

# EARTHSIPS IN EUROPE

SECOND EDITION

Mischa Hewitt and Kevin Telfer



bre press



---

# EARTHSIPS IN EUROPE

Second edition

Mischa Hewitt and Kevin Telfer



Published by IHS BRE Press

IHS BRE Press publications are available from  
[www.brebookshop.com](http://www.brebookshop.com)

or

IHS BRE Press

Willoughby Road

Bracknell RG12 8FB

Tel: 01344 328038

Fax: 01344 328005

Email: [brepress@ihs.com](mailto:brepress@ihs.com)

Printed on paper sourced from responsibly managed  
forests

Front cover image: The Groundhouse, Brittany

© Daren Howarth

Back cover image: Earthship France, Normandy

© Kevin Telfer

Index compiled by Margaret Binns

[www.binnsindexing.co.uk](http://www.binnsindexing.co.uk)

Requests to copy any part of this publication should  
be made to the publisher:

IHS BRE Press

Garston, Watford WD25 9XX

Tel: 01923 664761

Email: [brepress@ihs.com](mailto:brepress@ihs.com)

The authors and publisher accept no responsibility,  
nor liability, in any manner whatsoever for any  
error or omission, nor any loss, damage, injury, or  
adverse outcome of any kind incurred as a result  
of the use of the information contained in this  
book or reliance upon it. Readers are advised to  
seek specific professional advice relating to their  
particular construction project and circumstances  
before embarking on any building work.

The publisher accepts no responsibility for the  
persistence or accuracy of URLs referred to in  
this publication, and does not guarantee that any  
content on such websites is, or will remain, accurate  
or appropriate.

**EP 102**

**© Mischa Hewitt and Kevin Telfer 2007, 2012**

**First published 2007 (ref. EP 78)**

**Second edition published 2012**

**ISBN 978-1-84806-236-8**

# CONTENTS

---

Preface	vii
Acknowledgements	ix
About the authors	xi
1 INTRODUCTION	1
2 WHAT IS AN EARTHSHIP?	11
3 CONSTRUCTION METHODS	25
4 BUILDING WITH WASTE	39
5 RENEWABLE ENERGY AND POWER SYSTEMS	55
6 WATER	69
7 EUROPEAN BUILDS	89
Earthship Fife	91
Earthship Brighton	94
Earthship France	97
Earthship Valencia	101
The Groundhouse, Brittany	105
Earthship Almeria	109
8 PASSIVE SOLAR DESIGN AND MONITORED THERMAL PERFORMANCE	115
9 CONCLUSION: THE FUTURE OF EARTHSHIPS IN EUROPE	145
APPENDIX	158
REFERENCES AND NOTES	160
INDEX	167

---

Oscar Briz levels rammed tyres at Earthship  
Valencia, 2005 © Lisa-Jane Roberts and Oscar Briz



# PREFACE

---

This new edition sets out to be rather different to the first edition. To begin with, we have widened the scope of the book to include the whole of Europe, rather than just the UK. Second, we have told the stories of the people who have built earthships in Europe in order to gain both practical insights and to learn more about them, their motivation and experiences. Third, we have interrogated in much more detail whether the US-developed earthship paradigm has been translated into genuinely effective building performance in built European examples. We aimed to be as objective as possible in doing this: no sacred cows. Fourth, we have been more comprehensive and detailed across the board with the information and analysis we present, especially after studying the thermal performance of Earthship Brighton. Only in this way could we come to any meaningful conclusions. And, last of all, this has been an ideal opportunity to evaluate a more general ‘ten years of earthships in Europe’ (when we started work on this new edition – in 2010 – precisely a decade had passed since Mike Reynolds first spoke in Brighton and kick-started the European earthship movement).

TV presenter, architectural pundit and self-build guru Kevin McCloud wrote the foreword for the first edition and there is an element of *Grand Designs* in this one too – one of the buildings featured herein was also on the 2009 series of the Channel 4 show, and the review of earthship projects are also case studies focusing on people’s personal self-build stories.

*Grand Designs* is all about individual aspiration (collective, at a stretch, in the sense of most of the participants are couples). But is it possible to find a housing model that satisfies intensely personal dreams and desires while at the same

time delivering outcomes that benefit the wider population and environment by being genuinely sustainable? After all, legislation and planning from governments can only go so far in countries with market economies where people are as commonly referred to as consumers as they are citizens. People need to want to live in sustainable buildings as well as being told that they should. But choice is restricted by what is available in the marketplace and, so far, very few low carbon homes have been built, and certainly not in a way that reflects the complexity of what different people want from a house. It means that, for most people, the aspiration remains out of reach. Self-builders, though, are people who decide to take matters into their own hands: ‘forget about what the government wants us to do; forget about the rubbish that housebuilders are putting up: we’re going to do it ourselves.’ Earthships are entirely representative of this independent attitude.

Earthships are generally individualistic buildings, even if their construction often involves a great deal of communal effort; yet they claim to deliver benefits for the wider environment. In some cases, as we demonstrate in this book, people’s motivation for building their own earthship is not at all about environmental sustainability, but for other reasons, like long-term financial security. These things are linked but this is not always obvious and most people would accept that doing something for money or doing it to save the planet should be regarded as different types of rationale. Although this in itself is a way of thinking that needs to change: earthships suggest that people can both be more financially free and more socially responsible at the same time. And this in turn suggests that certain forms of sustainable housing are not, in fact,

part of some illusory, wishy-washy left-wing dream in the way they are often portrayed to be by critics.

But whatever the motivation for building an earthship, you need, to begin with, a building that works, or you'll waste tonnes of money and burn carbon like it's going out of fashion (which, of course, it is). This book is not a campaigning screed: 'build an earthship; they're the future.' Nor does it aim to be a glossy consumer pitch, saying 'look how cool you could be if you lived in one of these tyre homes'; nor is it a coffee table book nonchalantly surveying the scene. Instead, we explore – as objectively as possible – the pioneers' stories to examine whether the first generation of earthships

built in Europe do work, and if not, then what can be done to make the next generation work better. Buildings that function effectively can dramatically improve people's lives in many different ways. Nice ideas that don't work are a waste of everybody's time. We – the authors – passionately believe in many of the visionary ideas that have gone into creating earthships. And we hope that this book helps to develop the vision of what earthships can achieve so that more people in Europe – and the environment as a whole – can benefit from them.

Mischa Hewitt and Kevin Telfer,  
July, 2012



Hybrid earthship hut at night (Taos, New Mexico)  
© Kirsten Jacobsen



## ABOUT THE AUTHORS

---



**MISCHA HEWITT** is a sustainability consultant and project manager. He has MSc Architecture: Advanced Energy & Environment Studies from the Centre for Alternative Technology/University of East London and is also a Certified Passivhaus Designer. He is also director of Low Carbon Trust ([www.lowcarbon.co.uk](http://www.lowcarbon.co.uk)) where he project managed the award winning Earthship Brighton project, and runs a range of sustainable construction courses.

Mischa runs the sustainable building company Earthwise Construction ([www.earthwiseconstruction.org](http://www.earthwiseconstruction.org)) based in Sussex and in recent years has organised many environmental events, including the 'Eco Open Houses' weekends in Brighton & Hove and several conferences. He is also a trustee of the AECB – the Sustainable Building Association ([www.aecb.net](http://www.aecb.net)).

In his spare time he plays the piano and composes classical music.



**KEVIN TELFER** is an author and journalist. He first found out about earthships when he interviewed Mike Reynolds at Earthship Brighton on an assignment for *The Architects' Journal* in 2003. He has been fascinated by them ever since. He has also written about earthships for *The Guardian* and *The Idler* and was the co-author of *Earthships: Building a Zero Carbon Future for Homes* published in 2007 with Mischa Hewitt.

He is the author of *Peter Pan's First XI*, nominated as one of the 2010 books of the year in *The Guardian*, *The Telegraph* and *The Sunday Times* and shortlisted for the Independent Booksellers book of the year award in 2011. He also co-wrote *Grand Designs Abroad* with Kevin McCloud and *The Remarkable Story of Great Ormond Street Hospital*. As a journalist he has written for *Green Building Magazine*, *Grand Designs* magazine, and *Green Futures*, among others.

He is married and lives in the New Forest.

---

Entrance to Earthship France, Normandy  
© Kevan and Gillian Trott



# 1 INTRODUCTION

---

## BACKGROUND

The first edition of this book was written when the construction industry and legislators in the UK were, for the first time, having to engage seriously with sustainable building and the challenges of a low-carbon economy. The 2006 UK government-commissioned Stern Review, *The Economics of Climate Change*, was one of the main catalysts for this engagement. It recommended that early action to try to both minimise and mitigate the damaging impacts of climate change was economically far preferable to inaction. In terms of housing, the report stated that ‘It is vital that homes and other buildings are as sustainable and eco-friendly as possible. Further tough action is still needed to deliver significant energy use reductions in existing homes, but within a decade [we] want every new home to be zero carbon’. Policy initiatives such as

the Code for Sustainable Homes<sup>[1]</sup> and the Climate Change Act<sup>[2]</sup> soon followed. The first edition of this book published in 2007 argued that there were difficulties in using earthships as the prototype for the required new wave of zero-carbon, sustainable mass housing in the UK. But, nonetheless, we suggested that many aspects of earthship design could inform architects, legislators, housebuilders and others on the road to achieving this goal.

The prophecy that earthships would not become an integral part of plans for sustainable housing has so far been fulfilled. A small number of earthships, though, have been successfully completed across Europe. And it is these European builds that form the focus of this book – they essentially remain prototypes of a building approach that was first developed in the arid, high-altitude desert of New Mexico, and has now been translated to a variety



Figure 1: Hut House kitchen (Taos, New Mexico) with bananas growing in greywater planter © Kirsten Jacobsen

---

## EARTHSHIPS IN EUROPE

This second edition charts the building of the first earthships in Europe. It offers lessons about sustainable architecture and the legislative and regulatory culture that affects their construction by looking at energy, water, building with waste, and construction methods, and assessing the future of these buildings.

The first earthships were pioneered in the desert in New Mexico, but have they been successfully translated into a European setting? This book includes detailed case studies of earthships in France, Spain and the UK, and a general round-up of other projects across Europe. It also includes analysis of the most detailed thermal monitoring ever carried out on an earthship and the only airtightness test undertaken.

The book predicts the likely future of earthships in Europe – whether they will become a model for large-scale low-carbon housing or remain the preserve of a few brave self-builders.



## THE AUTHORS

**MISCHA HEWITT** is a sustainability consultant and was the project manager of the Earthship Brighton project. He is a director of the Low Carbon Trust, a director of a green building specialist company, Earthwise Construction, a trustee of the AECB – the Sustainable Building Association, and is also involved in many other environmental projects.

**KEVIN TELFER** is an author and journalist and has been writing about earthships for nine years. He is also the author of *Peter Pan's First XI*, *The Remarkable Story of Great Ormond Street Hospital* and co-wrote *Grand Designs Abroad* with Channel 4 TV presenter Kevin McCloud. As a journalist he has written for *The Guardian*, *Green Building Magazine*, *Grand Designs* magazine and *Green Futures*, among others.



IHS BRE Press, Willoughby Road  
Bracknell, Berkshire RG12 8FB  
[www.brebookshop.com](http://www.brebookshop.com)  
**EP 102**

ISBN 978-1-84806-236-8

