lecturer and ECR in September 2012, and the design and analysis processes have been exercised through teaching as well as through independent research. Smith played an equal part with Victoria Thornton in the original design of the house: see output JS1 'Petit Bayle' [5.3].

Since 2007 Smith has continuously used Petit Bayle – its overall concept, its details, and its post-occupancy feedback – as a basis for teaching in order to maintain a continuous process of research into its function. These aspects of the building were built into project briefs for students at different levels in the school and were discussed through lectures as well as seminars and design projects. This ongoing research continues to play a role in the evaluation of the design for a wider audience. Furthermore, during the design and research process Smith has been involved with the work of the School at all levels, which included engagement with its developing interest in sustainable environments; the establishment of CASE, the School's research centre for sustainable environmental design; and in practice also as a tutor to third-year students required to work on environmental and technical solutions for their buildings.

Petit Bayle is located in the Lot et Garonne region of South Western France. The process of design and research was underway in 2007 and the house was completed in 2008. The house was designed for the use of a single family as a holiday residence; the area is 170 square metres and the cost of the project was €290,000.

Research methodology and questions for the project are described in detail in the output JS1. The most significant questions were: how can local building materials and forms be incorporated into a sustainable building project in an isolated rural location? How can the requirements and details of sustainable design become part of a coherent architectural language that suits the special location of this house? How can the unique aspects of site and orientation be expressed while meeting the demands of sustainable design? What lessons can be drawn from the design

and occupancy of this project for architects operating in similar geographic and climatic situations?

Methodology: Using the site and context as a generator of form, function and materiality, the approach was to understand and explore the various architectural possibilities offered by a steeply sloping rural site. The location offered dramatic views of the surrounding landscape and the fundamental aim was the design of a house that would exploit the potential for useful passive solar gain and cooling, alongside an exploration of locally available, affordable and sustainable materials and building techniques. The early design processes were based on recording site experiences and exploring its potential through a quick turnover of ideas, without being overly precious, whilst remaining bound by some awareness of what could be affordable and practical.

The key research insights for the project take the form of the eventual architectural solution which has been widely published and continues to be analysed. Smith has defined his areas of enquiry as follows:

i) what are the pragmatic and poetic possibilities of a site in a context-based design response?
ii) what is the importance of understanding the opportunities and limits offered by the working practices and technologies of a particular place?
iii) how does a visceral, haptic experience function as an antidote to the increasingly virtual world of contemporary existence?
iv) how do the development of simple, low tech and robust sustainability strategies function as integral parts of the design process, becoming key generators of form and choice of materials rather than the outcome of simple pragmatic and technological developments?

Although these are questions without quantifiable answers, close observation of the house during the latter and current stages of the project has demonstrated some valuable responses. There has been continuous monitoring at a practical level, observing which elements need replacement/ repair; and comparing anticipated robustness (or otherwise) of materials and finishes. Specifically, the strategies to combat-over heating over the summer have been monitored, with better than expected results, although it should be noted that the performance of the house during the unoccupied winter months in terms of energy usage and cost have not yet been methodically tested or monitored. The use of spaces by residents and visitors (including) design professionals has however been monitored and discussed, in particular where this has varied from what was anticipated. Occupation of the project has prolonged the ability to experience and contemplate the building's engagement with the landscape throughout the day, night and the summer months, and to draw conclusions from it.

The design for this house forms part of a continuum of research undertaken by Smith, as an independent architect, as a collaborator, and as the lead design architect in earlier employment: all these projects share common ground with the following aspects of the research design process: engagement with context as being the key generator of form by careful consideration of the approach up and into the building; orchestration of routes through the building; and the controlling of views and manipulation of light.

3. References to the research

3.1 Jef Smith, REF output JS1, 'Petit Bayle'

3.2 http://www.meldarchitecture.com/projects/residential/petit-bayle

4. Details of the impact

The research project behind 'Petit Bayle' consists not only of the original design for it, but also the construction and continuing experience and use of it. This case study is based mainly on the claim that the widespread reporting of the project to a professional and public audience **and, specifically, the international recognition of it in the form of the publication of its original detailing in architecture handbooks or visits to it by sustainable design professionals**, are

evidence of continuing impact in the following respects:

REACH: impact on creativity, culture and society: the production of this cultural artefact has enhanced cultural understanding of phenomena; informed public and professional attitudes and values; has been widely shared with general / professional readers on sustainable house design

REACH: Economic, commercial, organisational impacts: the artefact demonstrates the development of new or improved materials, products or processes, as described in output JS1

SIGNIFICANCE: impact on the environment: the research process and the artefact are impacting on environmental or architectural design standards or general practice, and influencing professional practice, as evidenced by the publication of details in a textbook

SIGNIFICANCE: impact on practitioners and professional services: the artefact influence on professional standards; development of resources to enhance professional practice; use of research findings in the conduct of professional work or practice; professional practice has been informed or stimulated by research findings; research has challenged conventional wisdom, stimulating debate among stakeholders.

SIGNIFICANCE: the construction of the project has had some **local economic impact**

1 REACH – details of impact

Articles on Petit Bayle reached a very large number of general and professional readers through its publication in a variety of different forms of dissemination. The output JS1 reproduces the articles. Circulation numbers [c], print run [p], and typical monthly website page impressions [i] are given here according to the most recent figures available from the source itself, where available:

A Professional readership

Journals: *Architectural Review*, January 2009, pp 74-77: 12,078 [c]**;** *Architect's Journal* 15 January 2009, pp. 22-23: 7,415 [c]**;** *RIBA Journal*, August 2008, p. 10: 28,544 [c]; website: 57,000 [i]. Educational textbook: *Detail in Contemporary Residential Architecture*, by Virginia Macleod, May 2007, ISBN: 978-1856694827, pp. 34, 56, 69, 196, 237, 334 [pr] 5,000 UK; 4,000 US; 2,000 France; 3,000 Turkey.

B General readership

Magazines: *Grand Designs*, September 2009: 30,820 [c]; *Arper* [no figures available]**.** Book: *The New Natural Home*, Dominic Bradbury, 3/ 2011, ISBN 978-0500515617, pp. 239-245: [pr] 4,500.

C International publications

CAUE (French, professional readership http://www.caue-mp.fr/base-documentaire/bibliographie-maison-ecologique-conception.html; further reports at http://www.ladepeche.fr/article/2012/07/15/1400530-saint-amans-de-pellagal-le-caue-a-organise-une-visite-de-maison-de-vacances.html; *Eco Maison Bois*, Sept / Oct 2013, pp. 52-57: 58,000 [c]; *Living & Design* (Taiwan, general readership) estimated monthly circulation 10,000-15,000.

D Internet publications

ArchDaily 07.07.09: 183,403 page impressions for this page as at November 2012 (latest figure available – see [5.4])

http://www.archdaily.com/27675/petit-bayle-meld-architecture/

Archidose 29.12.2008*:* 6,000 page impressions for this page as at November 2012 (latest figure available – see [5.5])

http://www.archidose.org/Dec08/29/dose.html

World Architecture News [no date]: 1,300,000 [i];

http://www.worldarchitecturenews.com/index.php?fuseaction=wanappln.projectview&upload_id=10494

DeZona (Bulgaria), 20.07.09 [no figures available].

2 SIGNIFICANCE – details of impact

The primary claim made for this impact is that the prominence of the building in the professional press has contributed to the current professional debate around the architectural language of sustainable design, whilst providing clear visual images and architectural solutions for many current design questions.

Significance to professionals: Significance to professionals is demonstrated by the prominence of the project in three of the major British professional journals, the *Architectural Review*, the *Architect's Journal*, and the *RIBA Journal*, and several heavily visited international websites, making it unmissable at a time when the elements, details and language of sustainable architecture and environmental design are constantly being discussed. Equally, the building has started to host visits by professionals. On 10 July 2012 a group of 20 sustainable architecture professionals visited the house in an event organised by Espace Info Energie de Tarn-et-Garonne (part of CAUE, conseil d'architecture, d'urbanisme et de l'environnement) and further organised visits are planned [5.1]. The house featured as an exemplary achievement project in CAUE's 30th Anniversary exhibition. In the words of the visit organiser, CAUE's sustainability design expert Karine Ourceval: 'un très grand merci pour la visite. . . j'ai été ravie de decouvrir et faire decouvrir votre projet. Comme l'ensemble des participants, j'ai été conquise. Votre travail m'a beaucoup touché' [very many thanks for the visit…I was delighted to descover your project and introduce it to others. Like all the participants, I was enthralled. Your work greatly touched me'] [5.2].

The appearance of details of the house in the international textbook *Detail in Contemporary Residential Architecture* enables their embedding into future practice, especially for example by the many architecture and building students who use the book.

Significance to the general public: The house was featured in *Grand Designs* magazine which has a substantial regular readership in particular among those intending to carry out domestic building influenced by cutting edge sustainable design, as well as in *The New Natural Home*. It has been chosen by Dr Avi Friedman of the McGill School of Architecture to feature in his forthcoming book *Sustainable Dwellings*, to be published by the mass market art and design publisher Rizzoli (New York), because, in Friedman's words, of its 'unique urban solution, outstanding architectural design, environmental concerns, and for being exemplary in [its] innovation and detailing' [5.1]. The house has also featured over six pages in the French magazine *Eco Maison Bois* (circ. 58,000).

Economic significance: the construction of the house demonstrated an investment of €290,000 in the local economy for the building process alone, mainly, it being in the nature of the project, in the form of local labour and local materials.

5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 Detailed letter from Dr Avi Friedman, McGill School of Architecture, Montreal, to explain the significance of the project to general and professional readership;

5.2 Message from CAUE (L'Espace Info Énergie du Conseil d'Architecture d'Urbanisme et d'Environnement) to refer to the value of the house for sustainable design experts and their visit;

5.3 Vicky Thornton, to confirm Smith's role as co-designer.

Written Statements:

5.4 confirms over 180,000 webpage hits for *ArchDaily* (at November 2012);

5.5 confirms 6,000 hits for *ArchiDose* (at November 2012).