Contents

Introduction 8

1.0 DESIGN 10

1.1 What is a good building? An introduction to the key principles of good buildings 12

1.2 Beauty, utility and economy in action Archives and museums provide useful insight 22

1.3 Buildings as sculpture When form overrides function to produce bad buildings 36

1.4 Eco-bling - innovation and aspiration Aspiration and innovation can bring questionable results 44

1.5 Problem-solving designs The features of a good building design process 52

1.6 The search for quality What the designer must bring to the process - the need for care 58

1.7 A modern vernacular Four principles coming together to shape a process for designing and producing good buildings 62

1.8 The modern vernacular in action Applying the four principles in action in the field of housing design 72

1.9 Self-build Lessons from an approach to housing more akin to the idea of a modern vernacular 82

1.10 Sustainable neighbourhoods How the principles we have learnt from housing can inform good places, towns and cities 92

2.0 REDUCING ENERGY 104

2.1 Comfort and sufficiency Both important considerations, but what kind of 'comfort' and how much space do we need? 106

2.2 Closing the performance gap Why many buildings do not achieve their planned minimum-emission performance **114**

2.3 Form factor, massing and shape How size and shape are often fixed before detailed cost, energy or structural analysis are performed **118**

2.4 Environmental modelling and targets Numbers and targets are crucial to an understanding of how to improve the performance of buildings **124**

2.5 Passive solar design Shifting the focus from passive solar gains to glazing design to serve the comfort of occupants **132**

2.6 Why Passivhaus? The benefits, limitations and myths surrounding the use of this highly effective building standard **146**

2.7 Buildings must breathe Draught-free construction – and the resulting need for moisture and odour control – are essential **164**

3.0 ENVIRONMENTAL IMPACT CONSTRUCTION **170**

3.1 Heavyweight or lightweight? Advantages and disadvantages of both approaches and some myths explored **172**

3.2 Upfront carbon emissions How to reduce emissions arising from the act of construction, alongside other environmental impacts **178**

3.3 The more details, the more devils Principles for detailing to create robust buildings that achieve design, performance and sustainability aims 190

3.4 Elements of good building Approaches to the design of foundations, raised ground-floor construction, non-loadbearing walls, flat roof construction and windows 198

3.5 Services Efficient building services should be integrated into the design from an early stage 218

4.0 THE BUSINESS OF BUILDING 226

4.1 Land Focusing on the issue of land ownership and value, huge influencers on what is built 228

4.2 Design education and post-occupancy evaluation How to acquire the skills, knowledge and values designers need; learning what works and what doesn't 234

4.3 Cost and value Why do costs vary? Who benefits from value? How to reduce uncertainty and control costs 240

4.4 Value engineering in design Understanding how buildings perform and learning from experience 244

4.5 Appointing a design team and contractors A constructive approach to finding the right team and managing costs, quality and time 252

4.6 Risk management and regulation Risks that cannot be avoided and how to mitigate them, and the uses and limitations of regulation 262

Afterword 274

Notes on the authors 277

Chapter notes 278

Acknowledgements 280

Image credits 281

Index 282