LEARNING LOOPS IN SUSTAINABLE DESIGN: APPLYING SOCIAL RETURN ON INVESTMENT (SROI) TO BUILDINGS

A thesis submitted to The University of Manchester for the degree of Doctor of Philosophy in the Faculty of Humanities

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<tr>
<td>AEDET</td>
<td>Achieving Excellence Design Evaluation Toolkit</td>
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<td>BACO</td>
<td>Best Available Charitable Option</td>
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<td>BCO</td>
<td>British Council for Offices</td>
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<td>BER</td>
<td>Basic Efficiency Resource</td>
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<td>BREEAM</td>
<td>Building Research Establishment Environmental Assessment Method</td>
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<td>BSC</td>
<td>Balanced Scorecard</td>
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<td>BUS</td>
<td>Building User Survey</td>
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<td>CCG</td>
<td>Clinical Commissioning Groups</td>
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<td>CEO</td>
<td>Chief Executive Officer</td>
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<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<td>DQI</td>
<td>Design Quality Indicator</td>
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<td>ESRC</td>
<td>Economic and Social Research Council</td>
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<td>FF&amp;E</td>
<td>Furniture Fittings &amp; Equipment</td>
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<td>FGF</td>
<td>Feeling Good Foundation</td>
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<td>GP</td>
<td>General Practitioner</td>
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<td>HACT</td>
<td>Housing Associations Charitable Trust</td>
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<td>LEED</td>
<td>Leadership in Energy and Environmental Design</td>
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<td>MCA</td>
<td>Multi-criteria analysis</td>
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<td>NAVCA</td>
<td>National Association for Voluntary and Community Action</td>
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<td>nef</td>
<td>New Economics Foundation</td>
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<td>NHS</td>
<td>National Health Service</td>
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<td>NWDTC</td>
<td>North West Doctoral Training Centre</td>
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<tr>
<td>NWY</td>
<td>North West and Yorkshire</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>OASIS</td>
<td>Ongoing Assessment of Social Impacts</td>
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<td>PAB</td>
<td>Professional Advisory Board</td>
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<td>PCT</td>
<td>Primary Care Trusts</td>
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<td>PLACE</td>
<td>Patient-Led Assessment of the Care Environment</td>
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<td>POE</td>
<td>Post-occupancy Evaluation</td>
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<td>Probe</td>
<td>Post-Occupancy Review of Buildings and their Engineering</td>
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<tr>
<td>REDF</td>
<td>Roberts Enterprise Development Fund</td>
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<td>RIBA</td>
<td>Royal Institute for British Architects</td>
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<td>RSA</td>
<td>Royal Society for the Arts</td>
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<td>SAA</td>
<td>Social Accounting and Auditing</td>
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<td>SHA</td>
<td>Strategic Health Authorities</td>
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<td>SIMPLE</td>
<td>Social Impact Measurement for Local Economies</td>
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<td>SRA</td>
<td>Social Return Assessment</td>
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<td>SROI</td>
<td>Social Return on Investment</td>
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<td>STS</td>
<td>Science and Technology Studies</td>
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<td>UK</td>
<td>United Kingdom</td>
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Learning loops in sustainable design: applying Social Return on Investment (SROI) to buildings

ABSTRACT

Design quality work has sought to identify the impact of building design on users during the last 25 years. However, it has rarely considered the role that social context plays in this relationship, an issue that dovetails with the emerging concept of “social value”. To drive learning in design, the social value of buildings requires measurement and dissemination, yet existing post-occupancy methodologies have focused on technical building performance rather than user experience. A shift in evaluative focus is needed. The social value of buildings is conceptualised as the mutual interaction between physical building design, active building users and the dynamic social relations that exist within the community of building users. This research has investigated the effective measurement of the social value of buildings and its potential influence on learning in design and commissioning processes, through the critical application of a social impact methodology called Social Return on Investment (SROI). Three case buildings were selected from the nonclinical healthcare sector with differing levels of user-centred design to trial SROI and develop a framework for its application to the built environment. SROI is designed to quantify complex social outcomes, identified through qualitative stakeholder engagement, and generate a transferable metric in the form of a monetised return-on-investment ratio. A methodological account is given of the challenges faced when applying it to the case buildings and the modifications required as a result, representing a unique information source about applied social value research in buildings. However, the effectiveness of SROI at measuring the social value of buildings is questioned due to the process of simplification required to turn qualitative user narratives into monetised data. Its potential utility as a decision-making tool in the built environment is investigated through engagement with design and commissioning professionals. The findings suggest that SROI has limited utility in design-related decisions, but considerable potential as a high level investment tool to inform funding and commissioning decisions. Due to the accessibility of its methodology and transferability of its results, SROI is well-placed as a tool for end user clients, commissioners and investors, as much as design experts. SROI represents a development in lay (e)valuation practices in the built environment, with broader implications for user-centred learning in the context of the growing wellbeing agenda.
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THE AUTHOR

The author holds a BSc in Geography and an MSc in Environmental Governance from the University of Manchester, awarded in 2009 and 2011 respectively. Her research experience consists of a short research project conducted during the MSc which resulted in a publication (Watson, 2015), the work done for this thesis, and ongoing post-doctoral research since January 2016.
CHAPTER 1: Introduction

1.1 Situating the study

“There is a lack of understanding in the UK around the social value of good design in the built environment.”

“A well-designed and managed built environment contributes to the generation of economic, social and environmental value.”
(Report by the Royal Academy of Engineering, Watson et al., 2015, p.7)

This thesis addresses a complex and long standing issue in the built environment: how to close the learning loops of sustainable building design and ensure future projects are informed by a joined-up evidence base rather than the isolated experience of individual designers. Economic and environmental sustainability dominates existing knowledge about buildings. Developing new methodologies to complement this evidence by providing novel sources of information on the relationship between buildings and users is essential for triple bottom line sustainability in the built environment. The fact such methodologies must capture and communicate the complex and intangible interrelations between people and their environment requires going beyond technical building performance and embracing innovative and interdisciplinary ideas.

The research draws on the social value agenda, a melting pot of people-centred methodological innovation, to experiment with new ways of measuring and disseminating what works in buildings and advance learning in sustainable building design. The introductory chapter briefly outlines the emergence of user-centred design quality as a consideration in the built environment before discussing its crossover with the concept of social value, both as an agenda and as a source of methodological inspiration. The relationship with the CASE partner is outlined, followed by the theoretical framework of the thesis, and the aims and objectives of the study. The chapter closes with a brief statement about the research design and case selection, and an outline of the thesis structure.

1 The industrial organisation which co-supervised this research through an ESRC CASE (Collaborative) studentship.
1.1.1 User requirements in the built environment

Questions of design quality in the built environment have attracted sustained interest in the UK for several decades (Younger et al., 2008; Macmillan, 2006; Egan, 1998), promoting the value of buildings beyond the purely economic and emphasising the importance of understanding how people experience design. The post-occupancy agenda is well-established and has produced a wide-ranging and informative body of work on the complex realities of occupied buildings. Yet, user needs and preferences are habitually prioritised below conventional drivers related to profit, technical regulations and environmental performance in the delivery of the built environment (Vischer, 2008a). The intangible and qualitative nature of user requirements is a recognised concern for their effective measurement and dissemination, resulting in the limited traction of user-centred feedback in the learning loops of design (Macmillan, 2006; Macmillan, 2005).

The need for improved learning about user perspectives in the design of the built environment represents a long standing issue in both the design and construction industry and within interdisciplinary academic debate (Francis et al., 2016; Wheeler et al., 2016; Alker et al., 2014; Vischer, 2008a; Preiser and Nasar, 2007; Preiser and Vischer, 2005; Way and Bordass, 2005). Commissioning and design processes represent sets of ongoing negotiations between the financial budget set for a building project and the aspirations of the client as embodied in the design brief. Decisions made during these processes tend to be based on subjective, isolated experiences of what produces profit, rather than on joined-up thinking about end user evidence from across the sector. The intangible impacts of design on building users are inherently difficult to capture and measure effectively, and post-occupancy feedback has suffered from a lack of transferability, inhibiting learning loops in sustainable building design (Leaman et al., 2010; Stevenson and Leaman, 2010; Stevenson, 2009; Preiser and Vischer, 2005; Whyte and Gann, 2001). Furthermore, a great deal of the early stage activity in the design process is informed by planning requirements, which are wholly focused on the external building facade and streetscape (RIBA, 2013). End user requirements are lost in the negotiation process between complex sets of built environment actors including clients, developers, architects, engineers, and planners (Vischer, 2008a).

Within the academic sphere, a significant body of research has addressed the post-occupancy functioning of buildings through the study of building users and their
experiences, taking the building user as the unit of study. These studies emanate from a wide range of disciplines, including building science (Zhang and Barrett, 2012; Herkel et al., 2008; Raja et al., 2001), engineering and construction (Thomson et al., 2013; Mak and Lui, 2012; Clements-Croome, 2005), facilities management (Price, 2002; Price and Akhlaghi, 1999), environmental psychology (Greaves et al., 2013; Vischer, 2008b), the social sciences (Curtis et al., 2007; Gilbertson et al., 2006), health studies and medical research (Thomson and Petticrew, 2007; Howden-Chapman et al., 2005; Shaw, 2004), and science and technology studies (Berker, 2011; Aune et al., 2009; Guy and Shove, 2000). However, such research has rarely considered social context as a mediating factor in the interactions between buildings and users. Human relations are unmistakable in occupied buildings: the relationship between building design and building users does not occur in a social vacuum. The handling of building users differs across various literatures, from the presence of numerous homogenous individuals lacking in any distinct characteristics or traits, to a fuller appreciation of their social organisation within sets of user groups and scalar user units (Vischer, 2008a). The existence of dynamic sets of social relations within and between these groups, influencing the mutual interactions between building design and users, represents a significant and timely research gap.

The thesis develops existing post-occupancy research on buildings and users through the mobilisation of the influential concept of social value. This endeavour is fundamentally tied to the triple bottom line of sustainable development and emphasises the significance of social imperatives in design, alongside economic and environmental drivers (Dempsey et al., 2011). The concept of social value offers a useful analytical mechanism to draw out the implications of the sociality and contextuality of the building user community and promote wider understanding about the value of user-centred design (Vischer, 2008a). This represents an original contribution as little published research exists which explicitly tackles the social value of building design from the perspective of building users, being only indirectly addressed through work on the wider value of design (Macmillan, 2006; Macmillan, 2005). It has the potential to provide novel perspectives on the relationship between the experiences and opinions of building occupants and design decision-making.
1.1.2 Developing a social value agenda for buildings

The term “social value” has been previously applied to the built environment to consider the impact of design to wider society (beyond the building), for example, in built environment policy (Macmillan, 2005) and arts and humanities research (Flood and Lambert, 2012) regarding areas for future enquiry. The development of post-occupancy research through a social value agenda in buildings represents a unique application of the concept. It has the potential to overcome the identified research gap by promoting thinking about communities of building users, their social relations and the significance of building user group dynamics. The need to develop an appreciation of the social context of buildings through a nuanced understanding of building users in situ represents an important opportunity for future design quality research.

The concept of social value emerged from early ideas of corporate responsibility, ethical economics, and the social enterprise and valuation literatures (Zadek, 2004; Emerson, 2003; Richmond et al., 2003). It is defined as the products and services generated by organisational enterprise that are of value to wider society (Quarter and Richmond, 2001), and the necessity of measuring and evidencing their elusive social value has led to the rise of increasingly sophisticated social auditing and accounting techniques (Zadek, 2004). Social enterprise is strongly encouraged to evidence the social value it produces to enhance competitiveness (Nicholls, 2007) causing a third sector explosion in competitive social entrepreneurs and impact reporting practices (Nicholls, 2009).

Social value has more recently achieved significant traction in UK public sector policy through the Public Services (Social Value) Act 2012, commencing in February 2013 in England and Wales. The Act requires that public service contracts take into account the wider value of a project over its entire lifetime, promoting decision-making based on social outcomes rather than on financial considerations only (Lawlor et al., 2009). In relation, the Procurement Reform (Scotland) Act 2014 came into effect in April 2016 with similar intentions and a Draft Motion for a Social Value Act in Northern Ireland was signed by all parties in January 2016 following government-commissioned research to evaluate the success of the original Act and assess the impact if a similar bill was introduced (Harper, 2012).

There is considerable potential to overcome the de-prioritisation of user requirements in the design of buildings through an engagement with social value. Therefore, this research contributes to the contemporary discourse on social value and its increasingly
practical application to public service expenditure and social enterprise impact. It establishes a conceptual and methodological basis for the association of social value with research on building design and building users, its application emphasising the worth of design beyond profit-driven motivations. It is proposed that applied social value research in buildings could facilitate the dissemination of post-occupancy findings in industry learning loops to realise building design that is optimised for users, as well as economic and environmental performance.

1.1.3 Measuring the social value of buildings

Over the last 20 years, a long series of built environment tools have been designed and promoted as effective methodologies for capturing post-occupancy feedback from building users. However, these methods typically aim to capture and measure superficial causal links between design and user outcomes, without fully analysing the complex interactions between buildings and users. A range of these evaluation methods and tools currently exist (e.g. the PROBE methodology, Design Quality Indicators, Value in Design), yet they do not achieve significant influence within the design and construction industry. This is partly related to the relatively short timeframe of the design process in comparison to the longer timeframe required for effective evaluation, a disparity which currently undermines user-centred building design in practice. However, Mulgan et al. (2006a) offer a methodological take on their failure, related to their predominant basis in the weighting and scoring of pre-identified criteria, termed multi-criteria analysis (MCA). They identify three distinct problems with relying on the MCA approach for post-occupancy evaluation: the qualitative nature of the findings makes transferability difficult, feeding them into budget-focused decisions is problematic, and they focus on measuring design rather than user experiences. A shift in evaluative focus is required to understand the impact of design for building users and, to disseminate best practice effectively, there is a need for robust quantification of post-occupancy feedback that can be easily included in project budgets.

The need to overcome the limitations of existing post-occupancy methodologies by capturing and disseminating the user experience of building design in a more meaningful way dovetails with the recent proliferation of social impact assessment methodologies in use in the third sector. A particularly well-developed social impact valuation tool used across the UK, Europe, North America and beyond is Social Return on Investment (SROI), attracting considerable attention within the social enterprise
sector and, increasingly, the public sector and commercial industry. It is designed for the measurement and accounting of a wider concept of value for the attainment of multi-bottom lines in social enterprise and other mission-led organisations. It was originally developed in the US by the Roberts Enterprise Development Fund (REDF) in the mid-1990s. It has been further developed by the New Economics Foundation (nef) in the UK since the late 1990s with a widely applicable stakeholder emphasis and a standardised methodology that is robust and replicable. The main point of difference for SROI is that it can financialise complex social outcomes identified as the result of stakeholder engagement, representing an evidence base for impact with significant dissemination potential. It is based on traditional cost-benefit analysis and assigns a monetary value to social returns using financial proxies, which are compared against the level of investment to produce an SROI ratio of costs to social outcomes. It presents new opportunities for post-occupancy studies to capture the impact of design for building users, whilst translating the findings in a more effective way in the built environment sector.

The potential of SROI to deliver the quantification missing in current post-occupancy tools and effectively capture and disseminate the intangible impact of design for building users offers a new contribution to the academic and industrial knowledge base. Furthermore, its study represents applied research as part of the nascent social value agenda for building design assessment. The emphasis on social value promotes the investigation of communities of building users, rather than a homogenous collection of individuals, and SROI may constitute a methodology that can incorporate the implications of dynamic social relations within and between user groups, unlike other post-occupancy methods. This research involves an applied study to bridge the disciplines of post-occupancy building science, science and technology studies, and social value literatures. It takes a heuristic approach by applying a social impact methodology, SROI, to the built environment to investigate its effectiveness and usefulness as a post-occupancy evaluation tool. The interdisciplinary contribution to knowledge informs various discourses and debates that range across these areas and, ultimately, helps to draw out the significance and complexity of the user perspective in occupied buildings.
1.2 Research in practice

This project constitutes theoretically-informed, yet applied research with immediate relevance to industry and practice, developed in collaboration and through a co-funded application with the CASE partner Arup. The potential for real world impact was a key motivating factor for the research due to Arup’s interest in SROI and the built environment. This evolved from a previous organisational project (Aspden et al., 2012) where SROI was used in concert with a wider set of longitudinal evaluation activities to understand the impact of an energy saving retrofit scheme in a social housing estate.2 The CASE partner was interested in the potential of SROI as a tool to evidence the value of learning from previous projects and investing in the early stages of the design process to produce considered built environments, designed with the end user in mind.

The outputs of the doctoral project for the CASE partner have included regular meetings, multiple presentations, a webinar, several end user reports, and an ongoing post-doctoral collaboration to develop and validate a multi-item scale to measure wellbeing outcomes in the built environment. Alongside the positive working relationship with the CASE partner, regular contact was maintained with the research lead from an organisation that participated in the research as a case study, including several presentations and project reporting to their Professional Advisory Board. The author also carried out a considerable degree of industry and practice engagement during the course of the work, outlined in Table 1.1.

These activities represented an iterative process of engagement to further thinking in the early project stages, reflect on practical issues during fieldwork, and ensure the research developed in a manner that was impactful and timely. An applied focus has been taken in the project, trialling SROI in the built environment, critiquing its ability to capture the social value of buildings and investigating its potential application, rather than on knowledge transfer processes within the design and construction industry. It was evident that making SROI tangible both as a methodology and a set of results is important in order to consider its potential impact on the learning loops of design in conversation with industry and practitioner audiences. Therefore, the majority of the fieldwork for this project concentrated on the application of the SROI methodology to a series of case

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2 SROI was used to capture aspects like residents’ energy bills savings and benefits to the local economy, not as a form of post-occupancy evaluation. However, this is where Arup’s interest in its potential started.
buildings over a period of 12 months, followed by an ongoing period of desk-based analysis to produce and finalise the SROI results. A set of interviews with built environment professionals was undertaken over the course of seven weeks to disseminate these findings and investigate the potential application of SROI to decision-making processes. The suite of industry engagement activities taken throughout the project have added value to the research by informing this applied emphasis. The ongoing attention and interest from a range of external organisations and groups formed an integral, albeit informal, part of the research design.
<table>
<thead>
<tr>
<th>Date</th>
<th>Organisation</th>
<th>Activity</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 2012</td>
<td>SROI Network member</td>
<td>Face-to-face meeting,</td>
<td>Early discussion of SROI methodology and application to buildings; suggested attendance at Members Exchange</td>
</tr>
<tr>
<td>Feb 2013</td>
<td>SROI Network Members Exchange</td>
<td>Industry conference attendance</td>
<td>Opportunity to gain a picture of the growing social impact sector and projects related to SROI, confirmed built environment as a research gap; contact made at RSA</td>
</tr>
<tr>
<td>Aug 2013</td>
<td>Royal Society for the Arts (RSA)</td>
<td>Face-to-face meeting</td>
<td>Discussion of practical issues anticipated when applying SROI to buildings; suggested contact with FGF</td>
</tr>
<tr>
<td></td>
<td>New Economics Foundation (nef)</td>
<td>Workshop, SROI Practitioner training</td>
<td>Skills and knowledge for carrying out SROI; suggested contact with nef consulting</td>
</tr>
<tr>
<td>Sep 2013</td>
<td>nef consulting</td>
<td>Phone call</td>
<td>Discussion of practical issues anticipated when applying SROI to buildings; suggested contact Alex Notay</td>
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<tr>
<td></td>
<td>Feeling Good Foundation (FGF)</td>
<td>Face-to-face meeting</td>
<td>Discussion of project and potential dissemination through FGF</td>
</tr>
<tr>
<td>Oct 2013</td>
<td>Alex Notay Ltd.</td>
<td>Face-to-face meeting</td>
<td>Discussion of project</td>
</tr>
<tr>
<td></td>
<td>NHS England</td>
<td>Phone call, contact through Arup</td>
<td>Discussion of project, including potential contacts for later interviews</td>
</tr>
<tr>
<td></td>
<td>Institute of Healthcare Engineering &amp; Estate Management</td>
<td>Industry conference attendance</td>
<td>Opportunity to gain a picture of current thinking about nonclinical healthcare environments</td>
</tr>
<tr>
<td></td>
<td>Design Council</td>
<td>Workshop attendance</td>
<td>Contact made with evaluation team</td>
</tr>
<tr>
<td>Nov 2013</td>
<td>NHS England</td>
<td>Phone call</td>
<td>Discussion of project, including potential contacts for later interviews</td>
</tr>
<tr>
<td></td>
<td>Nesta</td>
<td>Brief discussion via email</td>
<td>Signposted to publication on measuring social value</td>
</tr>
<tr>
<td>Date</td>
<td>Organisation / Contact Details</td>
<td>Event Type</td>
<td>Details</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>May 2014</td>
<td>Urban Planning Authority, Gothenburg</td>
<td>Brief discussion via email, through a mutual contact</td>
<td>Interest in the project is evidence for the widespread scope and scale of the need to capture and communicate the impact of design for end users</td>
</tr>
<tr>
<td>Sep 2014</td>
<td>Arup</td>
<td>Lunchtime talk, Resilience and Legacy series</td>
<td>Dissemination of qualitative and quantitative results from fieldwork, and planned SROI analysis</td>
</tr>
<tr>
<td>Oct 2014</td>
<td>SROI Network</td>
<td>Northwest regional meeting</td>
<td>Discussion of SROI analysis, including issues arising with experienced SROI practitioners</td>
</tr>
<tr>
<td>Nov 2014</td>
<td>NHS England</td>
<td>Brief discussion via email</td>
<td>Received information on healthcare premises costs</td>
</tr>
<tr>
<td>Dec 2014</td>
<td>End user organisation: Professional Advisory Board (PAB)</td>
<td>Workshop between UoM and Arup – Future Cities</td>
<td>Evidence for ongoing interest in this agenda at Arup, and continuing commitment to collaborative research projects</td>
</tr>
<tr>
<td>Mar 2015</td>
<td>End user organisation: PAB</td>
<td>Project report</td>
<td>Dissemination of early SROI results for case building 1 in preparation for PAB meeting, March 2015</td>
</tr>
<tr>
<td></td>
<td>Arup Associates</td>
<td>Global webinar presentation</td>
<td>Dissemination of early SROI results and plans for ongoing collaboration with Arup; evidence for growing interest in social value in the built environment</td>
</tr>
<tr>
<td></td>
<td>FGF</td>
<td>Face-to-face meeting</td>
<td>Discussion of early SROI results, invitation to present at FGF seminar, April 2015</td>
</tr>
<tr>
<td>Apr 2015</td>
<td>FGF</td>
<td>Seminar presentation</td>
<td>Dissemination of early SROI results</td>
</tr>
<tr>
<td>May 2015</td>
<td>Health and Social Care Alliance Scotland</td>
<td>Face-to-face meeting</td>
<td>Discussion of early SROI results with experienced SROI practitioner, confirmation of decisions taken through SROI process (esp. Stage 4, see Section 1.5)</td>
</tr>
<tr>
<td>Date</td>
<td>Event Details</td>
<td>Event Type</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Jun 2015</td>
<td>European Healthcare Design Congress Industry conference presentation</td>
<td>Dissemination</td>
<td>Dissemination of project findings to audience of healthcare built environment professionals; evidence for growing interest in the social value agenda and understanding the impact of built environments from both designers and commissioners</td>
</tr>
<tr>
<td></td>
<td>Vision London Industry conference attendance</td>
<td>Opportunity to gain</td>
<td>Opportunity to gain a picture of growing health and wellness agenda in the built environment through a dedicated session</td>
</tr>
<tr>
<td></td>
<td>Parliamentary Design Commission Inquiry, Call for Evidence: Design, Behaviour and the Built Environment Case study submitted</td>
<td>Dissemination of project findings to policy audience</td>
<td>Dissemination of project findings to policy audience</td>
</tr>
<tr>
<td>Jul 2015</td>
<td>End user organisation: PAB Presentation</td>
<td>Project reporting and continued discussion of post-doctoral proposal</td>
<td>Project reporting and continued discussion of post-doctoral proposal</td>
</tr>
<tr>
<td>Nov 2015</td>
<td>Royal Institute for British Architects (RIBA), Call for Evidence: Design Quality and Performance Case study submitted</td>
<td>Dissemination of project findings to policy and practice audience</td>
<td>Dissemination of project findings to policy and practice audience</td>
</tr>
<tr>
<td></td>
<td>RIBA Research symposium: The Design Quality Proposition Industry conference attendance</td>
<td>Opportunity to gain a picture of current thinking about post-occupancy methodologies and findings</td>
<td>Opportunity to gain a picture of current thinking about post-occupancy methodologies and findings</td>
</tr>
<tr>
<td>Jan 2016</td>
<td>Anthesis Group/FGF member Face-to-face meeting</td>
<td>Discussion about disseminating SROI findings to client groups; evidence for potential application of SROI as an evidence base</td>
<td>Discussion about disseminating SROI findings to client groups; evidence for potential application of SROI as an evidence base</td>
</tr>
<tr>
<td>Feb 2016</td>
<td>Arup Presentation to Corridor Manchester Board</td>
<td>Dissemination of SROI results and post-doctoral research as examples of collaborative research; evidence for ongoing interest in social value agenda in the built environment</td>
<td>Dissemination of SROI results and post-doctoral research as examples of collaborative research; evidence for ongoing interest in social value agenda in the built environment</td>
</tr>
<tr>
<td>Month</td>
<td>Organisations/Groups</td>
<td>Event Type</td>
<td>Details</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Apr 2016</td>
<td>British Council for Offices (BCO) Technical Affairs Committee</td>
<td>Presentation</td>
<td>Dissemination of project findings and post-doctoral research project; evidence for ongoing interest in social value agenda in the built environment</td>
</tr>
<tr>
<td></td>
<td>FGF</td>
<td>Face-to-face meeting</td>
<td>Discussion of project findings and post-doctoral research project; evidence for ongoing interest in social value agenda in the built environment</td>
</tr>
<tr>
<td></td>
<td>End user organisation: PAB</td>
<td>Presentation</td>
<td>Project reporting, discussion of how SROI could be used going forward, and post-doctoral project; evidence for potential application of SROI in organisational process</td>
</tr>
<tr>
<td>May 2016</td>
<td>Campaign for Social Science, Call for Evidence: The Health of People</td>
<td>Case study submitted</td>
<td>Dissemination of project findings to research audience</td>
</tr>
<tr>
<td></td>
<td>Arup</td>
<td>Presentation to Buildings</td>
<td>Dissemination of project findings and post-doctoral research project; evidence for ongoing interest in social value agenda in the built environment</td>
</tr>
<tr>
<td></td>
<td>Arup</td>
<td>Societal Value PhD workshop</td>
<td>Discussion about collaborative PhD process and findings</td>
</tr>
<tr>
<td>Jun 2016</td>
<td>Vision London</td>
<td>Industry conference</td>
<td>Opportunity to get a picture of continued growth of health and wellness agenda in the built environment through a dedicated track of sessions across two days; evidence for rapid growth in industry attention compared to a single session the previous year</td>
</tr>
<tr>
<td>Jul 2016</td>
<td>RIBA: guidance report on post-occupancy evaluation</td>
<td>Invited case study submitted</td>
<td>Dissemination of project findings to policy and practice audience</td>
</tr>
<tr>
<td></td>
<td>Arup/Arup Associates</td>
<td>Phone call</td>
<td>Discussion about using post-doctoral research findings in global post-occupancy toolkit project</td>
</tr>
<tr>
<td>Aug 2016</td>
<td>Arup/Arup Associates</td>
<td>Phone call</td>
<td>As above</td>
</tr>
<tr>
<td>Sep 2016</td>
<td>Arup/Arup Associates</td>
<td>Phone call</td>
<td>As above</td>
</tr>
</tbody>
</table>
1.3 Theoretical framework

The applied research presented in this thesis is inspired by a sociotechnical perspective of building design and building users entwined in dynamic sets of mutual interrelations. The sociotechnical research agenda takes a distinct analytic focus on the mutual relations between humans and technologies (Guy and Karvonen, 2010), and the built environment represents a relatively niche portion of this academic field. Following broader sociotechnical research trends, relating to the innovation of technologies and their appropriation through practices of consumption, it addresses both the design and occupation phases of buildings (Rohracher, 2003; Rohracher, 2001). It has sought to expose the social context that inevitably structures every design process (Yaneva and Guy, 2008) and the usage of every design (Lie and Sørensen, 1996). However, more recent sociotechnical work related to valuation practices has yet to diffuse into its scholarship of the built environment, a research gap that this project inhabits.

A significant proportion of sociotechnical research in the built environment has dealt with the design phase of buildings and sustainable architecture has been a prominent point of inquiry (Fischer and Guy, 2009; Brand and Karvonen, 2007; Guy, 2006; Guy and Shove, 2000; Shove, 1998). Empirical work has typically explored the emergence of energy efficient design in specific spatial and temporal contexts (Guy, 2002). The design process is conceptualised as a black box hiding complex sets of social dynamics, described as ‘architecture in the making’ (Yaneva, 2009, p.5). Another area of sociotechnical research in buildings looks past the achievement of energy efficient design to its embedding and use. In particular, it offers a novel approach to understanding the ‘performance gap’ (Fedoruk et al., 2015; Bordass et al., 2004) that frequently exists between the anticipated and the actual performance of energy efficient technologies in the built environment. The mutual interactions between buildings and users represent the context within which sustainable building technologies function on a day-to-day basis. The choices and activities of users can impact and even subvert energy efficient technologies through processes of appropriation (Berker, 2011; Janda, 2011; Aune et al., 2009; Rohracher, 2003; Guy and Shove, 2000), with a direct influence on their performance.

Sociotechnical questions about the evaluation of performance have received increasing attention in recent years, including the relationship between social processes of valuation, i.e. giving value, and evaluation, i.e. assessing how something attains a
certain type of value (Lamont, 2012). Despite a range of work into the study of valuation and evaluative practices (Antal et al., 2015; Dussauge et al., 2015; Kornberger et al., 2015; Bessy and Chauvin, 2013; Mitra and Tait, 2012; Muniesa, 2011; Sjögren and Helgesson, 2007; MacKenzie, 2006; MacKenzie, 2005; Carruthers and Stinchcombe, 1999), as yet, this agenda is undeveloped in the built environment. Growing interest in valuation practices in the wider sociotechnical literature is seen as a result of the entrenchment of neoliberalism in western markets and the consequent rise in new public management tools such as quantitative performance measures and benchmarking techniques (Lamont, 2012). The study of valuation practices in the built environment is not an explicitly defined area of sociotechnical research, yet there has been a considerable degree of complementary work, particularly in relation to sustainable architecture. The existence of value systems in the design process has been studied in sociotechnical research for years, including the existence of competing environmental logics which produce a plurality of architectural responses with ethical implications for designers (Farmer and Guy, 2010; Guy and Moore, 2007; Guy and Farmer, 2001), the complex sets of outlooks, assumptions and beliefs holding alternative design practices together (Moore and Karvonen, 2008; Brand and Karvonen, 2007), and the ways that perceptions held by designers about the needs and preferences of imagined end users, known as user representations, are inscribed into the built environment (Lewis, 2015; Berker, 2011). Furthermore, sociotechnical scholars have considered ethical implications relating to design as a normative, moral practice (Farmer and Guy, 2010; Brain, 2005), and the impact of designers’ choices on both urban form and wider social change (Yaneva and Guy, 2008; Coutard and Guy, 2007).

Whilst pockets of values-related sociotechnical research in the built environment exist, there is considerable potential for a more developed agenda in the built environment that looks beyond sustainable architecture to the flourishing design quality and post-occupancy literatures. Long standing interest in the value of design (Younger et al., 2008; Macmillan, 2006; Egan, 1998), the rise of user-centred design priorities (Watson et al., 2016b; Vischer, 2008a), and the wider attention being placed on health and wellbeing outcomes of design more recently (Marmot and Ucci, 2015; Jones and Grigoriou, 2014; Ulrich, 1984) suggest that long-standing registers of value in the built environment are being re-ordered along the lines of benefits to building users, rather than for economic and environmental drivers. However, the lack of traction gained by existing post-occupancy evaluation tools to encourage learning about what works and
what does not, has inhibited the formation of successful learning loops (Leaman et al., 2010; Stevenson and Leaman, 2010; Stevenson, 2009) in future design. A small number of sociotechnical studies have begun to address evaluation in the built environment, typically providing a critique of existing methods and their technical focus (Chiu et al., 2014; Oladokun et al., 2012), which fails to consider the mutuality of relations between buildings and people. This ongoing issue represents a prime opportunity for sociotechnical scholarship to investigate the (e)valuation practices at play in the built environment.

The research presented in the thesis tackles this research gap by employing an emerging social impact valuation methodology, SROI, within the built environment sector to investigate its potential to capture and disseminate the significance of user experiences of buildings. This includes its ability to uncover the implications of the social relations that exist within the building user community as a mediating context to design/user interactions. Furthermore, SROI is under study to assess its potential as a tool to facilitate negotiation and learning about social value within the contested terrain of built environment commissioning, design and decision-making processes. The study offers a significant point of departure from existing sociotechnical work on building evaluation as it investigates practitioner viewpoints about the potential usefulness of SROI, rather than solely critiquing its handling of buildings and users.

### 1.4 Aims and objectives

The principal aim of this research is to investigate the effective measurement of the social value of buildings and its potential influence on learning in design and commissioning processes, through the critical application of SROI. Four discrete objectives have been identified to achieve this aim:

i) to conceptualise the “social value” of buildings,

ii) to develop and apply SROI in buildings,

iii) to critically evaluate the effectiveness of SROI to capture and measure the social value of buildings, and

iv) to investigate the usefulness of SROI as a learning and decision-making tool in building design and commissioning processes.
Through a combination of empirical investigation and theoretically-informed evaluative activities, the study offers a unique contribution to post-occupancy research in buildings, developing current understanding of the relationship between design and user experience, and promoting its dissemination to encourage user-centred learning in future development. The study is undertaken in the nonclinical healthcare sector in the UK, yet the insights drawn are relevant for furthering user-centred learning across a wide range of building typologies, including residential, commercial, clinical healthcare, education, retail and leisure, across the developed markets of Europe, North America, Australasia and beyond, as well as to the rapid expansion of urban built environments in emerging markets across Asia and South America, and in developing markets across the global south. The audience for this research includes the academic community across a range of disciplines, the design and construction sector, built environment policymakers, think tanks and research groups, the healthcare sector including charitable support organisations, and the general public.

1.5 Research design

The project bridges the disciplines of post-occupancy building research, science and technology studies, and social impact literatures. It takes a heuristic approach by critically applying SROI to the built environment to investigate its effectiveness and usefulness as a post-occupancy tool. There are two phases to the research program: Phase 1 comprises applied research, critically trialling SROI as a research tool in the evaluation of social value through a set of case study buildings, and Phase 2 evaluates the SROI findings through in-depth engagement with built environment decision-makers to investigate its potential as a tool for learning and decision-making in the commissioning and design processes of buildings. The following sections outline the research phases in more detail.

Phase 1

The first research phase is the critical application of SROI to evaluate three case study buildings taken from the nonclinical healthcare sector. A case-based approach was taken in order to provide distinct test sites for the framework. This is the first time SROI has been applied to buildings in this way, as opposed to the impact of a building-related project within the local community (e.g. Aspden et al., 2012). This required the integration of SROI principles into a post-occupancy framework for the built
environment, based on its six stage methodology as defined in *The Guide to Social Return on Investment* (Nicholls et al., 2012):

1. Establishing scope and identifying key stakeholders
2. Mapping outcomes
3. Evidencing outcomes and giving them a value
4. Establishing impact
5. Calculating the SROI
6. Reporting, using and embedding

A full methodological account of the various qualitative and quantitative research activities is presented in Chapter 3, including semi-structured interviews conducted with the project teams (Stage 1a: establishing scope) and centre managers (Stage 1b: identifying stakeholders), focus groups conducted with the building user groups (Stage 2), user surveys (Stage 3a: evidencing outcomes), and lengthy desk-based analysis including the identification and application of financial proxies (Stage 3b: giving outcomes a value), impact establishment measures (Stage 4), and the calculation and projection of the SROI ratio (Stage 5). Chapter 4 represents an end user SROI report for the charitable organisation occupying case building 1 (Stage 6), feeding into Phase 2 of the research.

**Phase 2**
The second research phase is evaluative, combining conceptual reflection on the effectiveness of SROI at capturing, measuring and quantifying the social value of buildings with critical evaluation of the SROI findings to investigate its potential as a tool for learning and decision-making in the built environment. This was achieved through a combination of desk-based analysis and in-depth, semi-structured interviews with practitioners and professional decision-makers identified through a live project of the charitable organisation mentioned above. The interviewees included designers, clinicians and charitable executive members, and the discussion focused on the ability of SROI to help inform the processes of negotiation that take place within the dynamics of commissioning and designing buildings.

The total number of research participants is presented in Table 1.2.

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3 See Appendices A-G for examples of interview schedules, focus group recruitment, Participant Information Sheet and schedule, user survey, and SROI spreadsheet.
Table 1.2: Number of research participants

<table>
<thead>
<tr>
<th>Phase</th>
<th>Number of participants</th>
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</thead>
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<td><strong>Phase 1</strong></td>
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<td>Project team interviews</td>
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<tr>
<td>Centre manager interviews</td>
<td>3</td>
</tr>
<tr>
<td>Focus groups</td>
<td>47</td>
</tr>
<tr>
<td>User survey</td>
<td>129</td>
</tr>
<tr>
<td><strong>Phase 2</strong></td>
<td></td>
</tr>
<tr>
<td>Practitioner interviews</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>206</td>
</tr>
</tbody>
</table>

1.6 Case selection

The case buildings include three cancer support centres in the UK, selected from the nonclinical healthcare sector which represents an emerging building typology. Its study is both timely and relevant based on significant recent reform within the NHS through the Health and Social Care Act 2012. The legislation replaced Strategic Health Authorities and Primary Care Trusts with Clinical Commissioning Groups and the facilities previously owned by the SHAs and PCTs were transferred to the new NHS Property Services body. This body is expected to dispose of approximately a third of the former estate, whilst simultaneously standardising facilities management and overall asset management. In addition to the legislative changes, the £20 billion Nicholson challenge, set by the former leader of the NHS in England (2011-2014), set a target completion date of 2015 to drive efficiency savings with significant implications for NHS estates (Building Better Healthcare, 2013).

These requirements have driven the consideration of NHS estates as a strategic asset and produced a need for a wider range of settings to deliver care, beyond clinical spaces within NHS ownership (Wearmouth, 2013). Jencks and Heathcote (2010) describe the emerging nonclinical healthcare sector as a new “hybrid building” typology where traditional clinical institutions are morphing into buildings with a range of functions. An ageing population means people are spending longer in healthcare settings, driving a shift towards more varied and people-centred building types. By 2020, almost half of
people in the UK will suffer from cancer at some point in their lives (Macmillan, 2013). Corresponding increases in heart disease and age-related diseases like Alzheimer’s suggest that centres offering “psychological, social and informational guidance” (Jencks and Heathcote, 2010, p.7) will be increasingly in demand with commissioning, design and management processes under the spotlight. The current emphasis on understanding the fundamental influence of building leadership and facilities management in optimising efficient space utilisation (Ellis, 2013) is directly related to the social value of buildings, which is more than a relationship between material design and individual users due to the mediating forces of building management and culture. Furthermore, the calls for dissemination of best practice in asset management and the implementation of governance regimes (Building Better Healthcare, 2013) makes the critical application of SROI to this sector highly relevant, to assess its potential as a decision-making tool.

In academic terms, nonclinical buildings represent an important gap in post-occupancy research in the healthcare sector that are currently dominated by studies on hospital design from either a patient or nursing healthcare professional perspective (Watson et al., 2016b). Research into alternative healthcare spaces, both within and outside of hospitals, and addressing a wider range of building users is less common. Cancer support centres, as a type of hybrid health facility, provide an ideal environment to understand the dynamics of building user groups as their day-to-day functioning and use is significantly different to clinical healthcare facilities. The interaction between different user groups represents the point of interest, preventing the collapse of users into conventional categories, and emphasising the social character of these buildings and their user communities. This project therefore represents timely research into an emerging hybrid healthcare building typology set to be highly significant in the UK in the coming decades.

The selected cancer support centres are comparable in terms of size, purpose and were all completed in the last five years. However, they represent varying levels of user-oriented design, allowing SROI to be trialled in a range of environments to test its applicability and performance. They also offer comparison across distinct funding, governance, and organisational structures, allowing mediating elements such as organisational culture, building management and user group dynamics to be considered within the SROI analyses. This is especially relevant in the context of calls for the NHS to learn from the private and social enterprise healthcare sectors, both of which are understood to lead the way in estate efficiencies (Ellis, 2013), with an anticipated rise in
collaborative long-term strategic estates partnerships by the NHS (Wearmouth, 2013). The case buildings have been restricted to England to ensure comparability of results due to differences across the UK in public sector healthcare policy, and healthcare commissioning and construction processes. The number of cases was based on the resource intensive nature of the SROI methodology to ensure detailed research outputs were produced and a comprehensive evaluation of SROI was possible.

However, the lessons learnt from trialling SROI in nonclinical healthcare buildings have considerable transferability to a range of other building typologies where a service of some kind is being offered to end users or consumers, for example, support centre environments, job centres, youth centres, retail and service environments like shops, banks, restaurants and bars, museums and sports stadia. The findings are also relevant to social spaces and break-out areas in commercial offices and academic workspaces, university learning commons, public libraries, and clinical healthcare buildings like hospitals and primary healthcare centres, and to the communal areas of apartment buildings, assisted living complexes, halls of residence, and prisons.
Figure 1.1: Case buildings
1.7 Thesis overview

The thesis is presented in an alternative format, comprising four academic papers and an anonymised end user report for the occupier of case building 1. This format was selected for a number of reasons. The applied nature of the research makes the findings of interest to a wide audience from academia, industry, the public sector and social enterprise, and the production of a set of publishable papers ensures the timely dissemination of results to maximise impact. The research is also highly interdisciplinary and the paper format is intended to engage a range of researchers in the built environment, urban social science, and science and technology studies.

The publications are predominantly the work of the author of this thesis who designed the study, researched all literature, conducted the various fieldwork, data collection and data analysis activities, and wrote all drafts and effected all revisions on each manuscript. J. Evans, A. Karvonen and T. Whitley are variously included as co-authors on the papers based on their comments on draft versions and revisions in their respective roles as primary, secondary and CASE supervisor to the doctoral research. At the time of writing three papers were published, one was under review and the SROI report was finalised and circulated to the end user organisation.

These distinct but related publications form a coherent body of interdisciplinary work and methodological innovation, as outlined in Table 1.3. The publications correlate to the research objectives and are ordered accordingly, as summarised below.

Chapter 2 provides a comprehensive review of the post-occupancy literature by building typology in relation to the framing of building users. The significance of social context as a mediator of the interactions between design and users is emphasised as a gap in research. The social context of a building is termed building user group dynamics, conceptualised to include factors like organisational culture, social norms and building management. This wider appreciation of the user experience of buildings is concluded to dovetail with the emerging concept of “social value”. This paper is published in Indoor and Built Environment and its key contribution is to emphasise the importance of user groups and user group dynamics.

Chapter 3 outlines the potential of social valuation methodologies to measure and quantify the social value of buildings, with critical insights from the application of SROI to case buildings in practice. The current focus of existing post-occupancy
evaluation tools to measure building performance suggests the need for an evaluative shift towards measuring outcomes in building users. A review of existing social impact assessment methodologies identifies SROI as the most developed methodology, producing a transferable result with dissemination potential in the design and construction industry. Critiques of SROI, both general and practical, are considered before its application to the three case buildings is outlined in detail, including qualitative interviews and focus groups, quantitative user survey design and implementation, and financial valuation using proxies, impact establishment, discounting and payback period calculations. The methodological challenges faced in applying SROI to the built environment for the first time, including the modifications required and the lessons learnt are discussed. The paper concludes with recommendations for future applied social value research in buildings, representing a unique source of learning about the practical undertaking of user-centred, post-occupancy methods. This paper is published in Building Research & Information and its key contribution is the development of a methodology that translates SROI to the built environment.

Chapter 4 is an end user report prepared for the third sector organisation of case building 1. It offers practical, methodological detail and in-depth SROI results for case building 1, representing the first SROI report on the social value of a building. The SROI data is calculated from the actual investment made by the charity. This differs from the data presented in Chapters 3 and 5 which are based on “added cost” of design figures, to represent the value of the additional spend over and above a typical benchmark. Therefore, this chapter shows how SROI would be used in practice, rather than for academic research purposes. The report was reviewed both by the charity and by the CASE partner Arup, and has been published as a collaborative working paper. Its key contribution is the practical application and reporting of the SROI methodology in the built environment.

Chapter 5 proposes a “social value” agenda for buildings which goes beyond physical design to consider the dynamic interactions that exist between people and their built environment as well as the social context that mediates them. The concept of social value is mobilised to facilitate the emergence of user-centred priorities in mainstream design. The requirement for building design to accommodate dynamic communities of building users has not been considered in post-occupancy work, but is a fundamental feature of social value research in buildings. The potential of SROI to fill this gap is
proposed, and the results of its critical application to the three cancer support centres are presented. A qualitative comparison of their “social value” covers their briefing and design processes, physical design features, organisational structures and building management, and the experiences of the building users. The quantitative SROI results include financial impact figures produced by each building in a year, SROI ratios and payback periods. However, the financialised data is not found to be consistent with the qualitative narratives. The effectiveness of SROI at capturing the social value of buildings is questioned, including the discrepancies between the quantitative results of an SROI analysis and the qualitative user narratives about their experiences of the design. The simplified picture that SROI presents of each building is also critiqued, based on its inability to take the complex and dynamic interactions between people and design in a mediating social context into account. This paper is published in Building and Environment and its key contribution is the conceptual application of the SROI methodology in the built environment, including the demonstration of its limitations.

Chapter 6 investigates the usefulness of SROI to promote user-centred learning in future built environment developments, employing a sociotechnical framework of analysis. The study of innovation in the design of buildings, particularly green building technologies, and their usage and potential appropriation is supplemented with more recent sociotechnical advances into practices of valuation. Building evaluation and its effective dissemination is proposed as a key direction for this research agenda, specifically post-occupancy methodologies that promote learning in the built environment. The qualitative results from semi-structured interviews with professional decision-makers of a nonclinical building project are presented, outlining their reactions and opinions on the results of applying SROI to a cancer support centre in the UK. The discussion centres on the usefulness of SROI as an evaluation and dissemination tool in the built environment. Whilst SROI appears to have limited usefulness as a design decision-making tool, its ability to evaluate the performance of a building based on the value generated for the building users has considerable potential to facilitate decision-making in commissioning, funding and investment decisions. The conclusion argues that whilst SROI cannot be used to direct decisions during the design process, its accessible methodology and the transferability of its results has the potential to drive the issue of user-centred design onto the negotiating table as a high level investment tool. This paper will be submitted to Environment and Planning B: Planning and Design in
October 2016, and its key contribution is the development of sociotechnical theory-building around valuation in the built environment.

The concluding and final chapter of this thesis, Chapter 7, brings the publications together into a coherent body of work through a critical discussion of each research objective, the original contribution of the study and its significance, the study’s limitations, prospective areas for future scholarship, and the wider implications of the research.
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Practices of (e)valuation in the built environment: Social Return on Investment (SROI) and sociotechnical inquiry

SROI is conceptualised as a new development in lay (e)valuation practices in the built environment. It measures outcomes experienced by building users, authorising a different type of non-expert value and its significance for learning about the design and occupation of buildings. SROI is found to have limited usefulness as a design decision-making tool, yet considerable potential to facilitate decision-making in high level investment decisions.

Qualitative semi-structured interviews, dialogic in nature

(The first pages of the published versions of Chapters 2, 3 and 5 in can be found in Appendices H-J)
CHAPTER 2: Re-Conceiving Building Design Quality: a Review of Building Users in their Social Context

Indoor and Built Environment: published

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Abstract

Considerable overlap exists between post-occupancy research evaluating building design quality and the concept of ‘social value’, popularised by its recent application to issues of the public realm. To outline this potential research agenda, the paper reviews design quality research on buildings in relation to users and their social context where the term ‘social context’ refers to building user group dynamics, a combination of organisational cultures, management strategies, and social norms and practices. The review is conducted across five key building types, namely, housing, workplaces, healthcare, education, and the retail/service sector. Research commonalities and gaps are identified in order to build a more comprehensive picture of the design quality literature and its handling of users in their social context. The key findings concerning each building type are presented visually. It is concluded that the design quality field comprises a patchwork of relatively isolated studies of various building types, with significant potential for theoretical and empirical development through interdisciplinary collaboration. Users tend to be conceived as anonymous and autonomous individuals with little analysis of user identity or interaction. Further, the contextual impact of user group dynamics on the relationship between building design and building user is rarely addressed in the literature. Producing a more nuanced understanding of users in situ is proposed as an important area for future design quality research.

Key words

Building user, building user group dynamics, design quality, social context, social value, typology of buildings
2.1 Introduction

2.1.1 Design quality research

A significant proportion of the research that exists on buildings addresses post-occupancy issues, rather than design process, and how this relates to the quality and functioning of the building in use. The literature is split between studies whose primary goal is to gather data about building users in order to evaluate design quality (Vischer, 2008a), and those that focus on assessing economic profit (Lützkendorf and Lorenz, 2005) or environmental performance (Cole, 2005). A variety of approaches exist which identify user experience as the unit of analysis but they vary considerably according to their theoretical underpinnings. As outlined by Vischer (2008a), deterministic perspectives that view user behaviour as a result of the environment are located at one end of the conceptual spectrum opposite social constructivist approaches, which emphasise the importance of social context over the built environment in explaining behaviour. Over the last 20 years, the majority of empirical publications on design quality have tended to comply with the deterministic perspective, with typical studies seeking to identify how the design of the building environment impacts on the user producing outcomes in health and wellbeing, behaviour and performance. These studies, if not directly allied to, are often tacitly founded on the principles of environmental psychology or sensory neuroscience, with an emerging research agenda around the holistic impact of design on the human senses (Barrett et al., 2013a). The significance of social context is notably absent from the majority of this literature.

2.1.2 Social context in building design quality

Human relations are an unequivocal presence in occupied buildings. The relationship between building design and building users does not occur in a social vacuum, yet design quality evaluation rarely considers social context as a mediating factor. Buildings house a distinct milieu of users: people with individual identities structured, either formally or informally, into groups of various scales and engaged in dynamic sets of social relations (Vischer, 2008a). To illustrate, within any typical office building there exists a large number of employees, each with individual personality traits and behavioural characteristics. Based on the way that the organisation is run, they are both formally structured in groups, spatially by workgroup (the people sharing a specific working area) (Leaman and Bordass, 1999), and spatially or non-spatially by team and/or department (the people working together based on a project or task), as well as
informally structured in groups based on social ties like collaboration or friendship, also spatially and non-spatially. Every building user is simultaneously a part of multiple building user groups at nested scales, including the individual user, the workgroup, team and/or departmental user, and the organisational user (Vischer, 2008a). Inherently linked to this social structuring are sets of ever-changing social relationships between building user groups at each scale. The picture becomes further complicated in the case of a shared, multi-organisational office building, or a more complex socio-spatial environment with multiple types of interacting user groups moving in and out of different spaces, for example, patients, visitors, doctors, nurses, administrative and maintenance staff in a hospital. The influence of building design quality on the people using it is irreducible from the social context of that environment. The outcomes of design that accrue to building users, whether they are health and wellbeing, behaviour or performance related, are unavoidably influenced by the social context that encapsulates them. The existence of fluid social relations within and between user groups at various scales is captured by the term ‘building user group dynamics’. It is defined as a combination of three interrelating scalar elements: 1) organisational cultures, referring to the traits and mores making up the social order of the organisational, or institutional, user (Smircich, 1983), 2) management strategies, referring to the systems and processes that control/enable (Price and Akhlaghi, 1999) individual users and user groups, and 3) social norms and practices, referring to the tacit knowledge and related behaviour patterns of individual users (Heeroma et al., 2012; Leaman and Bordass, 1999).

2.1.3 Paper aim

There is an increasing need to understand the social context of buildings and building design in use, made apparent by the recent surge of interest in ‘social value’ and its applicability to user-centric evaluation in post-occupancy building research (Mulgan et al., 2006b). Promoting a nuanced understanding of building users in situ represents an opportunity for future design quality research. The aim of this paper is to address this gap, reviewing empirical research in the design quality field in relation to building users and the influence of building user group dynamics. The review provides an original in-depth study of the existing research across a typology of buildings to contribute to and advance current debates in studies of design quality.
2.2 Methodology

This review is based upon the analysis of over 200 publications. It is not presented as an exhaustive review of all user-centric design quality evaluation research, which is great in number and considerably wide-ranging. It is an in-depth exploratory review to generate an improved understanding of how building users and their social context are addressed in the design quality literature. The identification of literature for the review was based on published, English language, peer-reviewed work in academic journals, academic conference proceedings and relevant public sector outlets. As this is an inherently inter-disciplinary field, specialist databases were omitted in favour of a wide-ranging search. A flexible approach was taken with various search terms to allow for a comprehensive exploration of the variety of research, academic and public, that addresses design quality issues. Key search terms used singularly or in combination included “design quality”, “building design”, “building users” and “social value”, with searches for similar words or synonyms, for example, building user/occupant/resident, etc. In addition, the reference lists of publications identified in the literature search were examined for other relevant studies in an informal snow-balling technique.

The selection of publications for inclusion in the review was based on the following parameters:

- Post-occupancy building research of user-centric design quality evaluation
- Empirical studies at the scale of the individual building as opposed to public realm or neighbourhood scale
- Conceptual or review publications addressing this field of research
- Research conducted in developed countries

Publications that did not meet these criteria were excluded, for example, research relating to the design or construction stages of development as opposed to the evaluation of occupied buildings or that conducted in developing countries. A wide range of literature was selected for review including studies from building science, construction and engineering, facilities, human geography, clinical medicine and health studies, environmental psychology, business studies, and retail studies, as well as public sector outputs. The literature was analysed thematically according to the paper aim to understand design quality research in relation to building users and the influence of
building user group dynamics. The themes under exploration were the user outcomes being studied, the handling of building users, and consideration of building user group dynamics. Analysis identified five building types that dominate the design quality literature and the review was therefore conducted across this typology, with the paper structured accordingly. Both commonalities and gaps in the literature were identified and located by building type to form a comprehensive picture of how research on building design in use has developed and can be applied to emerging challenges. The key findings have been presented visually: Table 2.1 summarises the user outcomes that dominate each building type and Table 2.2 identifies how the user is conceptualised in each building type.

2.3 The user in context in design quality research

The empirical work on design quality is united by its focus on the benefits (and dis-benefits) that accrue to the users of buildings which, being problematic to measure, have been termed “intangible outcomes” (Macmillan, 2006). The majority of the design quality literature addresses the impact of design by identifying and trying to capture a range of outcomes in the user related to three identifiable categories: health and wellbeing, behaviour, and performance. Health and wellbeing outcomes concern how users feel, physically and mentally, and examples include recovery rates in hospitals (Ulrich, 1984), incidence of depression in social housing (Wells and Harris, 2007) and satisfaction in office buildings (Armitage and Murugan, 2013). Behavioural outcomes relate to user actions, for example, the attendance rates of school children (Durán-Naracki, 2008) and consumer approach behaviours in retail environments (Areni and Kim, 1994). Performance related outcomes are associated with user achievement of goals or targets, like productivity in office workers (Leaman and Bordass, 1999), the quality of care delivered by nurses (Armstrong et al., 2004) and the academic achievement of students (Barrett et al., 2013b). However, explicit categorisation of user outcomes is rarely made in the design quality literature. Typically, a number of predetermined outcomes to be explored empirically are identified based on a discipline-specific framework or model.

In the relationship between design and building users, the influence of social context as a contributing factor is generally not addressed. Social context is conceptualised here in terms of building user group dynamics, entailing an amalgamation of organisational cultures, management strategies, and social norms and practices in the context of each
building. There are an emerging number of studies that acknowledge the role of contextual factors in mediating the impact of design on the building user. However, they tend not to examine the make-up of different user groups or their dynamics in depth and there is little discernible consistency in how this is conceptualised or how its effect is measured. The following sections review the design quality literature across five key emergent building types: housing, workplaces, healthcare, education, and the retail/service sector, focusing on how the user is framed, the types of outcomes commonly investigated, and the extent to which user group dynamics are considered in the relationship between design and user outcomes.

2.3.1 Housing

Design quality researchers have conducted numerous studies on housing, with contributions from disciplines including building science, health studies, sociology, environmental psychology and clinical medicine. A neighbourhood scale or urban design perspective is more common than research on individual buildings and the majority of the existing work addresses the physical condition of residential buildings, rather than their architectural design features. A common thread running through these studies is the association made between poor housing conditions and health (both self-reported and clinical conditions like respiratory disorders) and wellbeing outcomes (Younger et al., 2008; Shaw, 2004). This includes a small literature on children’s respiratory health specifically (Leventhal and Newman, 2010; Evans, 2004), as well as studies on mental health and the incidence of depression in relation to wellbeing measures like security or status (Wells and Harris, 2007; Newman, 2001). Research on the health and wellbeing ‘co-benefits’ (Howden-Chapman and Chapman, 2012) of housing retrofit due to improved thermal comfort is also prominent (Liddell and Morris, 2010; Thomson and Petticrew, 2007; Goodacre et al., 2002), including the impact of retrofit on mental health (Gilbertson et al., 2012) and on elderly health (Rudge and Gilchrist, 2005). There is no research on wider notions of wellbeing, like inter-family relations and family breakdown, influenced either by housing conditions or residential design.

Overall the majority of the research outcomes are health and wellbeing related, and behavioural outcomes represent a gap in design quality research with relevance to environmental behaviour change in homes (examples of common user outcomes under study in domestic buildings, as well as the other building types, can be found in Table
2.1. Furthermore, housing studies that address architectural design, rather than housing conditions, are generally missing. Weich et al. (2002) contribute a study on the links between mental health and depression and urban built environment design, rather than conditions, but this is at a neighbourhood scale. However, there is an emerging literature relating to the ‘building for life’ and ‘ageing in place’ ethos with an emphasis on flexible design for changing user requirements, as exemplified by the ‘Lifetime Homes’ design standards. This research area has links to elderly user experience and independence (Bernard et al., 2007; Hanson, 2001) and mental health (O’Malley and Croucher, 2005).

There is scant attention paid to the role of social context in mediating the relationship between householders and their housing. Wells and Harris (2007) consider social withdrawal as a mediating factor in the association between housing quality and psychological distress in low income women, where substandard housing restricts socialising within the home, creating the potential for reduced social networks and poor mental health. Whilst the notion of building user groups does not seem immediately applicable to typical single-family housing, however, maintenance and management by an external organisation plays a role in a wide variety of housing types, including rented and social housing, private flats and apartments, assisted living and other dwellings that share external space with neighbours. The nature of this external influence, the speed of response to requests and typical level of interaction with dwellers is anticipated to have an important effect on the experience and behaviour of the user in that environment. In addition, the impact of different domestic management preferences and styles on how the people living in that space enjoy its design is also assumed to be a significant variable. This represents a currently unexplored area of research into design quality which would feed directly into the identified gap on inter-family relations. It is also noted that housing studies tend to focus on nuclear families and elderly residents, with little consideration of other living situations.

2.3.2 Workplaces

Workplaces are the subject of a well-developed empirical literature on design and users which is dominated by research on commercial office buildings, both conventional and green. There is a remarkable gap in design quality research addressing workplace environments and users beyond office buildings. For example, factories, workshops and studios are not represented in these studies. The existing array of office-based studies
display a distinctly commercial nature, focusing on individual productivity and the impact of architectural design, interior office layout, indoor environmental quality and aesthetics (Lee, 2010; Clements-Croome, 2005; Leaman and Bordass, 1999). A wide range of user outcomes are addressed, covering health and wellbeing, behaviour and performance related categories. Office user satisfaction with the working environment is a common research topic, involving thermal comfort, lighting, acoustics, and feelings of privacy and security resulting from the layout of office furniture (Armitage and Murugan, 2013; Heerwagen and Zagreus, 2005). This tends to be linked to environmental control behaviours (Zhang and Barrett, 2012), territoriality and social interaction (Martin and Black, 2006), and individual productivity (Haynes, 2007a). Typically the collected data is self-reported and is justified as an appropriate people-centred method to reveal end-user opinions (Haynes, 2007a). However, the validity of self-reported feedback is questioned by others (Vischer, 2008a).

Whilst satisfaction is one of the most common health and wellbeing outcomes found in the workplace literature, it is rarely studied contextually with reference to the mediating effect of user group dynamics. For example, few studies address the importance of progressive management and communication strategies for the attainment of user satisfaction with their environment. A study by Kato et al. (2009) describe the importance of small-scale issues to users, such as personal comfort, which require greater attention from management when moving into new buildings. The findings evidence the success of management strategies that educate users to read tenant guides and optimise their personal working space, and create opportunities for two-way communication between users and management.

The influence of user group dynamics on the behavioural outcomes of individual users is also seldom addressed. For Vischer (2007), corporate structure and culture act as significant variables in the relationship between environment and user. She argues that a flat organisational structure with an egalitarian culture encouraging decentralised decision-making promotes very different user interaction with design than a hierarchical firm with a competitive and disciplinary culture. Unpacking corporate culture further, managerial and operational decisions are argued to have a significant effect on user behaviour. The influence of managerial culture on users can be categorised into two aspects: normative (how users think they should interact with design) and perceived (how users actually interact with design). The former is addressed by Wells et al. (2007) in their study on workspace personalisation. They find that organisational policies and
norms play a more influential role than personal factors on employee interaction with their personal environment, evidencing the inclusion of corporate cultures as a mediator of design/user interactions. The latter refers to slow and unresponsive facilities management cultures and the knock-on effect on user annoyance with design, which can cause users to bypass certain systems in an overcompensated reaction (Bordass et al., 2004). In this way, behavioural user outcomes are mediated by a combination of normative and perceived dynamics within different organisational user groups. A related literature aims to model user control of the office environment through quantification and digital modelling of observed window use (Zhang and Barrett, 2012; Herkel et al., 2008; Raja et al., 2001). This research is typically undertaken in green office buildings and is linked to user comfort and control in the promotion of building performance, rather than user performance.

As discussed, individual productivity within the office environment is the predominant performance-based outcome under study. In relation,acknowledgement of user group dynamics as an important factor is much more prevalent in studies focusing on productivity rather than wellbeing or behaviour-based outcomes. Office norms or practices, organisational culture and management are all tackled in this respect (Heeroma et al., 2012; Steiner, 2006; Price and Akhlaghi, 1999). As well as physical design and layout, individual productivity is argued to be affected by the ‘behavioural environment’ of the office, a set of dynamic elements like interaction and distraction (Haynes, 2008a; Haynes, 2008c; Haynes, 2007b), the product of a variety of contextual factors such as organisational purpose and nature of work (Lee, 2010). As a result, the ‘connectivity’ of the office layout is theorised to impact on social interaction and innovation opportunities, affecting productive outputs (Haynes, 2008b; Haynes and Price, 2004). In addition, organisational norms and working practices also dictate workgroup size with implications for environmental control, personal comfort and associated productivity gains and losses (Leaman and Bordass, 1999). However, commercial practice has yet to understand the workplace environment as an asset in need of strategic management in order to enhance productivity and improve organisational performance (Warren, 2006; Heerwagen, 2000).

There is a concentration in the commercial office literature on the measurement of individual productivity outcomes in relation to design, and this has also produced the most developed research into the role of building user group dynamics. In contrast, a
separate area of design quality research uses business performance and organisational outputs to evaluate office design (Bradley, 2002; Heerwagen, 2000).

It is important to note that the majority of design quality research in offices treats the user in a broad sense without making distinctions between different groups of users, for example, based on management grade or activity. In comparison, commercial post-occupancy evaluations do treat management grade as a significant factor in user experience of the office. Understanding more about the ever-changing social relations that exist between user groups and the mediating impact of this on users’ perceptions, usage and performance within an office environment represents a less-well studied element of the social context in workplaces.

2.3.3 Healthcare

Design quality research has often focused on healthcare buildings, an unsurprising trend considering health and wellbeing represent the primary function of these environments. In particular, hospitals form a key literature addressing user experience from the perspective of both patients and healthcare professionals. In the former (and more extensive) literature, clinical outcomes-driven design has steadily given way to conceptualising the patient as a customer in the discourse of ‘therapeutic environments’ (Gesler et al., 2004). Health and wellbeing outcomes are prioritised and typical examples include clinical health improvements, length of stay, satisfaction, environmental control, feelings of territoriality and privacy, access to outdoor spaces, and ease of wayfinding (Bernhofer et al., 2014; Codinhoto et al., 2009; Whitehead et al., 2007; Douglas and Douglas, 2005; Douglas and Douglas, 2004; Todd et al., 2002; Ulrich, 1984). The impact of design on aspects of patient wellbeing like dignity, autonomy and empowerment is also common, especially in mental health facilities research (Daykin et al., 2008; Curtis et al., 2007). There is also a subset of studies that addresses the impact of design on paediatric patients specifically (Ghazali and Abbas, 2012; Abbas and Ghazali, 2010; Varni et al., 2004). Aside from environmental control, behavioural and performance-based patient outcomes (synonymous with healing and wellbeing in a healthcare environment) are not addressed in the literature.

The second area of research addresses the impact of hospital and ward design on the healthcare professionals working in the space. Whilst less developed than the patient literature, it comprises a wider range of outcomes. This includes satisfaction, indoor environmental quality and safety at work (Varni et al., 2004; Wieslander et al., 1999),
walking distances, recruitment and retention (Armstrong et al., 2004), and the quality of care delivered (Hurst, 2008), signifying academic interest in health and wellbeing, behaviour and performance related outcomes. It is predominantly nursing staff that feature in these studies (Rechel et al., 2009); other hospital workers, including doctors, pharmacists, technicians, administrative and maintenance staff are rarely included in healthcare design quality work (although for a consultant perspective, see Curtis et al. (2007).

Although the user perspectives of patients and healthcare professionals have been dealt with separately in this review, many of the empirical studies discuss user outcomes from patients and staff in combination. It is noted that the research field does not address the complex social relations that exist between various user groups and their mutual impact on each other’s experience of the hospital environment. For example, Whitehead et al. (2007) suggest perceptions of cleanliness have a significant impact on patient satisfaction with their stay, and the maintenance staff group is evidently implicated in this process. In addition, a third user perspective can be identified based on the impact of design on hospital visitors, including the parents and guardians of paediatric or vulnerable patients (Varni et al., 2004; Todd et al., 2002). However, the low number of existing studies suggests that this is under-researched.

A striking characteristic of the healthcare sector design quality literature is the dominance of inpatient environments of hospitals and a lack of studies on outpatient or primary care facilities, such as surgeries, clinics, and support centres (see Raleigh et al. (2012) for a report on GP surgery facilities). Within the inpatient studies on hospitals, there is a distinction between research that addresses hospital buildings in general, studies on particular hospital types, like paediatric (Abbas and Ghazali, 2010) or geriatric hospitals (Nordström et al., 1999), and studies which select a specific environment, for example, wards (Hurst, 2008) or patient rooms (Douglas and Douglas, 2004), or a specific department, for example, orthopaedic units (Fornara et al., 2006). In line with the lack of research on visitor perspectives, there are no existing studies on day rooms or waiting areas. In addition, user group dynamics are not studied within this literature, in relation to working practices, organisational culture or management strategies.

There is some developing work in non-clinical healthcare environments. Care homes for the elderly and the role of tele-care have been studied with health and wellbeing
outcomes of inhabitants and satisfaction outcomes of staff prioritised (Barlow et al., 2007; Torrington, 2007). Furthermore, within this group of studies there is evident reference to the significance of user group dynamics. Torrington (2007) outlines the complex interaction between building design, elderly users, care staff and building managers which has a direct impact on patient wellbeing. Corporate cultures that prioritise safety significantly reduce opportunities for patient environmental control and pleasurable activities, directly impacting on the quality of life they can enjoy. This sort of cautious management culture is typically found in new, highly regulated care homes that meet stringent design standards, including restricted outdoor access, heavy fire doors, and featureless and confusing circulation routes, all of which limit freedom of movement and choice of activity (Torrington, 2007). In relation, Parker et al. (2004) found improved staff morale in non-institutional environments. This simultaneously evidences their protective nature towards patients, yet is partly responsible for the culture of over-regulation and risk minimisation that has emerged. An audio recording on the Design Council website of a presentation by an architect specialising in care homes for elderly dementia sufferers reiterates the significance of managerial culture on design and user interaction. His experience of a small-scale facility with amateur, co-produced care of patients taken over by care professionals led to the removal of the social hub to create a central nurses station for access and surveillance purposes (McLaughlin, 2012).

Other public sector research continues to look beyond hospital environments, with a recent study addressing user experience of design in an outpatient pharmacy, including patient and staff perspectives (Shakespeare, 2013). An on-line magazine article addresses the related issue of empowering design in shelters for domestic violence victims and recognises both inhabitant wellbeing and staff morale (Goodyear, 2013), highlighting the design of welfare-related buildings like shelters and children’s homes as an important research gap.

To summarise, whilst the healthcare building literature is significantly dominated by design quality research on hospitals from both a patient and a staff perspective, there is little analysis of how the various user groups within the environment interact and produce changing sets of social relations to structure user interaction with design. In contrast, the relatively recent emergence of care homes as a source of academic attention has focused on the role that managerial cultures play in patient and staff experiences, highlighting the relevance of user group dynamics as a variable.
Substantial research gaps exist on outpatient or primary care building types, as well as the perspective of visitors within the social spaces of healthcare environments.

2.3.4 Education

Educational buildings represent a significant proportion of the research on building design and its impact on building users, with the majority of literature being divided between schools and universities. Related to these building types are libraries and historic buildings, which are covered briefly at the end of this section. The wide-ranging empirical research on school buildings can be distinctly split between two user perspectives, student and teacher, and tends to evaluate design against a variety of user outcomes, including health and wellbeing, behaviour and performance. Examples include satisfaction (Issa et al., 2011; Earthman and Lemasters, 2009) and the impact of acoustics, lighting and thermal comfort (Woolner et al., 2007), student attendance/absenteeism and staff recruitment/retention (Durán-Naracki, 2008; Higgins et al., 2005), and academic engagement and learning outcomes (Barrett et al., 2013b; Tanner, 2009; Abdul-Samad and Macmillan, 2004). It is noted that school design tends to be evaluated based on traditional ‘chalk and talk’ teaching rather than new ‘effective learning environments’ (Macmillan, 2006). The majority of research focuses on student wellbeing, behaviour and performance outcomes, whereas clinical health outcomes are less relevant in this sector. Whilst the impact of school design on teachers’ wellbeing and behaviour is tackled to some degree (Barrett and Zhang, 2012) this represents a research gap in the design quality literature, linked to the absence of extensive workplace research beyond offices. Both primary/elementary and secondary/high school buildings are included in empirical research on the impact of design.

There are several school studies where the concept of user group dynamics is related to performance-based user outcomes. The significance of what is termed ‘school climate’ in mediating the relationship between facilities quality and academic achievement is identified statistically (Uline and Tschannen-Moran, 2008). School climate represents contextual products of poor facilities, such as reduced morale, engagement and effort of the school community, found to act as a variable in the achievement of learning outcomes. In a follow-on study ‘learning climate’ is conceptualised as the interaction of intended design, the day-to-day-realities of design, and the occupants (Uline et al., 2009). The learning climate is understood to facilitate or limit environmental understanding and control with implications for effective academic learning. In relation,
a separate study advocates that building purpose (i.e. educational function) should be taken into account when investigating the relationship between school facilities and academic achievement (Roberts, 2009), re-emphasising the significance of social context in understanding design/user interactions.

Although noticeably smaller than the literature on schools, existing design quality research on higher education buildings and universities in particular has two main themes: the impact of design on users with respect to learning and teaching outcomes and research outcomes (Temple, 2008). An underlying commonality across studies addressing learning and teaching is the role of information and communication technologies as a driver for change in the sector, with discussion of flexible learning environments and other pedagogical issues like group learning and mobile learning (Foresight, 2012a; Weaver, 2006). The user outcomes related to learning and teaching are similar to those in schools, comprising student satisfaction (wellbeing), student enrolment and attendance (behaviour), and student academic achievement and learning (performance) (Jamieson, 2003; Price et al., 2003; Shabha, 2000). However, the design quality work on learning environments in universities tends to be relatively discursive with a lack of empirical evidence. Furthermore, there is no research on these spaces from the lecturer perspective.

The impact of building design on academic research outputs is a newly emerging design quality literature which displays similarities to the publications on office buildings. The focus on users in academic workspaces relates to the impact of various office types on academic output and collaboration (Pinder et al., 2009). Significantly, many of these studies emphasise the role of user group dynamics in mediating the impact of design on wellbeing outcomes. Institutional management is argued to influence academics’ personal control over space and perceived embodiment of respect in the working environment, directly influencing feelings of satisfaction, autonomy and worth (Reisz, 2010; Anonymous, 2009). In relation, Pinder et al. (2009) discuss how institutional norms affect researcher expectations due to prior experience. Changing space provisions, typically from allocated desk spaces to non-territorial hot-desking, are usually accompanied by low satisfaction outcomes from users with previously allocated desk spaces compared to higher satisfaction from users previously without desks.

In relation to the work on schools and universities, the design of library buildings and its impact on library users represents a significant although less extensive literature, on
both academic and public libraries. The former area of research tackles similar technological drivers for change as in university buildings work, namely, a technology-literate generation of students with shifting user requirements producing a trend for value-adding elements like social learning commons in the ‘library as place’ debate (Gayton, 2008; Ludwig and Starr, 2005; Shill and Tonner, 2004). Again the focus is primarily on student wellbeing outcomes, such as satisfaction.

Design quality work on public libraries is less common than academic libraries, although there is a similar focus on wellbeing outcomes, such as user satisfaction. In addition, an association with the service sector literature (discussed below) is identifiable, with behaviour-related outcomes being prioritised (Martensen and Grønholdt, 2003). Conceptualising library users as customers leads to the prevalence of wellbeing outcomes for the attainment of desired behavioural outcomes, such as user footfall (Childs, 2006). This questions the core purpose of libraries, producing a tension in their design and intended use between grand and ‘seductive’ architecture, legitimised by the attraction of regional tourist users, and small-scale neighbourhood design which prioritises the local community user (Sullivan, 2012).

Finally, a small spinoff in the educational design quality literature addresses the user in relation to historic building design. Whilst user experience is implicit in research on ‘built heritage’ and heritage tourism (Tweed and Sutherland, 2007), there is minimal discussion of the impact of historic building design on user outcomes. However, a niche literature on European churches exists which relates user wellbeing to improvements to thermal comfort made possible through innovative technologies (Camuffo et al., 2010; Samek et al., 2007; Spolnik et al., 2007).

The wide range of buildings that fall into the education typology have spawned a variety of design quality studies, that do not necessarily share conceptual or methodological ideas. The schools literature is primarily empirical with a focus on student wellbeing, behaviour and performance related outcomes. There are increasing references made to the significance of user group dynamics, such as school or learning climate, as a contextualising variable in design/user interactions. In contrast, the university literature is much less empirically developed and tends to discursively outline the drivers for change and how this can be facilitated through design, rather than analysing that design in use. There is an overall trend towards the student perspective across both sectors, whilst teachers and lecturers are considerably understudied, linking back to the lack of
workplaces research beyond offices. The addition of building types such as libraries and historical churches further divides this field, by conceptualising users as customers and focusing on wellbeing outcomes to encourage continuing use, echoing service sector research.

2.3.5 Retail/service sector

A substantial component of the literature on design and users is comprised of the wide-ranging retail and service sector, including clothing shops (Ballantine et al., 2010), supermarkets and grocery stores (Kent and Kirby, 2009), restaurants (Kim and Moon, 2009), banking services (Allard et al., 2009), hotels (Heide et al., 2007), sports venues (Hightower Jr et al., 2002) and museums (Bonn et al., 2007). Typically retail and ‘servicescapes’ research does not investigate the impact of architectural design on the user; rather the sophisticated concept of ‘atmospherics’ dominates the literature, referring to the holistic use of various environmental cues and stimuli to influence users, for example, layout, lighting, music and scent (Gilboa and Rafaeli, 2003; Botschen and Crowther, 2001; Areni and Kim, 1994). The impact of atmospherics captured in the literature falls mainly into two categories: wellbeing outcomes like feelings of satisfaction/irritation, cognition and emotional response, pleasure-feeling, disconfirmation (fulfilling expectations or not), and perceived quality (Ryu and Han, 2010; Babin et al., 2003; Chebat and Michon, 2003; D' Astous, 2000), and behavioural outcomes such as approach-avoidance, consumer behaviours such as buying and browsing, and re-patronage intentions (Ballantine et al., 2010; Kim and Moon, 2009; Chebat and Michon, 2003; Areni and Kim, 1994). The majority of studies address both wellbeing and behavioural outcomes in customers, often investigating a causal link between cognitive responses and related consumer behaviours. Notably, the user outcomes under study differ significantly from those in other building types due to the distinctly commercial purpose of the retail and service environment.

The emphasis on the customer perspective is ubiquitous and there are no studies that focus on retail and service sector staff that work in these environments. However, user group dynamics are acknowledged in several building types, especially in relation to the influence of management. The concept of human factors has emerged in the servicescape literature to describe how management elements have a direct influence on customer experience and perception of service quality. There is an emerging interest in the interaction of different user groups within these spaces, although the preoccupation
with the impact on the customer remains. For example, in restaurant research Harris and Ezeh (2008) have employed the term ‘social-servicescape’ to refer to the management of the establishment, customer service and staff image, which influences customer experience, disconfirmation and interaction with the environment (Ryu and Han, 2011; Ryu and Han, 2010). The significance of human factors is also addressed in design quality research in hotels where the role of staff manner and image is understood as a variable in visitor experience of hotel design (Zemke and Pullman, 2008). A related concept in the hotels literature is ‘ambience’ which refers to a similar idea to retail atmospherics. Heide et al. (2007) discuss the significance of hotel management in creating and producing an ambient atmosphere, a subjective phenomenon unique to each hotel, directly influencing how guests respond to the environment.

Design quality research in this sector predominantly addresses shops, restaurants, hotels and banks, whereas entertainment venues, such as stadia, theatres and nightclubs are less well studied. There is a focus on measuring user outcomes in the customer, whereas staff perspectives are entirely ignored. In addition, the influence of architectural quality is wholly missing from retail sector studies, and represents a considerable research gap. Due to the purpose of the retail and service environment, performance user outcomes are not studied, whereas wellbeing and behaviour related outcomes are studied in tandem. There is an emerging interest in the impact of human factors on customer experience, including management cultures, that represents an awareness of building user group dynamics as a variable in the relationship between users and design.

A relevant but niche research area is the design of transport-related buildings, such as airport terminals and railway stations. The limited literature mainly focuses on airports in terms of wayfinding design and its impact on user satisfaction and the perceived ‘level of service’ (Correia et al., 2008) with typical outcomes including cleanliness, lighting and walkability (Tam, 2011).

2.4 Discussion

This in-depth review of the design quality literature has generated a more comprehensive picture of this empirical research area, including its interpretation of the building user and the concept of social context (as illustrated by Table 2.2). The treatment of the building user is distinct with an emphasis on identifying and measuring user outcomes. In contrast, the social context that surrounds the interaction between
design and users is generally neglected. Design quality research has focused on certain building types, particularly commercial buildings, such as offices and retail, and important public sector buildings, such as hospitals and schools. In addition, there are some emerging areas of interest that overlap between building types, for example, the burgeoning work on care homes draws on previous work from both the domestic and healthcare spheres.

Some significant research gaps are also evident. Housing is primarily evaluated based on its condition rather than architectural design and there is no work on the impact of design on inter-family relations or alternative household situations. Workplaces other than offices are considerably under-represented in the design quality literature. Outpatient surgeries, clinics and support centres form a similar gap in the healthcare sector that is dominated by work on hospitals. Within the hospitals literature, patients are most commonly addressed whereas healthcare staff (other than nurses) and visitors are rarely studied, and the social areas of hospitals (day rooms, waiting areas) are not considered. Related buildings, such as shelters and children’s homes are wholly absent from design quality research. The perspectives of teachers and lecturers in educational buildings are less commonly studied than those of students, and empirical design quality research in universities is relatively sparse. Other educational design quality work on libraries and historic buildings is also lacking. There is little research on the architectural design of retail and service sector buildings, whilst the existing work on atmospherics does not address entertainment venues to the same extent as shops, restaurants and banking facilities. There is no research on the user outcomes of staff working in retail and service sector buildings.

A significant finding from the review has been the inconsistency across building types with respect to user outcomes. This is assumed to be a result of the discipline-specific nature of design quality research: empirical activity tends to focus on a particular building type without drawing on academic developments made in relation to the study of other buildings. Therefore, there is a notably wide range of user outcomes scattered across the different types of buildings in the design quality literature. However, once the variety of user outcomes is ordered into the three categories identified here (health and wellbeing, behaviour and performance) trends begin to emerge, as Table 2.1 highlights. These patterns are a function of the building type under study, where building purpose directs the measurement of user outcomes relevant to that environment. The domestic literature tackles predominantly health and wellbeing outcomes, as would be expected
in buildings that provide living environments where people spend substantial amounts of time and cannot easily leave substandard spaces or simply swap them for an improved one. Performance outcomes are not relevant in this sort of building as users are not involved in the production or achievement of an end goal, whilst behavioural outcomes have been identified as a significant gap in research.

As presented in Table 2.1, the workplaces, healthcare and educational building research areas address the full range of health and wellbeing, behaviour and performance user outcomes. Users of these environments are expected to spend considerable amounts of time within them and have relatively low levels of autonomy in terms of improving or leaving the environment, making health and wellbeing outcomes particularly relevant. Behavioural outcomes are pertinent in buildings that represent public environments with a diversity of users, to understand the user activity being accommodated as well as promoting desired behaviours in these spaces. These building types also have work or education functions, generating an emphasis on performance outcomes, specifically how design influences individual productivity, quality of care and educational attainment.

The retail and servicescape literature deals with the first two categories of wellbeing and behaviour, but there is a noticeably commercial emphasis on the sorts of outcomes. For example, wellbeing outcomes relate to customer satisfaction and experience, and behavioural outcomes are related to consumer behaviours and actions. This is in contrast to the outcomes studied across the other building types in terms of health and wellbeing, also illustrated by Table 2.1. In addition, performance outcomes do not feature in this typology as the overwhelming customer focus has overshadowed staff performance. Overall, Table 2.1 demonstrates that after the outcomes under study are categorised, trends begin to emerge between building types that are otherwise less visible. Understanding where similar user outcomes are of interest in other disciplinary research areas facilitates the potential cross-over of ideas between previously unconnected studies. For example, the wealth of empirical research conducted in office buildings represents a valuable resource in emerging discussions about changing trends in academic workspace, whilst the sophisticated ‘atmospherics’ frameworks employed in retail and service sector work are applicable to academic and public library debates.
<table>
<thead>
<tr>
<th></th>
<th>Health &amp; wellbeing outcomes</th>
<th>Behaviour outcomes</th>
<th>Performance outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing</strong></td>
<td>Clinical health (Leventhal and Newman, 2010), mental health (O’Malley and Croucher, 2005),</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>depression (Newman, 2001), thermal comfort (Howden-Chapman and Chapman, 2012), wellbeing (Shaw, 2004), feelings of security and privacy (Wells and Harris, 2007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Workplaces</strong></td>
<td>Satisfaction (Kato et al., 2009), thermal comfort, acoustics, air quality, lighting and daylighting (Armitage and Murugan, 2013), feelings of privacy (Lee, 2010), sense of belonging (Martin and Black, 2006)</td>
<td>Environmental control (Leaman and Bordass, 1999), territoriality and belonging (Wells et al., 2007), social interaction and collaboration (Martin and Black, 2006), recruitment and retention (Warren, 2006)</td>
<td>Productivity (Haynes, 2007a; Leaman and Bordass, 1999)</td>
</tr>
<tr>
<td><strong>Healthcare</strong></td>
<td>Clinical health (Ulrich, 1984), satisfaction (Douglas and Douglas, 2004; Parker et al., 2004; Varni et al., 2004), wellbeing (Torrington, 2007; Todd et al., 2002), indoor environmental quality (Bernhofer et al., 2014), safety at work (Armstrong et al., 2004)</td>
<td>Environmental control (Douglas and Douglas, 2004), walking distances, recruitment and retention (Armstrong et al., 2004)</td>
<td>Quality of care (Hurst, 2008; Armstrong et al., 2004)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Satisfaction (Earthman and Lemasters, 2009), thermal comfort (Samek et al., 2007), acoustics and lighting (Woolner et al., 2007)</td>
<td>Student enrolment (Price et al., 2003), attendance and absenteeism (Issa et al., 2011), staff recruitment and retention (Higgins et al., 2005), customer footfall (Childs, 2006), re-patronage intentions (Martensen and Grønholdt, 2003)</td>
<td>Academic engagement and achievement (Barrett et al., 2013b; Durán-Naracki, 2008), academic research output and collaboration (Pinder et al., 2009)</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Retail/service sector</strong></td>
<td>Feelings of satisfaction (Allard et al., 2009) and irritation (D'Astous, 2000), cognition and emotional response (Chebat and Michon, 2003), pleasure-feeling (Ballantine et al., 2010), disconfirmation (Ryu and Han, 2010), perceived quality (Babin et al., 2003)</td>
<td>Approach-avoidance behaviours (Gilboa and Rafaeli, 2003), consumer behaviours like buying and browsing (Areni and Kim, 1994), re-patronage intentions (Ryu and Han, 2011)</td>
<td>-</td>
</tr>
</tbody>
</table>
Whilst the variety of user outcomes under investigation appears relatively disjointed on first inspection, the treatment of the building user in design quality research is highly distinctive, as summarised in Table 2.2. There is a preoccupation with user outcomes rather than analysis of the users themselves. Across the various building types, empirical studies favour the anonymous user with few defining features. For example, studies on housing, offices, retail and the service sector typically address the householder, office worker and customer, respectively. Some building types are more likely to be studied with an acknowledgement that different user groups exist, for example, patients, visitors and healthcare staff in hospitals, students and teachers in schools, and students, lecturers and academic researchers in universities. However the implication of multiple user types is not investigated and one or two user groups tend to dominate in each building type, for example, the patient in hospitals or the student in schools.

Consideration of building user group dynamics as a contextual factor in the relationship between design and user is rare. The building types identified in Table 2.2 comprise workplaces, specifically offices, healthcare sector care homes, schools and academic workspaces in the education typology, and the service sector. However, there is no defining characteristic or framework in how user group dynamics are conceptualised or handled in these studies, with considerable variety in the contextual elements identified as mediating influences. This can be explained partially by the discipline-specific nature of the vocabulary found in each area of research, combined with limited sharing of ideas between disciplines. Furthermore, there is variation in how user group dynamics are perceived to mediate the interactions of design and users. This is related to the focus on outcomes in a single user group in office, academic workspace and service sector research, whereas work in care homes and schools recognises the presence of multiple user groups, also outlined in Table 2.2.

The existing design quality studies that address building user group dynamics are few in number, making the identification of patterns or trends problematic. However, three main components recur in the literature, relating to organisational cultures, management strategies, and social norms and practices. Building user group dynamics represent a significant research gap across the whole design quality literature and provide an opportunity for empirical attention in the future.
Recent public sector interest in valuing the design quality of the built environment (Mulgan et al., 2006b; Gann and Whyte, 2003) has not included an appreciation of social context or, more specifically, the potential of building user group dynamics to mediate the design/user relationship. Mulgan et al. (2006a) consider multi-criteria analysis (MCA) methods, such as the Design Quality Indicator (DQI) (Gann et al., 2003), to be the most common research technique currently used to evaluate design quality. The industrial post-occupancy evaluation, such as the Post-Occupancy Review of Buildings and their Engineering (Probe) studies (Cohen et al., 2001a), also falls into the MCA category of weighting and scoring systems. Common considerations of this family of tools can be categorised between the practical, such as functionality/usefulness, build quality, and energy use, and the user-centred, such as occupant satisfaction (Riley et al., 2009). However, the evaluation criteria lack any reference to contextual factors, such as building user group dynamics, or their mediating influence on design quality.

Learning from the early advances of academic design quality studies into understanding the impact of user group dynamics going forward, it is suggested that investigation through a defined framework would drive a more robust literature that can be explored regardless of which type of building is under study. This might entail the identification of key building user group dynamics and their categorisation into organisational cultures, management strategies, or social norms and practices. Analysis of their mediating influence on the existence and frequency of typical user outcomes for each building type would promote a more sophisticated understanding of how design, users and social context interact in the built environment. Further, it would facilitate development of new or amended design quality assessment tools that consider mediation by building user group dynamics as a critical element of the design/user relationship.

2.5 Conclusion

This paper has summarised the design quality literature regarding the social context of buildings in use, reviewing the empirical research with respect to two cross-cutting themes: the measurement of outcomes for building users, and conceptualisation of users themselves. The typological approach has highlighted the relatively isolated academic developments in each building type that has produced an uneven field of research,
primarily unified by the dominant concern with user outcomes. The disinclination towards cross-disciplinary sharing has led to the study of a wide range of user outcomes. Emerging interest in the dynamics that exist between building user groups is developing in a similarly disparate fashion. There is significant potential for theoretical and empirical development based on the wealth of research available on various building types, but this opportunity is currently under-exploited due to a lack of interdisciplinary collaboration.

The importance of social context as a mediator of the relationship between building design and building users is yet to be fully explored. Developing a more nuanced understanding of building users in situ is proposed as an important opportunity for future design quality research. This would benefit both academic research and built environment professions by promoting environments that are designed for a dynamic community of building users rather than a set of anonymous and autonomous building user individuals. To develop an appreciation for the social relations that exist between people in buildings suggests that a wide range of perspectives would be of value to this endeavour, including a variety of social scientists as well as building scientists and environmental psychologists. For example, public spaces of non-clinical functions within healthcare buildings represent an under-researched area with considerable relevance. Corridor and waiting room environments are a routine element of the user experience in primary care and hospital facilities, whilst increasing numbers of information and support hubs represent a new type of space in this sector. It is recognised that a variety of different user groups including patients, visitors, healthcare professionals and maintenance staff interact in such spaces, but the impact of these complex social relations on people’s experience and usage of the built environment is unknown. Pushing current research boundaries means going beyond recognition of different building user groups to include analysis of their social dynamics as an essential part of the social value agenda within buildings.
Table 2.2: Conceptualisation of the building user found in the design quality literature

<table>
<thead>
<tr>
<th></th>
<th>Housing</th>
<th>Workplaces</th>
<th>Healthcare</th>
<th>Education</th>
<th>Retail/service sector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emphasis on measuring user outcomes</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Health &amp; wellbeing</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Behaviour</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Performance</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Analysis of building users</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>User identity</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Existence of building user groups</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Existence of building user group dynamics</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td><strong>Consideration of building user groups</strong></td>
<td></td>
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<tr>
<td>Organisational cultures</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Management strategies</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>Social norms and practices</td>
<td>×</td>
<td>✓</td>
<td>×</td>
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</tbody>
</table>
CHAPTER 3: Applying Social Return on Investment (SROI) to the Built Environment

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Abstract

The effective measurement and dissemination of the impact of design on building users requires an evaluative shift away from measuring building performance towards measuring the outcomes experienced by people. This agenda shares considerable overlap with the emerging concept of “social value” and it is proposed that social impact valuation methodologies could fill the post-occupancy quantification gap. A review of the social impact sector identifies Social Return on Investment (SROI) as the most developed methodology with a robust framework for implementation. SROI generates monetised results, anticipated to enhance transferability compared to typical post-occupancy evaluation summaries and facilitate the dissemination and usefulness of findings within the design and construction industry. The paper gives an in-depth account of an exploratory study to trial the six stage SROI methodology in three nonclinical healthcare buildings; interviews, focus groups, user surveys and financial valuation techniques are used. The SROI results are summarised and the discussion provides a critical methodological reflection of applying SROI to the built environment: the technical challenges faced, the modifications made as a result, and the lessons learnt from this process. The conclusion offers some practical recommendations for future applications of SROI to the built environment.

Key words

Building design, design evaluation, post-occupancy evaluation, social value, Social Return on Investment, valuation methods
3.1 Introduction

There has been a growing interest in the design quality of the built environment in the UK since the late 1990s (Macmillan, 2006). A long line of built environment tools have been designed and promoted in order to capture post-occupancy feedback from users of building design and public space. According to Mulgan et al.’s (2006a) comprehensive review, these methodologies have tended to be based on multi-criteria analysis (MCA) and the weighting and scoring of pre-identified criteria; for example, Design Quality Indicators (DQIs), as well as environmental economics-based approaches such as stated and revealed preference studies, and impacts-based approaches. Value mapping in the built environment is currently dominated by MCA approaches. For example, the UK healthcare sector employs a number of MCA-based assessment tools including the Achieving Excellence Design Evaluation Toolkit (AEDET), a Staff and Patient Environment Calibration Tool (ASPECT), and Patient-Led Assessment of the Care Environment (PLACE).

There are three distinct problems with the MCA approach. The first is a lack of transferability in the results of MCA-based methodologies, as they tend to be qualitative in nature (Vischer, 2009). In order for best practice to be disseminated effectively, there is a requirement for robust quantification of post-occupancy feedback beyond MCA-based scores. Secondly, the results lack relatability for decision-making that is necessarily based on economic valuation. The design and construction industry is profit-based, yet user feedback is not presented in a way that can be easily factored into project budgets. Third, current post-occupancy methodologies emphasise building performance rather than user experience. A shift in evaluative focus is required to understand the impact of design for building users (Watson et al., 2016a). The subject of analysis should be the outcomes experienced by people rather than predetermined criteria, for example, the outputs of design like build quality or function, specific physical aspects like indoor air quality or acoustics, or fixed user outcomes like satisfaction and productivity, which are typically measured.

The need to overcome the limitations of existing post-occupancy methodologies by capturing the user experience of building design dovetails with the increasingly popular concept of “social value” (Watson et al., 2016b). The Public Services (Social Value) Act 2012 has placed social value firmly on UK public agendas and accelerated the
impact-evidencing activities of mission-led organisations and programmes. A wide range of social impact valuation methods have been developed for this end, coinciding with requirements to capture post-occupancy feedback from building users in a more meaningful and transferable way. This paper considers the potential of Social Return on Investment (SROI), a well-developed social impact valuation tool used in the UK, Europe, North America and beyond, to fill the quantification gap of current post-occupancy tools and effectively capture and disseminate the intangible impact of design for building users. The paper aim is to trial the SROI methodology in an exploratory manner in a set of case buildings and to provide critical methodological reflection on the challenges faced. This represents applied research as part of the emerging “social value agenda within buildings” (Watson et al., 2016b, p.520). The following section reviews the range of social impact assessment methodologies that offer new opportunities for capturing social value in the built environment, and discusses the choice of SROI for this project. The stage-by-stage application of SROI to three case buildings is outlined in the methods section, followed by a summary of the SROI results. The discussion outlines the methodological challenges faced, the modifications required, and shares the lessons learnt from this process. The conclusion offers recommendations for the future application of SROI to the built environment.

3.2 Literature review

This paper is situated within a broader academic discussion about the need to improve post-occupancy evaluation (POE) methods to generate results which are both transferable and relatable to the development process, in order to facilitate the translation of knowledge in the learning loops of design (Vischer, 2009; Preiser and Vischer, 2005; Whyte and Gann, 2001). The surge of interest in design quality over the last few decades (Macmillan, 2006) has coincided with the development of a variety of post-occupancy tools to evaluate buildings from a user perspective. These include the renowned Probe studies (Bordass et al., 2001) in the 1990s which employed the building use studies (BUS) methodology, Soft Landings (Way and Bordass, 2005), the AMA Workware Nexus (Alexi Marmot Associates, 2008), and the DQI (Gann et al., 2003; Gann and Whyte, 2003). POE was developed specifically to evaluate building performance from a user point of view to generate feedback for design professionals and building managers and facilitate the improvement of building design and
functioning over time (Deuble and de Dear, 2014; Preiser and Nasar, 2007). However, these various tools have tended to be based on MCA techniques involving the weighting and scoring of pre-established criteria (Vischer, 2009; Mulgan et al., 2006a) to produce qualitative summaries and value maps, which has inhibited the take-up of feedback in the learning loops of future projects.

Recent academic work has sought to emphasise the lack of attention given to the internal dynamics of the building user community and discusses the role that sociality plays in mediating the interactions between buildings and users (Watson et al., 2016a; Watson et al., 2016b; Vischer, 2008a). The intangible impact of design on building users cannot be understood without consideration of the social context that mediates user experience, yet existing post-occupancy methodologies measure pre-determined criteria about building performance. A shift in evaluative focus is required, away from measuring building performance from a user perspective towards *measuring the outcomes experienced by building users* as a result of the dynamic interactions between buildings, users and the social context that mediates them.

The need to capture post-occupancy feedback from building users in a more meaningful way shares considerable overlap with the concept of social value and the impact-evidencing activities of mission-led organisations and programmes (Watson et al., 2016a). Recognising the subjective, malleable and variable nature of social value is key to the development of metrics suited to its capture and measurement (Mulgan, 2010). A wide range of social impact valuation methods now exist and Mulgan (2010) presents a concise summary of the main approaches currently used across social enterprise and public sector social value measurement. A comprehensive review of the various methodologies that fall within the social impact assessment category is provided in Table 3.1 with a glossary of key terms shown in Table 3.2. These tools measure social impact via the efficiency of funding decisions, namely, outcomes relative to inputs (Cugelman and Otero, 2010). There are a range of tools, including the process-oriented, e.g. the Social Enterprise Balanced Scorecard (BSC) and the Ongoing Assessment of Social Impacts (OASIS), impact assessment to facilitate organisational decision-making, e.g. Benefit-cost ratio, Best Available Charitable Option (BACO) Ratio and Social Accounting and Auditing (SAA), and those with an external focus, e.g. Expected-return, some of which also take a stakeholder engagement focus, e.g. Basic Efficiency
Resource (BER) analysis and SROI. Not all methods are able to quantify social impacts, and only a few specifically aim to place a value on impact.

According to Weinstein and Bradburd (2013), there are four main elements to consider when comparing social impact valuation techniques. This framework was used to compare the existing social impact methods, identifying SROI as the most developed, as shown below.

- Measuring outcomes rather than tracking outputs (i.e. number of end users)

Reviewing the variety of social impact tools that currently exist showed them all to differentiate between measuring outcomes rather than tracking outputs, with the exception of BACO.

- The ability to compare the value of different types of benefits

Whilst the cost of creating social impact is considered by most of the methodologies, there is only a small number that place a value on social returns via monetisation techniques, thereby facilitating comparison across different types of benefits and consideration of value returned. These methodologies are Social Return Assessment (SRA), Benefit-cost ratio, SROI and Expected-return. SRA disseminates the social returns of investors in financial form, but this equates to the returns of their processes, rather than impact measurement. Benefit-cost ratio, SROI and expected-return all apply financial proxies to social returns in order to evidence their value in a more transferable way.

- The consideration of counterfactual evidence (other factors) in impact creation

Unlike Benefit-cost ratio and Expected-return, SROI has a robust and replicable methodology with detailed guidelines, including comprehensive impact establishment activities to prevent claiming for counterfactual evidence. Furthermore, Expected-return does not emphasise stakeholder engagement whereas this is a key aspect of the SROI methodology to enhance the authenticity of identifying, measuring and establishing the impact of social outcomes.
### Table 3.1: Summary of social impact assessment methodologies

<table>
<thead>
<tr>
<th>Methodology/tool</th>
<th>Developer</th>
<th>Description</th>
<th>Benefits</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Enterprise Balanced Scorecard (BSC)</td>
<td>Robert Kaplan and David Norton’s BSC model (1992) modified by Social Enterprise London for charitable sector</td>
<td>Internal management tool. Process focused. Visual representation of strategic objectives for multiple bottom lines, including social impact. Identification, achievement and measurement of 2-4 key goals (Sanfilippo et al., 2009; Clark et al., 2004)</td>
<td>Useful for strategy development. Key goals communicated in a focused way. Encourages their deeper measurement via another social impact assessment methodology.</td>
<td>Limited in scope to the essentials, not in depth. No quantitative results. No external validation or certification.</td>
</tr>
<tr>
<td>The Third Sector Performance Dashboard</td>
<td>Social Firms UK – developed from internal performance management tool</td>
<td>CD-ROM tool based on the BSC (above). Software to monitor performance against typical objectives in the sector, using template measures or build your own. Can be used for projects, programmes or whole organisation (Sanfilippo et al., 2009).</td>
<td>Simple, practical, user-friendly - provides templates and samples for busy organisations to use/adapt as required. Clear self-assessment of performance against set objectives. Can generate reports for external audiences.</td>
<td>A dashboard of quantitative indicators – no exploration of long term outcomes or impacts. No real external use. No external validation or certification.</td>
</tr>
<tr>
<td>Method</td>
<td>Source</td>
<td>Description</td>
<td>Benefits</td>
<td>Limitations</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ongoing Assessment of Social Impacts (OASIS)</td>
<td>Roberts Enterprise Development Fund (REDF), 1999</td>
<td>Social management information system to assess organisational outcomes. Integrates tracking practices with mission goals (Maas and Liket, 2011).</td>
<td>Outcomes measurement based on credible research methods.</td>
<td>Tracking process limited to outcomes of 2 years (Clark et al., 2004).</td>
</tr>
<tr>
<td>Social accounting and auditing (SAA)</td>
<td>Social Audit Network; also Jed Emerson’s blended value accounting (Emerson, 2003)</td>
<td>Organisational framework for monitoring, evaluation and accountability. Evidence base for societal impact of economic activities, for both internal and external stakeholders. Also used for internal decision making. Does not require monetisation of outcomes (Gibbon and Dey, 2011; Sanfilippo et al., 2009).</td>
<td>Flexible and holistic method for evaluating organisational performance and impact. Stakeholder engagement focus. Useful for strategic planning, CSR activities. External validation of social accounts.</td>
<td>Time intensive, not yet recognised by funders. Flexibility of process reduces comparability of results. No benchmarking.</td>
</tr>
<tr>
<td>Social Impact Measurement for Local Economies (SIMPLE)</td>
<td>Social Enterprise London and University of Brighton</td>
<td>Organisational framework to understand, measure and communicate impact. Internal strategic review combined with outcomes-based assessment. 5 stages: scope, map, track, tell, embed (McLoughlin et al., 2009; Sanfilippo et al., 2009).</td>
<td>Quantifiable data collection. Strategic perspective to analysis. Holistic use across various levels of an organisation.</td>
<td>Time intensive at beginning. No external validation or certification.</td>
</tr>
<tr>
<td>Benefit-Cost Ratio</td>
<td>Robin Hood Foundation</td>
<td>Framework for making philanthropic investment decisions via predictive cost-benefit analysis. Underpinned by principle of ‘relentless monetization’: outcomes are assigned monetary value relentlessly, even when they are hard to measure or evidence is slim. Can direct spending to programs that do the most good per dollar of costs (Weinstein and Bradburd, 2013).</td>
<td>Offers a common yardstick to measure the success of philanthropic outcomes. Flexible 7 step framework (Weinstein and Bradburd, 2013; Clark et al., 2004).</td>
<td>Time intensive and costly. Requires wide skill set. Broad-brush approach, no replicable methodology.</td>
</tr>
<tr>
<td>Social Return on Investment (SROI)</td>
<td>Roberts Enterprise Development Fund (REDF) in mid 1990s in the US; brought to UK in 2003 by New Economics Foundation (nef); The SROI Network was established in UK in 2008 and renamed Social Value UK in 2014.</td>
<td>Outcomes-based measurement tool, related to cost-benefit analysis. Project/activity focus. Mixed methods: qualitative stakeholder engagement, quantitative outcomes measurement, valuation via financial proxies, to produce SROI ratio of costs to social returns. Also produces a narrative of the organisation’s value creation (Sanfilippo et al., 2009; Clark et al., 2004).</td>
<td>Produces a transferable, financial metric in “ROI” language understood by investors and commissioners. Credible results based on actual data and proxy research. nef’s version promotes consistency in approach for robust results. Can be applied as predictive or evaluative. External validation through Social Value UK and others. One of the most developed social value tools.</td>
<td>Time intensive and costly. Requires range of skills, from stakeholder engagement to spreadsheet analysis. Ratio is often used out of context of the accompanying narrative report.</td>
</tr>
<tr>
<td>Source</td>
<td>Description</td>
<td>Provides a comprehensive guide to the complex SROI process which requires a range of skills (as above).</td>
<td>Software is purchased under license.</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Social e-Valuator</td>
<td>d.o.b. Foundation, Noaber Foundation and Scholten Franssen (Dutch consultancy) Web-based software acting as a guide to the SROI methodology. Provides information, expert knowledge and on-line training (Anyetei, 2012).</td>
<td>Provides a comprehensive guide to the complex SROI process which requires a range of skills (as above).</td>
<td>Software is purchased under license.</td>
<td></td>
</tr>
<tr>
<td>Basic Efficiency Resource (BER) analysis</td>
<td>Dr. Brian Cugelman and Eva Otero for Oxfam GB global climate change campaign Cost-effectiveness based framework for the evaluation of complex programmes by enabling comparison between operational “units”, e.g. teams, departments, functions. Shares underlying theoretical foundation with SROI, but no financial valuation. Over or under performance visualised in 2D matrix of quadrants (Eurodiaconia, 2012; Cugelman and Otero, 2010).</td>
<td>Simple framework for the evaluation of complex activities. Provides results that are easy to understand. Initiates deeper discussion to understand why units fall into specific quadrants. Can be used to compare internal and external perspectives.</td>
<td>Time intensive and costly (less so than SROI). Lack of quantitative results. Not to be used as the only evaluation approach. No monetisation. No external validation or certification.</td>
<td></td>
</tr>
<tr>
<td>Best Available Charitable Option (BACO) Ratio</td>
<td>Acumen Fund Prospective project-focused tool to identify how best to allocate philanthropic resources. Compares cost per output of intended project with similar project. No impact measurement or valuation (Weinstein and Bradburd, 2013; Lee and London, 2008)</td>
<td>Cost per output focus means output units common to both projects are used e.g. number of end users. Avoids need for aggregating across various types of outcomes which is complex.</td>
<td>Cannot direct funding decisions across different types of projects. Impacts are not valued.</td>
<td></td>
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<td>----------------</td>
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<td>----------------------------------------------------------</td>
</tr>
</tbody>
</table>
• Usefulness to effective and coherent funding decisions

SROI can be applied prospectively and retrospectively, compared to the prospective Benefit-cost ratio application and Expected-return, boosting its usefulness to investment decisions and learning from completed projects.

SROI therefore emerges as the most developed social impact methodology, being the only tool that satisfies all four aspects of Weinstein and Bradburd’s (2013) framework. It is designed to measure the outcomes of an intervention, rather than solely tracking outputs, and its monetisation technique facilitates the comparison of otherwise incommensurable benefits across different activities. The results are disseminated using ‘return-on-investment’ language that is familiar with investors and commissioners, and are based on real data collected through qualitative stakeholder engagement to ensure that what is being measured is what matters to end users. This is realised through a comprehensive methodology that is robust and replicable due to recent standardisation work (Aeron-Thomas et al., 2004). As a result, SROI has achieved a significant deal of traction within the social enterprise sector (Heady and Keen, 2010) and, increasingly, public policy (Musto, 2015; Shaheen, 2011) and commercial industry (Battle, 2014).

The main point of difference that SROI delivers beyond existing methods in the built environment arena is the monetisation of outcomes identified through qualitative stakeholder engagement, producing a transferable evidence base that can be communicated to a wide range of audiences. It therefore has potential as a novel post-occupancy tool to capture the impact of design for building users and disseminate the findings in a more powerful way across the variety of actors in the design and construction sector.

Table 3.2: Key terms from the social impact sector

<table>
<thead>
<tr>
<th>Inputs</th>
<th>The resources that go into the intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs</td>
<td>The product of the intervention, i.e. the number of end users reached</td>
</tr>
<tr>
<td>Outcomes</td>
<td>The difference that the intervention makes, i.e. the changes that end users experience</td>
</tr>
<tr>
<td>Counterfactual evidence</td>
<td>The outputs and outcomes that would have happened regardless of the intervention</td>
</tr>
<tr>
<td>Impact</td>
<td>The overall effect of the outcomes minus counterfactual evidence</td>
</tr>
</tbody>
</table>
3.2.1 Social Return on Investment (SROI)

SROI is a methodology which measures and accounts for a wider concept of value for the attainment of multi-bottom lines in the not-for-profit sector. It was originally developed in the US by the Roberts Enterprise Development Fund (REDF) in the mid-1990s. It has been further developed by the New Economics Foundation (nef) in the UK since the late 1990s with a widely applicable stakeholder emphasis and a standardised methodology. It is based on traditional cost-benefit analysis and assigns a monetary value to social returns using financial proxies, which are compared against the level of investment to produce an SROI ratio of costs to social outcomes. An SROI analysis can be retrospective or prospective, encompass the value generated by an entire organisation or focus on specific programmes or projects. It is widely used in the UK social enterprise sector to evidence organisational impact and is endorsed by the Cabinet Office.

The SROI methodology has six stages as set out in The Guide to Social Return on Investment (Nicholls et al., 2012):

1. Establishing scope and identifying key stakeholders
2. Mapping outcomes
3. Evidencing outcomes and giving them a value
4. Establishing impact
5. Calculating the SROI
6. Reporting, using and embedding

3.2.2 SROI in practice

A number of critiques have been raised against SROI, both conceptual and practical, across academic and applied literatures. The growing trend towards monetising social outcomes is considered a symptom of the not-for-profit sector’s marketisation, harming its ability to create and maintain a strong civil society (Eikenberry and Kluver, 2004). Reducing social outcomes to monetary measures is considered to be problematic and often unwarranted, oversimplifying and underestimating the full impact of an intervention (McLoughlin et al., 2009; Wright et al., 2009). However, proponents of SROI argue that intangible outcomes are brought into the conversation by presenting them in a common unit of value. Another critique is that the SROI ratio is often disseminated as the sole finding of the analysis (Wright et al., 2009), yet is meaningless.
out of context. It requires appraisal with a predicted ratio, a preceding ratio, or a corresponding ratio from a similar organisation to evaluate the impact created (Olsen and Lingane, 2003). The SROI methodology (Nicholls et al., 2012) promotes contextualising the monetised results with qualitative stakeholder narratives and quantitative evidence of reported outcomes to communicate the full story of creating value.

An applied critique levelled at the SROI model developed by REDF was its lack of standards, making results unreliable and incomparable (Olsen and Lingane, 2003). Nef therefore developed the six stage framework to ensure consistent application by a wide range of organisations. Undertaking an SROI analysis is a resource intensive process which can be problematic for charities, where access to human and financial resources may be limited (Cresswell, 2004). It also requires a significant degree of input from the individuals responsible for the intervention to drive the social impact parameters under investigation and avoid a “top-down” evaluation (Cresswell, 2004). As a research activity, a process of mutual learning is recommended between the SROI practitioner and the organisation under study, with continual communication and dialogue (Rotheroe and Richards, 2007). Identification of a central point of contact is therefore critical to access the contextual knowledge, information and support required (Rotheroe and Richards, 2007). Data quality and availability issues are common and can lead to a narrowed focus on internal activities and achievable objectives, rather than a full range of impacts both inside and outside the organisation (Aeron-Thomas et al., 2004; Olsen and Lingane, 2003).

Another provocative aspect of SROI is the projection of social impact into the future. The guidelines suggest a discounting rate of 3.5%, as recommended in the Green Book (Nicholls et al., 2012). However, Emerson et al (2000) argue that a range of discounting rates are used as appropriate, due to the lack of comparative market rates available, observing that higher discount rates drive down the projected rate of return on investment. Olsen and Lingane (2003) also believe a rigorous selection process is required rather than accepting a standard discounting rate, based on the uncertainty of achieving social impacts over several years. Yet the SROI process involves numerous estimates including the discounting rate, financial proxies and impact establishment measures used. Sensitivity analysis is undertaken to identify which estimates have the greatest impact on social returns, informing resource allocation to ensure continual
improvement. Ongoing monitoring of social impact is therefore required for the effective integration of SROI into organisational operations (Olsen and Lingane, 2003).

3.3 Methods

The SROI methodology was critically trialled in an exploratory manner in the built environment to investigate its applicability as a form of POE, taking a case-based approach to provide distinct test sites for the framework. This is the first time SROI has been applied to buildings in this way, as opposed to the wider impact of a building-related project within the local community (Aspden et al., 2012). The six stages of the SROI methodology, which represent current prevailing practice in the UK social impact sector (Nicholls et al., 2012), were developed into a framework of analysis suitable for the built environment, summarised in Table 3.3 and detailed in the sections below.

Table 3.3: Application of the six stages of SROI to the case buildings

<table>
<thead>
<tr>
<th>Stages of SROI</th>
<th>Application to case buildings</th>
</tr>
</thead>
</table>
| Establishing scope and identifying stakeholders | Establish scope  
• Identify case buildings  
• Establish what is being studied – internal impacts to building users, not external impacts to local economy/community, etc  
• Semi-structured interviews with project teams (n=17)  
Identify stakeholders  
• Semi-structured interviews with centre managers (n=3) – identify building user groups |
| Mapping outcomes                      | Focus groups with each building user group in each case building (n=12)                      |
| Evidencing outcomes and giving them a value | Evidence outcomes  
• User survey for each building user group in each case building (n=12)  
Give them a value  
• Desk-based research to identify and apply financial proxies to outcomes |
| Establishing impact                   | Desk-based analysis of user survey data to calculate deadweight and attribution measures |
| Calculating the SROI                  | Inputting the building costs  
• Calculating the “added cost” using an NHS benchmark  
Inputting the social returns  
• Sum of the total impact of outcomes  
Calculating the SROI ratio |
Establishing scope and identifying stakeholders

Establishing scope involved the selection of case buildings and defining what is under study. Three cancer support centres with varying levels of user-centred design and different funding, governance, and organisational set-ups were selected from the nonclinical healthcare sector in the UK (see Table 3.4) to provide a range of environments to trial SROI (Watson et al., 2016a). An analytical barrier was set around each case building. The impacts under investigation were those accruing to the users due to the building, rather than the services being offered, nor external societal impacts such as local economic benefits or cultural value. Semi-structured interviews were conducted with the project teams of each case building, including client, project manager, cost manager, architect, engineer (structural, mechanical and electrical), interior designer, and lighting consultant professionals, to gain a thorough understanding of the building design and the designers’ intentions. In total, 17 interviews were carried out, nine with the project team of case building 1, five for case building 2, and three for case building 3, based on the number of professionals involved in each project. The interviews were voice recorded, transcribed and coded using the qualitative analysis software Atlas.ti.
Table 3.4: Summary of cancer support centre case buildings

<table>
<thead>
<tr>
<th>Case building</th>
<th>Organisation</th>
<th>Build type</th>
<th>Size (m²)</th>
<th>Built environment</th>
<th>Clinical/ nonclinical</th>
<th>Rooms provided</th>
<th>Services offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Charitable</td>
<td>New build</td>
<td>360</td>
<td>Domestic scale, standalone building within an NHS hospital campus</td>
<td>Nonclinical design (homely)</td>
<td>Kitchen, library, private rooms, activity room, office</td>
<td>Psychosocial support, benefits advice, nutritional advice, low impact exercise sessions</td>
</tr>
<tr>
<td>2</td>
<td>Charitable</td>
<td>Fit out</td>
<td>300</td>
<td>Ground floor unit in a mixed-use commercial development in an inner city context</td>
<td>Nonclinical design (spa-like)</td>
<td>Reception, library, therapy rooms, activity room, several offices</td>
<td>Psychosocial support, complementary therapies, nutritional advice, low impact exercise sessions</td>
</tr>
<tr>
<td>3</td>
<td>NHS</td>
<td>Structural retrofit</td>
<td>106</td>
<td>Non-clinical space within NHS hospital building (between a ward and external, fully glazed access corridor overlooking a walled garden)</td>
<td>Clinical feel (NHS environment)</td>
<td>Library with a reception desk, private consultation booths, several offices</td>
<td>Psychosocial support, benefits advice, signposting service to relevant information</td>
</tr>
</tbody>
</table>

Source: Watson et al. (2016a, p.294)
Stakeholder identification was undertaken via a semi-structured interview with the centre manager of each case building to learn how the buildings operate on a day-to-day basis, who uses the space, and identify “building user groups” (Watson et al., 2016b) to represent the key stakeholders. Several identifiable categories of building users were summarised into four user groups: visitors, centre staff, session leaders/therapists, and volunteers (see Table 3.5), forming the basis for the SROI analyses.

Table 3.5: Number of building users in each case building

<table>
<thead>
<tr>
<th></th>
<th>Case building 1</th>
<th>Case building 2</th>
<th>Case building 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visits</td>
<td>10,517</td>
<td>4,913</td>
<td>11,860</td>
</tr>
<tr>
<td>Centre staff</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Session leaders/</td>
<td>19</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>therapists</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteers</td>
<td>17</td>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>

2. Mapping outcomes

Qualitative stakeholder engagement was conducted with each user group. A set of four focus groups were run at each building, one per user group, with approximately five participants in each session. The participants talked about their experiences of the buildings including their needs and preferences, how they use the space, how the design impacts them, and their opinions on improving the space. The focus groups were voice recorded, transcribed and coded using Atlas.ti for outcomes reported, such as wellbeing, care performance and revisit intention, and design features mentioned, such as homely environment, colourful furniture and large windows. The data analysis focused on identifying outcomes experienced by the user groups, and the design features they reported had impacted those experiences. The outcomes were inputted into a spreadsheet per building, according to the total number of individuals per user group (see Table 3.5).

3. Evidencing outcomes and giving them a value

This is the most complex and time consuming stage of SROI involving prolonged fieldwork followed by extensive desk-based analysis. The outcomes were evidenced
through quantitative user surveys, one for each building user group in each building. A core principle of SROI is measuring what the stakeholders reported rather than predetermined outcomes, requiring a separate survey for each user group in each building. A total of 12 surveys were designed.

The survey design was initially based on the BUS methodology questionnaires (Cohen et al., 2001a) in terms of layout and item scales. However, the purpose of the SROI user surveys is to measure outcomes in the building users, requiring the creation of new items with more similarity to social impact methods than typical post-occupancy surveys. Whilst the outcomes under study were different on each survey, the consistent sections are outlined in Table 3.6. The surveys were distributed in paper form in each building for several weeks up to several months, according to the speed of response rates. The data were collated electronically and analysed for descriptive statistics (frequencies and averages) to produce quantitative measurement of the outcomes reported by each user group. This was inputted as the proportion of each user group in agreement with the reported outcomes to calculate total incidence. It should be noted that the user surveys were designed and analysed in an exploratory manner and do not represent validated tools.

The second half of stage 3 places a value on the quantified outcomes. The SROI methodology uses financial proxies to assign a value to the outcomes, based on valuation traditions in environmental and health economics fields. Suitable financial proxies were identified via primary data from the occupying organisations, for example, average wages and cost-per-hire data, and through an exploratory desk-based literature search of academic, public sector and social enterprise publications relating to the measurement of social impact. Increasing interest in social value has led to a growing body of work relating to the ‘subjective wellbeing approach’ (Fujiwara and Campbell, 2011), described as an “established alternative to traditional preference-based valuation

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4 For an example survey, see: [http://bit.ly/1SzPNCk](http://bit.ly/1SzPNCk)

5 Seven-point Likert scales provided a neutral point and a range of positive and negative points either side. Additionally, a nine-point scale was included, based on the BUS item for productivity, to understand percentage change of outcomes, with 0% as the neutral point and a range of -40% to 40% either side. Additional sections focused on the design features mentioned during the focus groups: firstly, to cross-reference the outcomes against the design features; and secondly, to rate the design features on a seven-point scale.
methods typically used in cost benefit analysis” (Fujiwara and Dolan, 2014, p.3). National-scale datasets containing people’s lived experiences of specific interventions are statistically analysed to attach value to the outcomes. This is considered the latest development in social impact measurement, beyond preference-based methods with unavoidable bias (Fujiwara and Campbell, 2011). The subjective wellbeing approach has spawned an increasing number of publications containing financial proxies, e.g. the value of improved wellbeing, having a hobby or being able to seek advice locally. A particularly useful source of financial proxies was the recently published ‘Measuring the Social Impact of Community Investment: A Guide to Using the Wellbeing Valuation Approach’ from housing innovator HACT (Trotter et al., 2014). These proxies represent the value to an individual for a full year being intended for application to the long-term outcomes of social interventions, rather than the impact of design on building users for a specific time period. Where applicable, adjustment was made from yearly to hourly values and from hourly to the average number of hours spent in the building per user group, calculated from the survey data. Table 3.7 presents a summary of the financial proxies identified for the current study. The financial proxies were inputted alongside the relevant outcomes reported by each user group. The total incidence multiplied by the financial proxy produces the value created by that outcome for that user group in a year.

The inherent subjectivity of the monetisation process requires that a full account of how each valuation has been calculated is made available, especially where multiple financial proxies can be identified for any one outcome. Transparency is considered a core principle of the SROI methodology (Nicholls et al., 2012).

4. Establishing impact

The values placed on the outcomes are interrogated to establish their impact, prevent over-claiming and enhance credibility (Nicholls et al., 2012). Impact relates to four

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6 For example, the outcome of improved wellbeing was valued at £36,776 per individual per year (Table 3.5). The value of improved wellbeing per individual per hour is calculated accordingly: £36,766/(365 days x 24 hours) = £4.20. The visitor data for case building 1 showed the average time spent in the building per visit was 2.3 hours, and so improved wellbeing is valued at £9.66 per visit. The building received 10,517 visits in 2013 according to the secondary data gained from the charitable occupying organisation. The total value of the outcome of improved wellbeing for the visitor user group for the year is calculated to be £101,594.
counterfactual aspects: deadweight, displacement, attribution and drop-off, dealt with below.

Table 3.6: Main sections in user surveys

- Introductory paragraph: survey purpose and research team details
- Background information: user group status, age, time spent in building, time spent in specific spaces
- Agreement to reported outcomes
- Cross reference reported outcomes and reported design features
- Rate the impact of reported design features
- Information required for Stage 4 (see next Methods section)
- Rate percentage change to alternative outcomes identified during the transcript analysis

i) Deadweight

Deadweight is a measure of the proportion of the outcome that would have happened anyway, regardless of the intervention. The deadweight principle was applied to the proportion of the outcomes not reported as improved in the survey data, e.g., if visitors reported wellbeing improved by 35%, then 65% of the value placed on wellbeing cannot be claimed for and is removed as deadweight. This process was carried out across the outcomes for all user groups in each case building7.

ii) Displacement

Displacement is a measure of whether a positive outcome has simply displaced other negative outcomes elsewhere. It is not always relevant to every analysis (Nicholls et al., 2012) and is not considered applicable to post-occupancy analysis of the built environment.

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7 The exploratory nature of the study meant that deadweight data were not collected for all outcomes reported. Estimate deadweight proportions, based on available data for the corresponding user group, were used when necessary.
Table 3.7: Financial proxies identified for SROI analysis of case buildings

<table>
<thead>
<tr>
<th>Financial proxy</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of suffering from depression or anxiety per individual p.a.</td>
<td>-£44,237</td>
<td>Valuing Mental Health: How a Subjective Wellbeing Approach Can Show Just How Much It Matters (Fujiwara and Dolan, 2014)</td>
</tr>
<tr>
<td>Value of being relieved from depression or anxiety per individual p.a.</td>
<td>£36,766</td>
<td>Measuring the Social Impact of Community Investment: A Guide to Using the Wellbeing Valuation Approach (Trotter et al., 2014)</td>
</tr>
<tr>
<td>Value of regular attendance at a local organisation per individual p.a.</td>
<td>£1,773</td>
<td>As above</td>
</tr>
<tr>
<td>Value of being able to obtain advice locally per individual p.a.</td>
<td>£2,457</td>
<td>As above</td>
</tr>
<tr>
<td>Value of being a member of a social group per individual p.a.</td>
<td>£1,850</td>
<td>As above</td>
</tr>
<tr>
<td>Value of having a hobby per individual p.a.</td>
<td>£1,515</td>
<td>As above</td>
</tr>
<tr>
<td>Unit cost of a general practitioner (GP) visit in the UK</td>
<td>£49</td>
<td>Unit Costs of Health &amp; Social Care 2013 (Curtis, 2013)</td>
</tr>
<tr>
<td>Average salary for centre staff in each case building</td>
<td>-</td>
<td>Primary data</td>
</tr>
<tr>
<td>Average wage per hour for session leaders/therapists in case buildings</td>
<td>£36</td>
<td>Primary data</td>
</tr>
<tr>
<td>UK minimum wage per hour for over 21s (2013/14)</td>
<td>£6.31</td>
<td><a href="https://www.gov.uk/national-minimum-wage-rates">https://www.gov.uk/national-minimum-wage-rates</a></td>
</tr>
<tr>
<td>Cost per hire for employees in the not-for-profit sector (not senior managers or directors)</td>
<td>£1,500</td>
<td>Resourcing and Talent Planning 2012 (Sinclair, 2012)</td>
</tr>
</tbody>
</table>

Note: p.a., Per annum

iii) Attribution

Attribution is a measure of how much of the outcome can be attributed to the intervention, rather than other factors, e.g., the way the building is managed, the services being offered, or the interaction between building users. These data were collected through the user surveys and the average attribution percentage applied to each outcome. For example, if visitors considered 85% of improved quality of care to be attributable to the building design, 15% of the value was removed. This process was carried out across the outcomes for all user groups in each case building.
iv) Drop-off

Drop-off is a measure of how long outcomes last for over time. It is usually calculated by removing a fixed percentage from the remaining level of outcome after each year (Nicholls et al., 2012). Whilst relevant, the drop-off measure is affected by the visitor user group which is not fixed, but comprised of a changing set of new visitors each year alongside a decreasing number of long-term re-visitors. Whilst data were collected through the user surveys, analysis produced an unexpected finding according to the SROI methodology which is designed to take account of diminishing outcomes. On average, all user groups recorded no change to how much they experience outcomes from first using the building until the present. The visitor user group actually reported an average increase over time.

A possible explanation is the likelihood that factors aside from building design will influence users increasingly over time and enhance the outcomes they experience, e.g., human factors like developing friendships will positively influence outcomes of wellbeing, re-visit intention or staff retention, whilst building management factors could negatively affect outcomes like stress or reduced productivity. However, the attribution measure is designed specifically to combat this issue. The lack of drop-off could also be explained by an increasing attachment of the users to the buildings over time. Contextualising the quantitative data with the qualitative stories from the focus groups suggests this could be a factor. Further research is required to understand how design-related outcomes affect building users over time and whether there is a relationship between users ‘falling in love’ with buildings causing positive outcomes like wellbeing to increase over time.

The unexpected increases to certain outcomes reported by the visitor user groups were not accounted for due to the limited evidence for this phenomenon. This is recommended by the SROI methodology (Nicholls et al., 2012) in the unlikely event that an increase in value is reported rather than a reduction.

The deadweight and attribution measures identified in the user survey data were inputted against the relevant outcomes as percentages to be removed, producing a final impact-adjusted valuation for each outcome.
5. Calculating the SROI

The calculation of the SROI requires five separate elements: inputting the building costs, inputting the social returns, calculating the SROI ratio, projecting into the future, and sensitivity analysis. These activities are detailed below.

i) Inputting the costs

The building costs were calculated from the professional design fees, contract sum (construction cost) and the furniture, fittings and equipment (FF&E) cost. The point of interest was the impact of the additional spend above typical levels for a nonclinical healthcare building in the UK. Therefore, the costs were compared with an NHS benchmark for a similar build in order to calculate the “added cost” of the buildings.\(^8\)

The costs were sought during the project team interviews. All costs were inputted as commercial estimates\(^9\) due to the charitable nature of case building 1 and 2, whilst case building 3 was an add-on to an existing clinical scheme in an NHS hospital.

An NHS estimate was produced for each building based on the benchmark contract sum figure of £2,040/m\(^2\) for a new build NHS primary care centre found in the Department of Health’s Healthcare Premises Cost Guide (2010, p.22). Benchmark contract sum figures were calculated by the internal footprint of each case building, with professional fees estimated at 15% of the contract sum, a standard based on the secondary author’s industrial experience. As an FF&E benchmark could not be found for a nonclinical NHS setting, the figure collected during the primary research at case building 3 was modified to produce a benchmark of £24.25/m\(^2\) and adjusted according to the footprint of case building 1 and 2. The benchmark fees, contract sum and FF&E costs were combined to produce a total NHS benchmark cost per building, which was subtracted from the commercial estimate to leave the “added cost” of each case building.

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8 Alternatively, the costs could have been represented by the commercial estimates without comparison with a benchmark, or the charitable rates. Inputting the costs involves making a judgement call as part of the SROI process, emphasising the importance of transparency throughout. The flexibility of the methodology allows factors like the purpose of the analysis and the intended audience to direct the way the costs are calculated.

9 If the SROI analyses were being performed for the charitable occupying organisations then the costs would be represented by the charitable rates they paid. These would be smaller figures as the project teams and contractors worked at pro bono rates.
The “added cost” figures for case buildings 2 (fit-out) and 3 (retrofit) required further modification (see Table 3.8) due to the complexity of capturing the impact of design in these build types. The impact of the fit-out cannot be isolated from that of the shell-and-core retail unit, and the impact of the retrofit cannot be isolated from that of the surrounding built form. The commercial estimate for case building 2 was increased to include the shell-and-core unit. For case building 3, however, as no reliable estimate was available for the adjacent glass corridor, the NHS benchmark was adjusted to represent a retrofit at 33% of the cost of a new build. The comparability of the “added cost” figures is affected, as for case buildings 1 and 2 they represent the added cost of the full built environment (new build; fit-out and shell-and-core unit), whereas for case building 3 they represent the added cost of the retrofit only. It is apparent that a considerable degree of assumptions are required as part of the SROI methodology, emphasising the importance of transparency as a core principle.

Table 3.8: Inputting the “added cost” of the case buildings

<table>
<thead>
<tr>
<th>Case building</th>
<th>Build type</th>
<th>“Added cost” calculations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New build</td>
<td>Professional fees, contract sum and furniture, fittings and equipment (FF&amp;E) cost for new build; minus NHS benchmark fees, contract sum and FF&amp;E cost for new build</td>
</tr>
<tr>
<td>2</td>
<td>Fit-out</td>
<td>Professional fees, contract sum and FF&amp;E cost for fit-out; plus estimated fees, contract sum, and FF&amp;E cost for core-and-shell unit; minus NHS benchmark fees, contract sum and FF&amp;E cost for new build</td>
</tr>
<tr>
<td>3</td>
<td>Structural retrofit</td>
<td>Professional fees, contract sum and FF&amp;E cost for retrofit; minus estimated NHS benchmark fees and contract sum for retrofit; minus NHS benchmark FF&amp;E cost for new build</td>
</tr>
</tbody>
</table>

Source: Watson et al. (2016a, p.296)

ii) Inputting the social returns

A core SROI principle is to take a conservative approach in order to avoid overclaiming and to produce reliable and trustworthy results. Due to the interrelated nature of many of the reported outcomes, only wellbeing (and stress), performance (care and productivity), and NHS cost savings (due to reduced intention to access psychosocial support services through a general practitioner environment) were included in the
analysis. The impact-adjusted value of each outcome per user group was combined to calculate the total value generated by the design of each building for the users in a year.

iii) Calculating the SROI ratio

The SROI ratio was calculated by dividing the value of the outcomes by the added cost of each building. The SROI ratios represent the value created by the design of each case building for the building users in a year, per every £1 spent over and above the NHS benchmark.

iv) Projecting into the future

A snapshot ratio was calculated after one year\(^{10}\), with further ratios projected at useful time points across building lifetime to inform maintenance and re-fit decisions. Whilst discounting is not prescribed by SROI, it was considered appropriate to the commercial design and construction industry and Green Book discounting rates were applied over a 60 year period: 3.5% for the first 30 years, and 3.0% from year 31 onwards. SROI ratios were calculated after 10 years, at which point a re-fit is typically required, and after 60 years, the typical life time of building design. These ratios represent the value created by the design for the building users over 10 or 60 years, per every £1 spent over and above the NHS benchmark.

It is worth noting that the discounted SROI ratios are likely to underestimate the true value created as they are based on the original number of visits seen in 2013, whereas the case buildings receive an increasing number of visits each year.

v) Sensitivity analysis

The sensitivity of the SROI analysis was tested to investigate which estimates have the most impact on the overall ratio. The standard sensitivity checks include:

- Quantity of the outcome

\(^{10}\) Discounting is usually undertaken before the SROI ratio to calculate the total social returns created by an intervention over time, typically about five to 10 years after a charitable project is completed. The outcomes of design arguably last much longer, potentially the whole life time of a building, but as building users are not fixed in place, the impact will not be felt by the same group of individuals over time. Therefore the yearly social returns were deemed to be an important finding, before projecting into the future.
• Financial proxies used
• Estimates of deadweight and attribution
• Value of inputs

The aim is to calculate the amount each estimate needs to be changed to take the SROI ratio to 1.0, i.e., from positive to negative, or vice versa (Nicholls et al., 2012). The purpose is to identify priority areas for resource allocation to maintain and improve the return generated over time. The visitor and staff user groups proved more significant in terms of value creation than the session leaders and volunteers, and the visitor outcomes of reduced intention to use NHS support services and wellbeing, and the staff outcome of performance produced the most value.

6. Reporting, using and embedding

Detailed SROI results are presented by Watson et al (2016a) including a discussion of the effectiveness of SROI at capturing the social value of buildings. In addition, an end user SROI report was produced for one of the occupying organisations interested in applying SROI to more of their centres. The current paper provides critical methodological reflection on the process of applying SROI to the built environment, including a summary of the results produced. Further research has been undertaken to investigate the usefulness of the various SROI data for decision-makers and design professionals of future nonclinical healthcare buildings more widely. A summary of the SROI results are presented below followed by a methodological discussion, including the challenges faced, modifications required and lessons learnt.

3.4 Results

This paper delivers critical methodological reflection on applying SROI to the three case buildings. However, a summary of the results generated is included in Table 3.9 to demonstrate the potential insights and knowledge that SROI can provide about the value of building design for users. The monetised data presented includes total impact produced for the end users of each case building, impact/m² to aid comparison, “added cost” of each building including professional fees, contract sum and FF&E costs, and SROI ratios at 1, 10 and 60 year time points. Case building 1 produces considerably greater impact per year for its building users at £375/m² compared with £229/m² for
However, the SROI ratios are similar with £2.07 returned for every £1 spent over the NHS benchmark for case building 1, compared to £1.98 for case building 2, over a 60 year period. This is because the total “added cost” of case building 1 is much higher at £4,796/m² compared with £3,063/m² for case building 2. The main difference in investment can be identified using the SROI data: £294/m² was spent on the professional fees for case building 2, representing only 36.5% of that spent on fees for case building 1 at £805/m². A fuller account of the results produced by SROI analysis in the built environment is provided in a separate paper (Watson et al., 2016a). However, this summary illustrates the latent potential of SROI as a novel form of POE which can capture and monetise user experience in occupied buildings, as opposed to measuring building performance from a user perspective, and disseminate these insights in a transferable manner with direct relevance to the profit-oriented design and construction sector.

3.5 Discussion

The following sections reflect on the challenges faced in trialling SROI in the built environment, both general and technical, the modifications required, and the lessons learnt from the process.

3.5.1 General challenges

A set of high-level concerns relating to the application of SROI in the built environment were considered. The first related to the design of the SROI methodology to measure a change, i.e., before and after a social intervention, whereas building design does not represent an intervention in a traditional sense. In these cases the building users did not experience outcomes before and after the design meaning a baseline measure could not be collected. Therefore, the outcomes were measured as self-reported experiences, rather than before and after changes, in the context of the building design.

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11 The results for case building 3 are not directly comparable as they represent the returns on a retrofit scheme only, whereas case buildings 1 and 2 represent a new build and a fit-out of a shell-and-core scheme respectively, as outlined in the methods section.
Table 3.9: Summary of SROI results for the case buildings

<table>
<thead>
<tr>
<th>Case building</th>
<th>Floor plan (m²)</th>
<th>Total impact (p.a.)</th>
<th>“Added cost” of case building</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Impact</td>
<td>Professional fees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>/m²</td>
<td>/m²</td>
</tr>
<tr>
<td>1</td>
<td>360</td>
<td>£134,991</td>
<td>£375</td>
</tr>
<tr>
<td>2</td>
<td>300</td>
<td>£68,764</td>
<td>£229</td>
</tr>
<tr>
<td>3</td>
<td>106</td>
<td>£23,445</td>
<td>£221</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case building</th>
<th>SROI ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>1</td>
<td>£1 : £0.08</td>
</tr>
<tr>
<td>2</td>
<td>£1 : £0.07</td>
</tr>
<tr>
<td>3</td>
<td>£1 : £0.02</td>
</tr>
</tbody>
</table>

Source: adapted from Watson et al (2016a, p.298)
Secondly, the SROI methodology is designed to capture the value of social outcomes, and does not investigate and untangle the complex interrelations involved. No causal links can be drawn between the intervention and the outcomes. The outcomes identified and the data collected tend to be material, e.g., number of participants trained. In contrast, investigating and understanding the dynamic interactions between design and users mediated by their social context (Watson et al., 2016a) is important for a true representation of the value of design, from which lessons can be learnt and applied in future developments. This is problematic when applying SROI to building design as a potential means to close learning loops to promote user-centred design for future development.

Thirdly, it is worth noting that the data-crunching stages of the methodology are far removed from the qualitative focus group data about specific design features. SROI cannot evidence that certain design features produce specific outcomes based on quantified evidence. The qualitative data from the focus groups and the quantified design features scores from the survey data can help identify the most significant design features. However, this is similar to the information available through existing post-occupancy methodologies with the exception that it is stakeholder-driven, not pre-identified. It should also be noted that the design features sections on the user surveys are superfluous to the SROI methodology as this information was not required to produce the SROI data and ratios which are based on the reported outcomes only. Whilst attention is drawn to the value of “good” design overall, SROI does not quantify and monetise the value produced by specific design features. Further research is required to trial SROI in a different way, targeting specific design features and asking building users to identify outcomes they experience as a result. It is anticipated that the impact establishment stage would require considerable resources to produce a set of reliable and trustworthy estimates.

Finally, using an NHS benchmark to calculate the “added cost” of the buildings can be perceived as an assumption that no outcomes would be felt in a standard NHS environment. Whilst there is no reliable way of collecting evidence of outcomes “before” the building design, the deadweight measure does take into account how much the outcomes are reportedly boosted due to the current environment, and removes the
difference. This difference represents what would have happened (i.e., what would have been felt within NHS environments).

3.5.2 Technical challenges

The process of trialling SROI in the built environment faced a set of technical challenges, relating to the following themes: reported outcomes, surveys, financial proxies, impact establishment and calculating the SROI.

A significant challenge related to the interrelatedness of the outcomes: the causal links between improved wellbeing, relationship building, quality of care and services, and revisit intentions cannot be reliably extricated. Therefore, the final SROI only included reduced intention to use NHS psychosocial support services, wellbeing and performance outcomes to avoid over-claiming. A second challenge was felt in the identification of outcomes affecting stakeholder groups on different scales, e.g., the reduced intention of visitors to access psychosocial support services through NHS environments was included as a cost saving to the NHS. The occupying organisation also represents a stakeholder on a larger scale, with outcomes like brand enhancement also accruing value due to the building design. However, they were not included in the SROI due to concerns about finding reliable indicators, suitable financial proxies and establishing measures of deadweight, attribution, displacement and drop-off within the time and resource limitations. Further research is needed that trials SROI in relation to outcomes experienced by a wider set of building users at different scales, e.g., Vischer (2008a) outlines the relations between individuals users, groups of users and organisational scale users of buildings.

Maintaining access to the stakeholders over the time period required to complete the SROI analyses was problematic, particularly in two of the case buildings. Typically the practitioner aims to set up a dialogue with the key stakeholders and, as information is required, they speak with them directly to understand their opinions. It was most successful in case building 1, considered a result of the users’ affection for the building meaning they were keen to offer their experiences. To combat this issue, a quantitative approach was taken by designing user surveys to gather all of the information required throughout the SROI process. This led to the implementation of rather long, unwieldy surveys which were off-putting for potential participants and generated low response
rates, particularly by the visitors in case buildings 2 and 3. Case building 2 operates on an appointment basis, meaning visitors do not have the time to fill out a long survey when they are in the building. Case building 3 is managed on a drop-in basis where visitors only spend a short period of time, with similar implications for survey completion. Case building 1 also runs as a drop-in centre, but visitors are encouraged to spend time relaxing in the building and were more willing to spend time on the survey.

The SROI methodology emphasises that the outcomes being measured should be directed by the stakeholders. As a result, each user group in each building required a separate survey, leading to an extremely resource intensive period of fieldwork designing, administering and collating data from 12 different surveys. The survey design proved problematic as there is no precedent for items and scales to measure user outcomes of design, rather than building performance criteria. The BUS questionnaires represented a useful starting point, but they do not measure outcomes in building users. Existing survey items for the measurement of wellbeing, such as the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) (Tennant et al., 2007), tend to measure long-term personal wellbeing, rather than the wellbeing experienced due to design for a specific time period. Therefore, the scales on the BUS questionnaire were applied to newly designed items in an exploratory manner.

The identification of financial proxies represents another challenge as this is a new area of research with few centralised sources for outcomes of building design. Furthermore, different types of proxies exist, either organisational data or from the subjective wellbeing approach literature. Access issues to organisational data caused a reliance on the latter, but ideally these would be backed up with organisational proxies, e.g., the cost of a service per hour. Best practice involves using a mixture of proxies as, for example, a service may cost £30 but produce a value 10 times that. The modification of the financial proxies for application to the built environment was also highly challenging. Considerable discussion was held before they were adapted from a yearly value to an hourly value to enable adjustment per average hours spent in the building by each user group. The visitor user group was especially complicated as the survey data did not map onto the organisational visits-per-year data. There was no reliable way of calculating how many individuals made up the visitor user group, and this drove the modification of yearly values to hourly values.
Establishing the impact of each outcome proved complex. Firstly, identifying how the impact measures applied to the built environment took considerable debate. A discussion was held about whether deadweight and attribution represent the same thing in the built environment\textsuperscript{12}. Secondly, the unexpected finding that the outcomes were remaining constant, or even increasing, rather than dropping off over time could not be reliably incorporated into the SROI analyses.

The final set of technical challenges related to calculating the SROI. Inputting the cost data proved problematic for a number of reasons. Firstly, accessing cost data from the project teams was difficult due to the pro-bono nature of third sector costs. Similarly, costs for case building 3 were also estimated due to it forming an add-on to an existing scheme. Secondly, consideration was required over what the costs should constitute, whether the full commercial estimate or an “added cost” over and above a benchmark. The decision was taken to use the added cost scenario, leading to further decisions over how to benchmark for the various build types (new build, fit-out and structural retrofit).

Whilst the build types were achieved with varying costs/m\textsuperscript{2}, the social returns relate to the whole built environment as there is no way to separate the impact of the fit-out from that of the shell-and-core unit in case building 2, or the impact of the retrofitted structure from that of the surrounding structure in case building 3.

It is not typical practice to calculate the SROI ratio before discounting has been completed. However, understanding the return on investment after one year was considered important, and a discounted and a non-discounted set of ratios could then be calculated over the 10 year and 60 year time periods. In relation, using discounting rates to project social returns into the future was a considerable point of discussion. The value accrued from the buildings for the user groups should be understood as a yearly snapshot, as it will not be felt by the same set of individuals in the future. This is especially pertinent to the visitor user group which is constantly changing, making discounting to take account of the time preference of money less relevant to this user group. However, SROI has been applied to the built environment with the intention to

\textsuperscript{12} Calculating how much of the outcomes would have happened anyway and removing this as deadweight could be considered as calculating how much of the outcomes were caused due to the building design rather than other factors.
disseminate the findings in the design and construction sector, where discounting is an accepted and expected activity, typically based on the Green Book guidelines.

3.5.3 Lessons learnt

The final methodological output is the lessons learnt during the application of SROI to the built environment. Firstly, the volume of project team interviews could be condensed to include the client, architect and commercial manager, with any specialist consultants involved in the project as appropriate. Secondly, it is advisable to keep the survey design short and spend resources setting up a successful dialogue with stakeholders. As information is required during the SROI analysis, follow-up focus groups could be carried out with relevant user groups to gather qualitative data, rather than using surveys. This would provide a richer dataset but from a smaller group of participants, i.e., quality over quantity. It would also remove the risk of misinterpreting quantitative survey data, and the challenge of survey design in a nascent field of enquiry without established items and scales.

Thirdly, it is pertinent to note that a more streamlined SROI process is possible by pre-identifying outcomes in order to reduce significantly the time and resources spent measuring, valuing and establishing the impact of outcomes that cannot be claimed for due to inter-relatability issues. The important outcomes were reduced intention to access psychosocial support services in NHS environments, wellbeing and performance. In similar analyses, these outcomes could form the sole focus from stage 3 onwards. It is not advisable to pre-identify outcomes prior to stakeholder engagement in stage 2, which provides key insights into user experiences of design by learning about the full range of outcomes. Furthermore, qualitative context is vital to ensure the many decisions and judgement calls made throughout the SROI process are informed and directed by stakeholder experiences.

3.6 Conclusions

Recent interest in the design quality of the built environment has produced a range of tools to capture post-occupancy feedback from the users of buildings. However, a reliance on MCA and the scoring and weighting of predetermined criteria has impacted on the transferability of results and their usefulness to profit-related decisions, and
overlooked the outcomes experienced by users. The emerging “social value” agenda in the UK has led to methodological developments in social impact assessment, dovetailing with requirements to capture post-occupancy feedback from building users in a more meaningful and transferable way. The review of existing social impact valuation tools identified SROI as a well-developed methodology with significant potential for measuring and disseminating the impact of design on building users through the monetisation of social value. This research paper forms an account of the first applied social value research in the built environment, specifically trialling SROI in three case buildings. The results summary shows the potential of SROI to generate novel insights about the value of buildings for end users and its ability to communicate these findings in a powerful manner. The implications of transferring these findings include their application in commissioning and high-level investment decisions by clients and developers, and to inform project briefs and act as a source of user-centred evidence for project teams during the design process, facilitated by the variety of qualitative, quantitative and monetised data available. SROI represents an opportunity to engage with the end users of design to develop and share knowledge about their preferences and experiences and enhances the ability of practitioners to shape the built environment in positive ways. The discussion provides critical methodological reflection, including the challenges faced, both general and technical, the modifications made to the SROI methodology, and the lessons learnt. The methodological discussion does not include the effectiveness of SROI at capturing, measuring and disseminating the social value of buildings, which is covered separately (Watson et al., 2016a).

3.6.1 Recommendations for future applications of SROI to the built environment

- Consider data access at an early stage and gather as much data as possible during the early scoping and stakeholder engagement stages to facilitate the complex valuation and impact establishment stages

- Condense the number of project team interviews to conserve resources

- Consider the quantitative/qualitative balance used to collect the various data required and spend resources securing an ongoing dialogue with stakeholders

100
• Reflect on the environment where the user surveys will be administered and consider using pre-identified outcomes for a shorter survey design if necessary

• Consider build type when inputting cost data, especially if benchmarked

• Be transparent about how the valuations have been calculated
CHAPTER 4: Social Return on Investment (SROI) Report

A report to [charitable organisation]

Kelly Watson
School of Environment, Education & Development
University of Manchester

12 JAN 2016

[charitable organisation logo]
4.1 Executive summary

This report presents a study of the social return created by the building design of [case building 1] for the building users. The study is part of a PhD project in the School of Environment, Education and Development at the University of Manchester to investigate the effective measurement of the social value of buildings, using the Social Return on Investment (SROI) methodology. The research was funded by the Economic and Social Research Council (ESRC) with the CASE partner Arup. The project began in September 2012 and is due for completion in September 2016.

SROI was developed in the late 1990s as a framework for social enterprise to measure and account for a wider concept of value. It is based on cost-benefit analysis with a particular emphasis on stakeholder engagement. By quantifying and financialising complex social outcomes, it allows organisations to understand “for every £1 spent, we achieve outcomes worth £X”.

A range of information is generated, including qualitative stakeholder narratives, quantified stakeholder outcomes, and monetised returns.

There are six stages to the SROI methodology:

1) Establishing scope and identifying stakeholders
2) Mapping outcomes
3) Evidencing outcomes and giving them a value
4) Establishing impact
5) Calculating the SROI
6) Reporting, using and embedding

In this study, SROI has been applied to the built environment as a post-occupancy tool to understand the value of the design of [case building 1] for the building users. Four building user groups were identified: visitors, centre staff, session leaders and volunteers.

Qualitative stakeholder engagement was carried out in the form of focus groups with each user group to produce qualitative user narratives about the building, and more personalised case studies about the impact of its design.
A wide range of outcomes were identified through the focus groups with each building user group. However, they were highly inter-related and to avoid double counting only a select number could be included in the final analysis, namely:

- wellbeing and stress
- performance and productivity
- reduced intention to access psychosocial support services through NHS environments

**User surveys** were conducted with each building user group. The identified outcomes were quantified using the survey data, and presented as a set of bar charts for each user group.
Suitable financial proxies were applied to the quantified outcomes in order to place a value on them. A set of impact establishment techniques were carried out, including deadweight and attribution measures collected during the user surveys, to prevent over-claiming.

The total impact of [case building 1] for the building users was calculated at £134,800 per year.

[Charitable organisation] paid professional design fees of £182,000, a contract sum (construction cost) of £1,450,000, and a furniture, fittings and equipment (FF&E) cost of £80,000. The cost of [case building 1] was therefore a total of £1,712,000.

The SROI ratio was calculated based on the impact of the design after 1 year:

| 1 year | £1 : £0.08 |

The social returns were projected into the future using discounting rates from the Treasury’s Green Book, at useful time points: after 10 years at which point a re-fit is typically required, and after 60 years, the typical lifetime of building design.

[Charitable organisation] paid £1,712,000 for [case building 1]. The projected social returns are valued at £1,122,500 after 10 years, and £3,572,000 after 60 years.

Prospective SROI ratios were calculated based on the projected social returns:
<table>
<thead>
<tr>
<th></th>
<th>£1 : £0.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 years</td>
<td></td>
</tr>
<tr>
<td>60 years</td>
<td>£1 : £2.09</td>
</tr>
</tbody>
</table>

These ratios represent the value that will be created by the design of [case building 1] for the building users over 10 and 60 years, per every £1 spent on the building.

The payback period for [case building 1] is **12 years and 7 months**.

The uplift cost of [case building 1] above an NHS benchmark for a similar NHS building of the same footprint was also calculated, at **£858,710**.

Prospective SROI ratios were calculated for the uplift spend based on the same projected social returns as above:

<table>
<thead>
<tr>
<th></th>
<th>£1 : £0.16</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td></td>
</tr>
<tr>
<td>10 years</td>
<td>£1 : £1.31</td>
</tr>
<tr>
<td>60 years</td>
<td>£1 : £4.16</td>
</tr>
</tbody>
</table>

The payback period for the uplift cost of [case building 1] is **6 years and 5 months**.

A set of recommendations are given, relating to the design of [charitable organisation]’s centres, operational considerations, and potential uses for SROI.

**4.2 Introduction**

This report presents a study of the social return created by the building design of [case building 1] for the building users. The study is part of a PhD project in the School of Environment, Education and Development at the University of Manchester to investigate the effective measurement of the social value of buildings, using the Social Return on Investment (SROI) methodology. The research was funded by the Economic and Social Research Council (ESRC) with the CASE partner Arup. The project began in September 2012 and is due for completion in September 2016.
SROI is a framework for measuring and accounting for a wider concept of value, beyond that which can be easily captured in market values. It is increasingly in use across the social enterprise and not-for-profit sector in the UK, and has been endorsed by the Cabinet Office and Office for the Third Sector. The methodology is based on traditional cost-benefit analysis and assigns a monetary value to social returns which are compared against the original level of investment, producing a ratio of costs to social outcomes.

4.3 What is Social Return on Investment?

SROI was originally developed in the US by the Roberts Enterprise Development Fund (REDF) in the mid-1990s. It has been further developed by the New Economics Foundation (nef) in the UK since the late 1990s to have a stakeholder emphasis and a robust and replicable methodology.

SROI is a framework for measuring and accounting for a wider concept of value, beyond that which can be easily captured in market values. It seeks to improve decision making by incorporating economic, social and environmental costs and benefits. SROI measures change in ways that are relevant to the people or organisations that experience or contribute to it, including economic, social and environmental outcomes and using monetary values to represent them. This enables a ratio of benefits to costs to be calculated. SROI is about value, rather than money. Money is simply a common unit and as such is a useful and widely accepted way of conveying value (Nicholls et al., 2012).

However, the SROI methodology has been critiqued for its use of monetary values to represent intangible outcomes. There are many well developed arguments that social impacts are not reducible to monetary measures, that this is neither possible nor desirable, and the methodology therefore underestimates their true value (McLoughlin et al., 2009). SROI supporters would argue that it is a step in the right direction, bringing intangible outcomes into the conversation by presenting them in a commonly understood unit of value.

An SROI analysis can take many forms. It can encompass the value generated by an entire organisation, or focus on a specific aspect of the organisation’s work, for example, the impact of the [charitable organisation]’s programme on visitors. In the case of this
study, the value created by the built environment is what is being measured. This is a new application of the SROI methodology, and comes with its own set of issues to be worked through. Therefore this study represents an exploratory application of SROI to the built environment.

However, using SROI to capture the impact of the full [charitable organisation]’s offer, both programme and built environment, would be a typical application of the methodology and represents a potential avenue for [charitable organisation] to consider.

The findings of the SROI analysis of [case building 1] built environment are presented below.

4.4 The SROI Framework

The SROI methodology has six stages, as set out in The SROI Network’s “A Guide to Social Return on Investment” (Nicholls et al., 2012). The six stages are:

1) Establishing scope and identifying stakeholders
2) Mapping outcomes
3) Evidencing outcomes and giving them a value
4) Establishing impact
5) Calculating the SROI
6) Reporting, using and embedding

The following sections of this report are structured according to the six stage methodology to present the SROI analysis of [case building 1].

4.5 SROI analysis

4.5.1 Establishing scope and identifying stakeholders

Establishing scope

The purpose of the SROI analysis is to form part of the research for a PhD project, aiming to investigate the potential applicability of SROI to the issue of measuring the social value of the built environment. The audience is both academic and non-academic. The academic audience is made up of the immediate supervisory team, internal and external (to the University of Manchester) examiners of the PhD, and academic
reviewers of subsequent papers for peer reviewed publication in academic journals. The non-academic audience is primarily [charitable organisation]. The aim and objectives of [charitable organisation] is to create a nonclinical space for anyone affected by cancer, offering a programme of psychosocial support in an uplifting environment.

The PhD student has carried out the SROI analysis, as part of a wider 12 month programme of full time fieldwork from September 2013, followed by 6 months of desk-based analysis. The resources available included an annual research grant of £750 as part of the PhD funding, and the school fieldwork allowance of £600. The PhD student completed SROI Practitioner training with the New Economics Foundation (nef) prior to the SROI analysis.

The SROI analysis will focus on [case building 1]. It is pertinent to note that the value of the building design is being analysed, as opposed to the design process or the programme of services provided in the building. The SROI is intended to represent a snapshot of the building, understanding how it impacts on the end users on an ongoing basis. This study is an evaluative (retrospective) SROI analysis, as opposed to a forecast (prospective) SROI.

The project team for [case building 1] was interviewed to gain a thorough understanding of the architectural brief, the intentions of the design team and the design features included in the final building. Semi-structured interviews of approximately 45-90 minutes were carried out with [charitable organisation] current property manager, the property manager in post during the development, the project manager, the cost manager, the project architect, interior designer, structural engineer, mechanical engineer and lighting consultant.

Identifying stakeholders

Stakeholders are defined as people or organisations that either experience change or affect the activity, whether positive or negative. For a typical SROI, organisational stakeholders are therefore included. However, the scope of this analysis is to measure the impact of the built environment on the building users. A semi-structured interview was carried out with the centre manager to understand the different people using the building, in order to establish the set of building user groups, outlined below.
- Visitors
- Centre staff
- Session leaders
- Volunteers

The SROI process requires consideration of which stakeholders have experienced material change (i.e. relevant and significant outcomes), whether positive or negative, to decide which stakeholders should be included. The above list is not finalised at this stage, but open to refinement through later stakeholder engagement. It is also important that the stakeholder groups do not hide differences, for example, the visitors group does not mask significant differences between patients, and friends and families of patients.

**Table 4.1: Stakeholder identification**

<table>
<thead>
<tr>
<th>Building user group</th>
<th>What happens to them</th>
<th>Included or excluded from SROI?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>Impacted by the design of the centre as a therapeutic environment</td>
<td>Included as they are the intended end user of the centre</td>
</tr>
<tr>
<td>Centre staff</td>
<td>Impacted by the design of the centre as a working environment</td>
<td>Included as the centre is their working environment</td>
</tr>
<tr>
<td>Session leaders</td>
<td>Impacted by the design of the centre as a working environment</td>
<td>Included as the centre is their working environment</td>
</tr>
<tr>
<td>Volunteers</td>
<td>Impacted by the design of the centre as a volunteering environment</td>
<td>Included as the centre is their volunteering environment</td>
</tr>
</tbody>
</table>

Deciding how to involve stakeholders

The SROI methodology promotes the collection of information directly from stakeholders, where possible. For the initial stages, the sample of stakeholders does not need to be statistically representative but is about getting a broad picture and quality of information.
Table 4.2: Stakeholder engagement activities

<table>
<thead>
<tr>
<th>Building user group</th>
<th>Method of involvement</th>
<th>How many?</th>
<th>When?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>Focus group</td>
<td>Focus group n=5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survey</td>
<td>Survey n=77</td>
<td></td>
</tr>
<tr>
<td>Centre staff</td>
<td>Focus group</td>
<td>Focus group n=5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survey</td>
<td>Survey as many as possible</td>
<td>Focus groups in spring 2014</td>
</tr>
<tr>
<td>Session leaders</td>
<td>Focus group</td>
<td>Focus group n=3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survey</td>
<td>Survey as many as possible</td>
<td>Surveys in summer 2014</td>
</tr>
<tr>
<td>Volunteers</td>
<td>Focus group</td>
<td>Focus group n=3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survey</td>
<td>Survey as many as possible</td>
<td></td>
</tr>
</tbody>
</table>

4.5.2 Mapping outcomes

Valuing the inputs

The investment in an SROI is the financial value of the inputs, which are used up over the course of the activity, e.g. time or money. SROI requires identification of what stakeholders are contributing to make the activity (i.e. the design) possible.

The inputs to the design of [case building 1] are represented by the professional fees, contract sum and furniture, fittings and equipment (FF&E) cost. However, it is worth noting that most of the professional fees were agreed at a reduced rate, or conducted on a pro bono basis.

[Case building 1] was completed with professional fees of £182,000, a contract sum of £1,450,000, and a FF&E cost of £80,000, totalling inputs of £1,712,000.
Clarifying the outputs

Outputs are a quantitative summary of the activity, in this case, the design of the building. The output is the end usage of that design. At the time of the analysis, there were approximately:

- 10,500 visitors at the building per year
- 6 centre staff working in the building
- 19 session leaders working part time in the building
- 17 volunteers spending volunteering time in the building

Identifying outcomes

SROI is an outcomes-based measurement tool, as measuring outcomes is the only way to be sure that changes are taking place for stakeholders. The SROI methodology requires that outcomes are identified through stakeholder engagement. The aim of the design activity is to create a space that produces positive impacts on the people using it: the output is its usage, and the outcomes are the impacts on the building users.

A set of focus groups were run in [case building 1], one with each building user group. There were approximately 5 participants in a focus group. They were asked to talk about their experiences of the building design, including their opinions of the building, how they use the space, how the design impacts them, and their opinions on improving the space. Some of the main qualitative findings are outlined below.

i) Visitors

- High quality, nonclinical environment – calming, space to gather your thoughts
- Kitchen as hub of the whole building – warm and welcoming atmosphere; kitchen table as point of contact – can talk in a different way
- Interior design – quirky and colourful, furniture and furnishings, homely feel
- Window design – natural light, views to nature – uplifting
- No reception – can be intimidating if not met at the door, and view down the stairs into the kitchen can be scary – sea of faces
- Seating in kitchen can block people in
- Uphill access to building is problematic
ii) Centre staff

- High quality environment and nonclinical atmosphere – changes how they interact with visitors, and each other – team working
- Social spaces and private spaces – useful for offering varied support, and providing time out for staff
- Window design: natural light and views to nature – acts as a coping mechanism for emotional impact of job
- Kitchen size and layout – can bottleneck at peak times – stress
- Open plan layout – lack of quiet, private spaces available can be stressful – also upstairs rooms often full to capacity
- Accessible office with lots of people calling in – concerns around confidentiality and impacts on productivity

iii) Session leaders

- High quality working environment, especially wooden floor in activity room
- Nonclinical design with friendly, ambient atmosphere – visitors open up more and they can interact with them differently
- Large windows with access to natural light – uplifting environment
- Kitchen as hub of building promotes meeting new people and building relationships
- Some dissatisfaction with practical issues like shape of activity room, windows not staying open, storage cupboards

iv) Volunteers

- Glass front door – can see who is approaching and offer a welcome
- Homely environment with kitchen table – changes how they interact with visitors, more informal
- Variety of interiors – there is a space for everyone to feel comfortable
- High quality environment with natural light, friendly atmosphere – enjoy spending time, lifts your mood/spirits, feeling of happiness
- Kitchen can become cramped during peak times
The focus group data was also used to produce more personalised case studies about the impact of the [case building 1] and its design, which are presented below (*names have been changed to maintain participant anonymity).

Michael* was diagnosed in 2013. His nurse recommended [redacted] as a source of advice and information. He was initially wary as he would usually shy away from group situations, but the unusual green exterior surrounded by trees made him curious as it was so different from the rest of the hospital. Once inside, Michael liked the fact there was no reception and he could wander into the informal kitchen which acts as the heart of the building. He found the interior was light and airy with colourful, high quality finishes which drew him in:

"It feels a very enticing, interesting space and it makes you feel very vibrant inside, but calm and relaxed. There’s a quality in the art work through to the wooden floors, the whole thing is fantastic!"

He always pops into [redacted] after his monthly visits to the oncology department as he finds it a nice place to have a cup of tea and see a friendly face. He forgets he is at a hospital when he is inside the centre.

"You can see the hospital but I don’t look out and think that’s a hospital. The building does absorb you from that externally although you can actually see it, which is quite unique really."

He has also taken part in several tai chi classes and finds the building is well-suited to a meditative approach to relaxation:

"It has a positive energy when you come in...Clarity is very easy here."

Michael believes the building plays an important role in allowing the staff to operate in a different way to traditional healthcare settings:

"I find the staff friendly and open, not pushy, just very good natured in the way they do things and extremely good the way they approach things. So I think that is a very important part, but I think that the building is as equal because it creates the environment where you can do that. There is never a feeling of tension about the people that work here."  
(Visitor, 2014)

(*names have been changed to maintain participant anonymity)

Figure 4.1: Visitor narrative
Grace* is a member of the [redacted] staff. Working in a non-institutional environment with lots of natural light and trees outside the windows has made a real difference to her ability to cope with the emotional demands of her role. She enjoys working in a building that does not feel like a hospital, particularly the kitchen, with its sociable feel and lively acoustics.

"Something I've noticed is I've never heard anyone come in and say, oh I can't, not another day here, or I really didn't want to come in today. I don't hear those kinds of things because it seems that people enjoy coming here to work and the volunteers are always happy to be here."

She believes the small building means the centre staff have formed genuine friendships and work together very well as a team. Whilst space is sometimes an issue during busy times, she finds having a variety of rooms to talk to visitors very helpful depending on their need for privacy.

(Centre staff, 2014)

(*names have been changed to maintain participant anonymity)

Figure 4.2: Centre staff narrative

Julie* is a Clinical Nurse in the main oncology department. She runs a specialist support group and decided to hold it in [redacted] rather than the hospital building:

"For patients, [the centre] does make a difference. It hasn't got a hospital feel, it's got a calming atmosphere and it feels like you're in someone's house. The patients are more relaxed and they're able to open up to you more."

She recognises that the building has a positive impact on her as well. The noise and stress of the hospital environment are removed and she can give more to her patients. She enjoys spending time at [redacted]. She sometimes brings her lunch over and feels like she has had a proper break.

(Session leader, 2014)

(*names have been changed to maintain participant anonymity)

Figure 4.3: Session leader narrative

A set of outcomes was identified due to the building design for each user group from the focus group data. However, the SROI methodology recognises that there is a temporal element to consider when identifying outcomes. Long term outcomes can be difficult to identify, and often there are intermediate outcomes (changes observed along
the way) that form a “chain of events”. Outcomes need to be considered as either new outcomes or part of an existing chain of events. SROI places a value on the final outcomes only.

This idea is very relevant to understanding outcomes in building users, as often a variety of intermediate outcomes produce a final outcome, e.g. satisfaction leading to improved retention, or interacting with people differently leading to improved care performance. Furthermore, the outcomes identified by building users are highly interrelated and unravelling the causal relationships is problematic. Therefore, only a select few can be included in the final analysis to avoid double counting.

The outcomes reported by each building user group due to the building design are outlined in the table below, with the outcomes that were included in the final analysis in bold.

### 4.5.3 Evidencing outcomes and giving them a value

Developing outcome indicators

This is the most complex and time consuming stage of the SROI methodology involving fieldwork followed by desk-based analysis. Based on the outcomes identified during the focus groups, a set of user surveys were designed to measure the outcomes reported by each building user group. A core principle of SROI is measuring what matters rather than pre-determined outcomes, requiring a separate survey for each user group instead of one general survey.

Whilst the outcomes under study were different on each of the four surveys, the main sections were consistent.

- Introductory paragraph: survey purpose and research team details
- Background information: user group status, age, time spent in building, time spent in specific spaces
- Agreement to reported outcomes
- Cross reference reported outcomes and reported design features
- Rate the impact of reported design features
- Information required for Stage 4
- Rate percentage change to alternative outcomes identified during the transcript analysis

The visitor survey is available to view from: [http://bit.ly/1SzPNCk](http://bit.ly/1SzPNCk)

Table 4.3: Outcomes identified per building user group

<table>
<thead>
<tr>
<th>Building user group</th>
<th>Outcomes reported (final outcomes in bold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td><strong>Increased wellbeing</strong></td>
</tr>
<tr>
<td></td>
<td>Increased relationship building</td>
</tr>
<tr>
<td></td>
<td>Higher quality of care</td>
</tr>
<tr>
<td></td>
<td>Higher quality of services</td>
</tr>
<tr>
<td></td>
<td>Increased beneficial effect from care and services</td>
</tr>
<tr>
<td></td>
<td>Increased first visit intention</td>
</tr>
<tr>
<td></td>
<td>Increased revisit intention</td>
</tr>
<tr>
<td></td>
<td>Longer visit intention</td>
</tr>
<tr>
<td></td>
<td><strong>Reduced intention to access psychosocial support services in NHS environments</strong></td>
</tr>
<tr>
<td>Centre staff</td>
<td><strong>Increased wellbeing</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Increased stress</strong></td>
</tr>
<tr>
<td></td>
<td>Increased relationship building</td>
</tr>
<tr>
<td></td>
<td><strong>Improved care performance</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Reduced office performance (productivity)</strong></td>
</tr>
<tr>
<td></td>
<td>Increased recruitment</td>
</tr>
<tr>
<td></td>
<td>Increased retention</td>
</tr>
<tr>
<td></td>
<td>Increased presenteeism (i.e. reduced absenteeism)</td>
</tr>
<tr>
<td></td>
<td>Increased time spent at work</td>
</tr>
<tr>
<td>Session leaders</td>
<td><strong>Increased wellbeing</strong></td>
</tr>
<tr>
<td></td>
<td>Increased relationship building</td>
</tr>
<tr>
<td></td>
<td><strong>Improved care performance</strong></td>
</tr>
<tr>
<td></td>
<td>Improved quality of sessions</td>
</tr>
<tr>
<td></td>
<td>Increased recruitment</td>
</tr>
<tr>
<td></td>
<td>Increased retention</td>
</tr>
<tr>
<td></td>
<td>Increased presenteeism (i.e. reduced absenteeism)</td>
</tr>
<tr>
<td>Volunteers</td>
<td><strong>Increased wellbeing</strong></td>
</tr>
<tr>
<td></td>
<td>Increased relationship building</td>
</tr>
<tr>
<td></td>
<td><strong>Improved care performance</strong></td>
</tr>
<tr>
<td></td>
<td>Increased recruitment</td>
</tr>
<tr>
<td></td>
<td>Increased retention</td>
</tr>
<tr>
<td></td>
<td>Increased presenteeism (i.e. reduced absenteeism)</td>
</tr>
</tbody>
</table>
The survey design was based on the Building User Survey (BUS) questionnaire (Cohen et al., 2001a), an established methodology in the post-occupancy evaluation of buildings, primarily in terms of layout and item scales. Seven point Likert scales (‘strongly agree’ to ‘strongly disagree’) provided a neutral point and a range of positive and negative points either side. Based on the BUS item for productivity, a nine point scale was also included to understand percentage change of outcomes, with 0% as the neutral point and a range of -40% to +40% either side. Additional sections focused on the design features mentioned during the focus groups: firstly to cross reference the outcomes against the design features, and secondly to rate the design features on a seven point scale.

Collecting outcomes data

The implementation of the user surveys was achieved over the course of several weeks in August 2014. The visitor, session leader and volunteer surveys were distributed in paper form in a tray on the kitchen table in case building 1, and the completed surveys were collected in a separate tray. The centre head distributed the user survey to the centre staff, and visitors, session leaders and volunteers were made aware of the surveys with the help of the centre staff and regular volunteers.

- 77 visitors filled out the visitor survey
- All of the 6 centre staff members filled out the centre staff survey
- 5 of the 19 session leaders filled out the session leader survey
- 7 of the 17 volunteers filled out the volunteer survey

The resulting data was collated electronically and analysed for descriptive statistics (frequencies and averages) in order to produce quantitative measurement of the outcomes reported by each user group. The outcomes data was inputted into an SROI spreadsheet as a proportion of each building user group in agreement with the reported outcomes, allowing the total number of each user group in agreement to be calculated. It should be noted that the user surveys were designed and the results analysed in an exploratory manner and they do not represent validated tools. The outcomes data results are presented below for each user group, followed by the impact of the design features. They represent quantified stakeholder feedback and show the impact of the centre design on the building users.
i) **Percentage agreement to reported outcomes**

**Visitors**

- Increased wellbeing: 95%
- Increased relationship building: 92%
- Higher quality of care/services: 93%
- Increased beneficial effect from care/services: 90%
- Increased first visit intention: 88%
- Increased re-visit intention: 91%
- Longer visit intention: 96%
- Reduced intention to access psychosocial support services in NHS environments: 69%

**Figure 4.4:** Reported agreement to outcomes for visitors

**Centre staff**

- Increased wellbeing: 83%
- Increased stress: 20%
- Increased relationship building: 50%
- Improved care performance: 100%
- Reduced office performance (productivity): 50%
- Increased recruitment: 67%
- Increased retention: 60%
- Increased presenteeism: 33%
- Increased time spent at work: 17%

**Figure 4.5:** Reported agreement to outcomes for centre staff
Figure 4.6: Reported agreement to outcomes for session leaders

- Increased wellbeing: 100%
- Increased relationship building: 100%
- Improved care performance: 75%
- Improved quality of sessions: 100%
- Increased recruitment: 50%
- Increased retention: 25%
- Increased presenteeism: 25%

Figure 4.7: Reported agreement to outcomes for volunteers

- Increased wellbeing: 86%
- Increased relationship building: 86%
- Improved care performance: 86%
- Increased recruitment: 86%
- Increased retention: 71%
- Increased presenteeism: 57%
### ii) Impact of the design features

**Figure 4.8: Reported impact of design features for visitors**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Impact (1 to 7 scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playful exterior</td>
<td>5.9</td>
</tr>
<tr>
<td>High quality space</td>
<td>6.6</td>
</tr>
<tr>
<td>Nonclinical environment</td>
<td>6.8</td>
</tr>
<tr>
<td>Homely environment</td>
<td>6.6</td>
</tr>
<tr>
<td>Open plan layout (staircases, landings)</td>
<td>6.2</td>
</tr>
<tr>
<td>Open plan layout (kitchens)</td>
<td>6.3</td>
</tr>
<tr>
<td>Kitchen as social hub</td>
<td>6.7</td>
</tr>
<tr>
<td>Kitchen table as point of contact</td>
<td>6.5</td>
</tr>
<tr>
<td>Kitchen size and layout</td>
<td>6.5</td>
</tr>
<tr>
<td>Balconies</td>
<td>6.4</td>
</tr>
<tr>
<td>Variety of spaces</td>
<td>6.5</td>
</tr>
<tr>
<td>Availability of small private spaces</td>
<td>6.4</td>
</tr>
<tr>
<td>Large activity room</td>
<td>6.5</td>
</tr>
<tr>
<td>Dividing wall in activity room</td>
<td>5.8</td>
</tr>
<tr>
<td>Colourful/quirky interiors</td>
<td>6.5</td>
</tr>
<tr>
<td>Choice of soft furnishings/furniture</td>
<td>6.3</td>
</tr>
<tr>
<td>Lack of soft furnishings/furniture</td>
<td>4.2</td>
</tr>
<tr>
<td>Lighting (table/ floor lamps)</td>
<td>5.9</td>
</tr>
<tr>
<td>Window design (large/ operable)</td>
<td>6.4</td>
</tr>
<tr>
<td>Acoustics</td>
<td>6.2</td>
</tr>
<tr>
<td>Heating controls</td>
<td>5.9</td>
</tr>
<tr>
<td>Lack of space/ capacity</td>
<td>4.5</td>
</tr>
<tr>
<td>Sloping site</td>
<td>5.0</td>
</tr>
<tr>
<td>Steps outside</td>
<td>5.1</td>
</tr>
<tr>
<td>Bridge entrance</td>
<td>5.6</td>
</tr>
<tr>
<td>Staircases inside</td>
<td>5.2</td>
</tr>
<tr>
<td>Lift inside</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Impact on a 1 to 7 scale.
### Centre staff

<table>
<thead>
<tr>
<th>Feature</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>High quality space</td>
<td>5.3</td>
</tr>
<tr>
<td>Nonclinical environment</td>
<td>5.3</td>
</tr>
<tr>
<td>Open plan layout (staircases, landings)</td>
<td>5.3</td>
</tr>
<tr>
<td>Open plan layout (kitchen/ side rooms)</td>
<td>4.8</td>
</tr>
<tr>
<td>No reception</td>
<td>4.8</td>
</tr>
<tr>
<td>Social spaces (kitchen, library)</td>
<td>4.8</td>
</tr>
<tr>
<td>Kitchen as social hub</td>
<td>5.0</td>
</tr>
<tr>
<td>Kitchen size and layout</td>
<td>5.0</td>
</tr>
<tr>
<td>Variety of rooms</td>
<td>4.6</td>
</tr>
<tr>
<td>Availability of small, private spaces</td>
<td>3.0</td>
</tr>
<tr>
<td>No signage for occupied rooms</td>
<td>4.7</td>
</tr>
<tr>
<td>Accessibility of office</td>
<td>3.8</td>
</tr>
<tr>
<td>Unlockable office</td>
<td>2.7</td>
</tr>
<tr>
<td>Lack of soft furnishings/ furniture</td>
<td>3.2</td>
</tr>
<tr>
<td>Lighting (table/floor lamps)</td>
<td>5.5</td>
</tr>
<tr>
<td>Window design (large, operable)</td>
<td>5.2</td>
</tr>
<tr>
<td>Acoustics</td>
<td>4.7</td>
</tr>
<tr>
<td>Heating controls</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Figure 4.9: Reported impact of design features for centre staff**
### Session leaders

<table>
<thead>
<tr>
<th>Design Feature</th>
<th>Impact on a 1 to 7 scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of space/capacity</td>
<td>4.8</td>
</tr>
<tr>
<td>Heating controls</td>
<td>5.3</td>
</tr>
<tr>
<td>Window design (large, operable)</td>
<td>7.3</td>
</tr>
<tr>
<td>Lighting (table/floor lamps)</td>
<td>5.3</td>
</tr>
<tr>
<td>Lack of soft furnishings/furniture</td>
<td>4.0</td>
</tr>
<tr>
<td>Practical facilities (e.g. storage)</td>
<td>6.0</td>
</tr>
<tr>
<td>Wooden floor (activity room)</td>
<td>7.0</td>
</tr>
<tr>
<td>Activity room (shape and size)</td>
<td>7.0</td>
</tr>
<tr>
<td>Variety of rooms</td>
<td>5.5</td>
</tr>
<tr>
<td>Kitchen as social hub</td>
<td>5.3</td>
</tr>
<tr>
<td>Nonclinical environment</td>
<td>5.8</td>
</tr>
</tbody>
</table>

**Figure 4.10: Reported impact of design features for session leaders**

### Volunteers

<table>
<thead>
<tr>
<th>Design Feature</th>
<th>Impact on a 1 to 7 scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating controls</td>
<td>5.8</td>
</tr>
<tr>
<td>Lack of space/capacity</td>
<td>5.4</td>
</tr>
<tr>
<td>Window design (large, operable)</td>
<td>6.5</td>
</tr>
<tr>
<td>Lighting (table/floor lamps)</td>
<td>6.0</td>
</tr>
<tr>
<td>Lack of soft furnishings/furniture</td>
<td>5.0</td>
</tr>
<tr>
<td>Colourful/quirky interiors</td>
<td>5.9</td>
</tr>
<tr>
<td>Acoustics</td>
<td>5.2</td>
</tr>
<tr>
<td>Variety of rooms</td>
<td>5.9</td>
</tr>
<tr>
<td>Kitchen size and layout</td>
<td>5.8</td>
</tr>
<tr>
<td>Kitchen as social hub</td>
<td>6.7</td>
</tr>
<tr>
<td>Open plan layout (kitchen)</td>
<td>6.3</td>
</tr>
<tr>
<td>Open plan layout (staircases, landings)</td>
<td>6.0</td>
</tr>
<tr>
<td>Glass front door</td>
<td>6.5</td>
</tr>
<tr>
<td>No reception</td>
<td>5.8</td>
</tr>
<tr>
<td>Nonclinical environment</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**Figure 4.11: Reported impact of design features for volunteers**
Putting a value on the outcomes

The SROI methodology uses financial proxies to place a monetised value on intangible outcomes, allowing a wider concept of value to be considered within operational decision-making. As outlined in the introduction, SROI has been critiqued for its use of monetary values to represent intangible outcomes, based on the irreducibility of social impacts to monetary measures (McLoughlin et al., 2009). Whilst controversial, the ability to present intangible outcomes in a commonly understood unit of value (money) promotes negotiation around issues that would otherwise be side-lined. The identification of financial proxies is a subjective process and not an exact science. Therefore, the SROI methodology emphasises the need to find financial proxies that are appropriate to the outcomes under study, within the time and resources available, and to present them in a transparent manner.

Suitable financial proxies were identified from primary data, for example, equivalent NHS salary bands to charitable organisation pay scale, as well as an exploratory literature search of academic, public sector and social enterprise publications relating to the measurement of social impact. Increasing interest in social value has led to a growing body of work relating to the subjective wellbeing approach (Fujiwara and Campbell, 2011). This is considered the latest development in social impact measurement and led to an increasing number of publications containing a variety of financial proxies, for example, the value to an individual of improved wellbeing, having a hobby or being able to seek advice locally. A particularly useful source of financial proxies was the recently published “Guide to Using the Wellbeing Valuation Approach” from housing innovator HACT (Trotter et al., 2014). Using financial proxies that are based on previous research and have been used in SROI analyses before enhances their credibility. However, due to data access issues, there may be organisational data that could be used to provide more accurate financial proxies.

A summary of the financial proxies identified for the SROI analysis of [case building 1] is presented in Table 4.4.

It should be noted that there may be more than one financial proxy identified for an outcome, or the same proxy might be suitable for more than one outcome. The SROI methodology is not prescriptive but allows the flexible selection of proxies in a way deemed most suitable. In this case, the proxy used for increased wellbeing is the value
of being relieved from suffering from depression or anxiety, taken from the HACT report (Trotter et al., 2014). This is a commonly used proxy for increased wellbeing in the social impact literature and does not mean that wellbeing is being defined here as the absence of depression or anxiety. This is simply the most appropriate financial proxy available. Similarly, the same proxy was inverted to a minus figure for the outcome of increased stress. However, the selection of these proxies is supported by academic work on wellbeing and stress in the workplace where “the most common stress related conditions are depression and anxiety” (Cartwright and Cooper, 2014, p.30).

**Table 4.4: Summary of financial proxies**

<table>
<thead>
<tr>
<th>Reported outcome(s)</th>
<th>Financial proxy</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased stress</td>
<td>Cost of suffering from depression or anxiety per individual p.a.</td>
<td>£44,237</td>
<td>Valuing mental health: how a subjective wellbeing approach can show just how much it matters (Fujiwara and Dolan, 2014)</td>
</tr>
<tr>
<td>(or wellbeing if +£)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased wellbeing</td>
<td>Value of being relieved from depression or anxiety per individual p.a.</td>
<td>£36,766</td>
<td>Measuring the Social Impact of Community Investment: a Guide to using the Wellbeing Valuation Approach (Trotter et al., 2014)</td>
</tr>
<tr>
<td>(or stress if -£)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>Value of being a member of a social group per individual p.a.</td>
<td>£1,850</td>
<td>As above</td>
</tr>
<tr>
<td>Higher quality of care/services</td>
<td>Value of being able to obtain advice locally per individual p.a.</td>
<td>£2,457</td>
<td>As above</td>
</tr>
<tr>
<td></td>
<td>Value of having a hobby per individual p.a.</td>
<td>£1,515</td>
<td>As above</td>
</tr>
<tr>
<td>Category</td>
<td>Value of participation in yoga per individual p.a.</td>
<td>Value of regular attendance at a local organisation per individual p.a.</td>
<td>Unit cost of a GP visit in the UK</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Improved beneficial effect</td>
<td>£2,256</td>
<td>£1,773</td>
<td>£49</td>
</tr>
<tr>
<td>Improved visit intentions</td>
<td>As above</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td>Reduced intention to access psychosocial support services in NHS environments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved performance</td>
<td>Average salary for centre staff based on NHS bands</td>
<td>£27,241</td>
<td>Primary data</td>
</tr>
<tr>
<td>Improved retention</td>
<td>Average wage per hour for session leaders/therapists</td>
<td>£36</td>
<td>Primary data</td>
</tr>
<tr>
<td>Improved presenteeism</td>
<td>Minimum wage per hour for over 21s in the UK during 2013</td>
<td>£6.31</td>
<td><a href="https://www.gov.uk/national-minimum-wage-rates">https://www.gov.uk/national-minimum-wage-rates</a></td>
</tr>
<tr>
<td>Longer spent at work</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A number of the financial proxies required modification before they could be applied to [case building 1]. Many represent the value to an individual for a full year, being intended for application to the long term outcomes of social interventions. They were not developed for the purpose of measuring the impact of design on building users, where outcomes are experienced for a specified time period. The yearly financial proxies were adjusted, simply by dividing by 365 days per year and 24 hours per day, to produce the value to an individual per hour. The hourly proxy could then be amended according to the average time spent in the building per user group, as reported in the survey data.

For example, the outcome of improved wellbeing was valued at £36,776 per individual per year. The value of improved wellbeing per individual per hour is calculated accordingly: £36,766 / (365 days x 24 hours) = £4.20. The visitor data showed the average time spent in the building per visit was 2.3 hours, and so improved wellbeing is valued at £9.66 per visit. The building received 10,517 visits in 2013 according to [case
building 1] data, 95% of whom agreed they experienced the outcome of increased wellbeing. Therefore, the value of the outcome of improved wellbeing for the visitor user group for the year is calculated to be £96,500. Corresponding modifications for the outcome of increased wellbeing were made for the other building user groups, according to the survey data.

This process was required across a significant number of the financial proxies which are based on yearly values, including organisational data like salaries. Where applicable, adjustment was made from yearly to hourly values and by the average number of hours spent in the building.

The finalised financial proxies were inputted into the SROI spreadsheet alongside the relevant outcomes reported by each building user group. The total number of individuals in agreement with an outcome is multiplied by the relevant financial proxy to produce the value created by that outcome for that user group in a year. However, before these values can be presented, impact is established in Stage 4.

4.5.4 Establishing impact

In order to establish the impact of the outcomes reported, the values placed on them are interrogated to prevent over-claiming and enhance credibility (Nicholls et al., 2012). Impact relates to four key aspects: deadweight, displacement, attribution and drop-off, before the impact can be calculated.

Deadweight

Deadweight is a measure of the proportion of the outcome that would have happened anyway, regardless of the intervention. When placing a value on reported outcomes, a scenario without the intervention must be considered to remove impact that cannot be claimed for. Applying the deadweight principle to analysis of building design is complicated as without [case building 1] there would be no building users and therefore no social value. However, deadweight is relevant based on the user surveys which quantified the level of agreement of the user groups. For example, 93% of the visitors that filled out the survey agreed that the quality of care and services was improved due to the building design, and on average this was reported as a 35% improvement. Therefore, 65% of the value placed on this outcome cannot be claimed for and is
removed as deadweight. This process was carried out across the outcomes for all building user groups in [case building 1].

It should be noted that the exploratory nature of the study meant the surveys did not collect deadweight data for all outcomes reported. Estimate deadweight proportions, based on the available deadweight data for the corresponding user group, were used when necessary.

**Displacement**

Displacement is a measure of whether a positive outcome has simply displaced other negative outcomes elsewhere. Displacement is not always relevant to every analysis (Nicholls et al., 2012) and in the case of analysing the impact of the built environment, it is not considered to be applicable.

**Attribution**

Attribution is a measure of how much of the outcome can be attributed to the intervention, rather than other factors. Applied to [case building 1], this measures asks how much of the reported outcomes are due to the building design rather than factors such as the way the building is managed, the services being offered, or the interaction between building users. A question was included on the user surveys to collect this data, and the average attribution percentage applied to each outcome. For example, on average the visitor user group considered 85% of the improved quality of care and services to be attributable to the building design, resulting in 15% of the value placed on this outcome being removed. This process was carried out across the outcomes for all building user groups in each case building.

**Drop off**

Drop-off is a measure of how long outcomes last for over time. The significance of drop-off as an impact measure in [case building 1] is affected by the visitor user group which is not fixed, being comprised of a changing set of new visitors each year alongside a lower number of long term re-visitors.

A set of questions were included on the user surveys to collect drop-off data from the building user groups. However, this produced an unexpected finding according to the SROI methodology which is designed to take account of diminishing outcomes. All user
groups were most likely to record no change in how much they experience the outcomes of design from first using the building until the present. The visitor user group actually reported an average increase over time.

The lack of drop-off could be seen as a direct result of building design that the users have become increasingly attached to over time. Contextualising the quantitative data with the qualitative stories from the focus groups certainly suggests this could be a factor.

As drop-off was not reported in the survey data, no impact was removed from the total value of the outcomes each year. The unexpected increase in certain outcomes over time reported by the visitors was also not accounted for due to limited evidence about its cause. This is recommended by the SROI methodology (Nicholls et al., 2012), in the unlikely event that there is an increase in impact over time, rather than a reduction.

A summary of the deadweight and attribution impact measures for each user group are presented in the tables below.

**Table 4.5: Summary of deadweight and attribution measures**

<table>
<thead>
<tr>
<th></th>
<th>Visitors</th>
<th>Centre staff</th>
<th>Session leaders</th>
<th>Volunteers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEADWEIGHT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased wellbeing</td>
<td>0.65</td>
<td>0.75</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>Increased stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>0.65</td>
<td>0.75</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>Higher quality of care/services</td>
<td>0.65</td>
<td></td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Increased beneficial effect</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased first visit intention</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased re-visit intention</td>
<td>0.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longer visit intention</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduced intention to access support services in NHS envs</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved performance</td>
<td>-</td>
<td>0.77</td>
<td>0.70</td>
<td>0.73</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Increased recruitment</td>
<td>-</td>
<td>0.70</td>
<td>0.80</td>
<td>0.72</td>
</tr>
<tr>
<td>Increased retention</td>
<td>-</td>
<td>0.87</td>
<td>0.70</td>
<td>0.74</td>
</tr>
<tr>
<td>Increased presenteeism</td>
<td>-</td>
<td>0.75</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>Increased time spent at work</td>
<td>-</td>
<td>0.70</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**ATTRIBUTION**

<table>
<thead>
<tr>
<th>Increased wellbeing</th>
<th>0.85</th>
<th>0.60</th>
<th>0.55</th>
<th>0.80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased stress</td>
<td>-</td>
<td>0.55</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>0.90</td>
<td>0.55</td>
<td>0.55</td>
<td>0.70</td>
</tr>
<tr>
<td>Higher quality of care/services</td>
<td>0.85</td>
<td>-</td>
<td>0.55</td>
<td>-</td>
</tr>
<tr>
<td>Increased beneficial effect</td>
<td>0.78</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Increased first visit intention</td>
<td>0.25</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Increased re-visit intention</td>
<td>0.85</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Longer visit intention</td>
<td>0.85</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Reduced intention to access support services in NHS envs</td>
<td>0.78</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Improved performance</td>
<td>-</td>
<td>0.70</td>
<td>0.55</td>
<td>0.95</td>
</tr>
<tr>
<td>Increased recruitment</td>
<td>-</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Increased retention</td>
<td>-</td>
<td>0.60</td>
<td>0.70</td>
<td>0.75</td>
</tr>
<tr>
<td>Increased presenteeism</td>
<td>-</td>
<td>0.60</td>
<td>0.70</td>
<td>0.75</td>
</tr>
<tr>
<td>Increased time spent at work</td>
<td>-</td>
<td>0.65</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Calculating impact**

The deadweight and attribution impact measures identified using the survey data were inputted into the SROI spreadsheet against the relevant outcomes for each building user group. These proportions were removed from the value of each outcome to produce the total impact, shown in the tables below for each building user group.
Table 4.6: Total impact for each user group

**Visitors**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased wellbeing</td>
<td>£28,500</td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>£1,500</td>
</tr>
<tr>
<td>Higher quality of care/services</td>
<td>£1,800</td>
</tr>
<tr>
<td>Improved beneficial effect from care/services</td>
<td>£1,200</td>
</tr>
<tr>
<td>Increased first visit intention</td>
<td>£400</td>
</tr>
<tr>
<td>Increased re-visit intention</td>
<td>£1,400</td>
</tr>
<tr>
<td>Longer visit intention</td>
<td>£500</td>
</tr>
<tr>
<td>Reduced intention to access psychosocial support services in NHS environments</td>
<td>£63,500</td>
</tr>
<tr>
<td><strong>Total impact of [case building 1] for the visitors is</strong></td>
<td><strong>£98,800</strong></td>
</tr>
</tbody>
</table>

**Centre staff**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased wellbeing</td>
<td>£5,000</td>
</tr>
<tr>
<td>Increased stress</td>
<td>-£1,100</td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>£100</td>
</tr>
<tr>
<td>Improved care performance</td>
<td>£21,800</td>
</tr>
<tr>
<td>Reduced office performance</td>
<td>-£11,400</td>
</tr>
<tr>
<td>Increased recruitment</td>
<td>£20</td>
</tr>
<tr>
<td>Increased retention</td>
<td>£70</td>
</tr>
<tr>
<td>Increased presenteeism</td>
<td>£70</td>
</tr>
<tr>
<td>Increased time spent at work</td>
<td>£700</td>
</tr>
<tr>
<td><strong>Total impact of [case building 1] for the centre staff is</strong></td>
<td><strong>£15,200</strong></td>
</tr>
</tbody>
</table>
### Session leaders

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased wellbeing</td>
<td>£2,500</td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>£100</td>
</tr>
<tr>
<td>Improved care performance</td>
<td>£18,100</td>
</tr>
<tr>
<td>Improved quality of sessions</td>
<td>£19,000</td>
</tr>
<tr>
<td>Increased recruitment</td>
<td>£35</td>
</tr>
<tr>
<td>Increased retention</td>
<td>£60</td>
</tr>
<tr>
<td>Increased presenteeism</td>
<td>£10</td>
</tr>
</tbody>
</table>

Total impact of \([case building 1]\) for the session leaders is \(= £39,800\)

### Volunteers

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased wellbeing</td>
<td>£3,300</td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>£150</td>
</tr>
<tr>
<td>Improved care performance</td>
<td>£4,600</td>
</tr>
<tr>
<td>Increased recruitment</td>
<td>£25</td>
</tr>
<tr>
<td>Increased retention</td>
<td>£60</td>
</tr>
<tr>
<td>Increased presenteeism</td>
<td>£60</td>
</tr>
</tbody>
</table>

Total impact of \([case building 1]\) for the volunteers is \(= £8,200\)

#### 4.5.5 Calculating the SROI

The calculation of the SROI requires five separate elements: inputting the design costs, inputting the social returns, calculating the SROI ratio, projecting into the future, and calculating the payback period. These activities are detailed below.
Inputting the costs

[Charitable organisation] paid professional design fees of £182,000, a contract sum (construction cost) of £1,450,000, and an FF&E cost of £80,000. The cost of the design of [case building 1] was, therefore, a total of £1,712,000.

It also possible to calculate the uplift cost of [case building 1], meaning the amount spent by [charitable organisation] above a benchmark for an NHS building of the same footprint. The benchmark of £2,040/m² for the contract sum of an NHS primary care centre is taken from the Health Building Note 11-01 (Department of Health, 2013), and used to calculate the contract sum and professional fees for a 360m² footprint. An NHS benchmark of £24.25/m² for the FF&E cost is taken from primary research, and used to calculate the FF&E cost for a 360m² footprint, as shown below.

**Table 4.7: Calculating the NHS benchmark**

<table>
<thead>
<tr>
<th>Calculation</th>
<th>NHS benchmark for 360m² building</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contract sum</strong></td>
<td>£2,040 x 360m² = £734,400</td>
</tr>
<tr>
<td><strong>Professional fees</strong></td>
<td>15% contract sum = £110,160</td>
</tr>
<tr>
<td><strong>FF&amp;E</strong></td>
<td>£24.25/m² x 360m² = £8,730</td>
</tr>
<tr>
<td></td>
<td>= £853,290</td>
</tr>
</tbody>
</table>

The total NHS benchmark spend on a building of the same footprint as [case building 1] would be £853,290. Subtracting the benchmark from the total cost of [case building 1] gives an uplift spend of **£858,710**.

Inputting the social returns

The total impact of each outcome is presented above in section 4.5.4, by building user group. Adding these up gives the total value created by the design of each case building for the building users in a year.

However, many of the reported outcomes are highly inter-related and the relationships between them cannot be rigorously analysed. Therefore, only the outcomes seen in bold in section 4.5.2 were included, specifically, increased wellbeing, increased stress, reduced intention to access psychosocial support services through NHS environments, and performance-related outcomes. This issue relates to the SROI principle of being
conservative and preventing over-claiming, in order to produce a reliable and trustworthy result.

Therefore, the total impact of the design of [case building 1] for the building users is £134,800 per year, further outlined in Table 4.8.

**Table 4.8: Total impact of case building**

<table>
<thead>
<tr>
<th>Visitors</th>
<th>Total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased wellbeing</td>
<td>£28,500</td>
</tr>
<tr>
<td>Reduced intention to access psychosocial support services in NHS environments</td>
<td>£63,500</td>
</tr>
<tr>
<td><strong>Centre staff</strong></td>
<td></td>
</tr>
<tr>
<td>Increased wellbeing</td>
<td>£5,000</td>
</tr>
<tr>
<td>Increased stress</td>
<td>-£1,100</td>
</tr>
<tr>
<td>Improved care performance</td>
<td>£21,800</td>
</tr>
<tr>
<td>Reduced office performance</td>
<td>-£11,400</td>
</tr>
<tr>
<td><strong>Session leaders</strong></td>
<td></td>
</tr>
<tr>
<td>Increased wellbeing</td>
<td>£2,500</td>
</tr>
<tr>
<td>Improved care performance</td>
<td>£18,100</td>
</tr>
<tr>
<td><strong>Volunteers</strong></td>
<td></td>
</tr>
<tr>
<td>Increased wellbeing</td>
<td>£3,300</td>
</tr>
<tr>
<td>Improved care performance</td>
<td>£4,600</td>
</tr>
</tbody>
</table>

= £134,800

**Calculating the ratio**

The SROI ratio is calculated by dividing the value of the outcomes by the cost of the design.

The SROI ratios represent the value created by the design of [case building 1] for the building users in a year, per every £1 spent.
Table 4.9: SROI ratios

<table>
<thead>
<tr>
<th>Building cost : total impact</th>
<th>Uplift cost: total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>£1,712,000 : £134,800</td>
<td>£858,710 : £134,800</td>
</tr>
<tr>
<td><strong>£1 : £0.08</strong></td>
<td><strong>£1 : £0.16</strong></td>
</tr>
</tbody>
</table>

The value created by [case building 1] for the building users in a year is £0.08 per every £1 spent on the building in total, and £0.16 per every £1 spent on the building above the NHS benchmark.

Projecting into the future

The social returns have been projected into the future in order to understand the value created by the design of [case building 1] over its lifetime.

The suggested discounting rates from the Treasury’s Green Book (HM Treasury, 2003) were applied to the total impact values over a 60 year period, using 3.5% for the first 30 years, and 3% from year 31 onwards.

\[
\text{Discounting formula} = \frac{\text{total impact}}{1 + \text{discounting rate}^y}
\]

Projected social returns were calculated at useful time points, namely, after 10 years at which point a re-fit is typically required, and after 60 years, the typical lifetime of building design.

The projected social returns are valued at **£1,122,500** after 10 years, and **£3,572,000** after 60 years.

Prospective SROI ratios were also calculated. The ratios represent the value that will be created by the design for the users over 10 or 60 years, per every £1 spent on the building in total, and above the NHS benchmark.

Table 4.10: Projected SROI ratios

<table>
<thead>
<tr>
<th></th>
<th>Building cost : total impact</th>
<th>Uplift cost : total impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>£1 : £0.08</td>
<td>£1 : £0.15</td>
</tr>
<tr>
<td>10 years</td>
<td>£1 : £0.66</td>
<td>£1 : £1.31</td>
</tr>
<tr>
<td>60 years</td>
<td>£1 : £2.09</td>
<td>£1 : £4.16</td>
</tr>
</tbody>
</table>
The ratios show that:

- after 10 years of \( \text{case building 1} \) being occupied, there was £0.66 in social returns for the building users for every £1 spent on the building, and £1.31 for every £1 spent above the NHS benchmark, and

- over the 60 year lifetime of \( \text{case building 1} \), there was £2.09 in social returns for the building users for every £1 spent on the building, and £4.16 for every £1 spent above the NHS benchmark.

It is worth noting that the discounted SROI ratios are likely to underestimate the true value created as they are based on the original number of visits seen in 2013, whereas \( \text{charitable organisation} \)'s centres receive an increasing number of visits each year. Furthermore, they are based on average salaries from 2013 and do not take pay rises into account.

**Payback period**

The payback period is a useful alternative to the SROI ratio for communicating the value of the built environment at \( \text{case building 1} \), based on how quickly it pays back in user outcomes. It is calculated by dividing the annual value created by 12 to produce impact per month, and then dividing the investment figure by the impact per month to get the payback period in months.

\[
\text{Payback period} = \frac{\text{investment}}{\text{(annual impact/12)}}
\]

The payback period was calculated for \( \text{case building 1} \):

Payback period = £1,712,000 / (£134,800 / 12) = 12 years and 7 months

This means that in less than 13 years the full cost of the built environment at \( \text{case building 1} \) will be returned in social benefits for the building users.

The payback period was also calculated for the uplift spend on \( \text{case building 1} \):

Payback period = £858,710 / (£134,800 / 12) = 6 years and 5 months

This means that in less than 6.5 years the spend on the built environment of \( \text{case building 1} \) above the NHS benchmark will be returned in social benefits for the building users.
4.5.6 Reporting, using and embedding

The data presented in this SROI report relates immediately to [case building 1], but the findings have relevance to all [charitable organisation] centres.

A set of recommendations are set out below, based on the SROI analysis of [case building 1] and the discussions held with [charitable organisation] executive team members during post-project interviews.

Design recommendations

- Accessible entrance without steps or uphill climb
- Direct line of sight to kitchen with pause spaces to reduce visitor anxiety about being “on show”
- Open plan kitchen to allow for busy periods and reduce staff stress, with flexible furniture to allow free movement of people
- Mix of social and quiet spaces within open plan layout, and more private spaces to offer varied support for visitors and valued time out for staff
- Less accessible staff office to ensure confidentiality and help with productivity issues
- Square rather than rectangular activity room for movement-based classes
- Ensure practical details are considered, e.g. adequate storage, operable windows

Operational recommendations

- Induction programme to manage expectations and offer support to new staff during transition from clinical environment
- More formalised building management processes rather than informal “firefighting” to reduce stress

Recommendations for using SROI to deliver the strategic goals of [charitable organisation]

- Improve the accuracy of financial proxies by using internal data for each centre, e.g. average cost-per-hire, average session leader wages, etc
- Expanding SROI analysis across network of centres will allow comparison of ratios to inform both the design of future centres to promote best return on
investment, and refurbishment decisions of existing centres to address low scoring ratios

- SROI could be used predictively before commissioning and retrospectively as a post-occupancy tool to ensure the expected return on investment has been delivered
- Potential to expand SROI analysis to the wider [charitable organisation] offer, i.e. support and services as well as built environment, which would solve concerns about the impact of other variables, e.g. human factors
- Consider including a wider set of outcomes in the SROI analysis where value is felt by [charitable organisation] as an organisation, e.g. reputational boost due to high quality builds, improved fundraising, or opportunities to engage with wider arts-related audiences

4.6 Next steps

The PhD research has been developed into a related 12 month project to be undertaken by Kelly Watson in the School of Environment, Education and Development at the University of Manchester, in collaboration with Arup and [charitable organisation]. The proposed project engages with [charitable organisation ’s] research strategy priority to understand the impact of [charitable organisation] environments.

The project aim is to investigate the impact of the built environment on the wellbeing outcomes of building users.

A survey-based tool will be designed to measure the wellbeing of building users. Three [charitable organisation] centres will be selected in which the tool will be trialled and validated. The SROI methodology will be applied to produce financial valuation of the wellbeing created by the design of each building. A set of architectural design guidelines will be produced to promote wellbeing in future nonclinical developments.

The project deliverables are:

- Monetised evidence of the impact of [charitable organisation]’s environments
- Quantitative database containing wellbeing scores for each centre
- Simple, survey-based tool to measure the impact of new centres
- Set of architectural design guidelines for nonclinical environments
Funding has been secured through the ESRC Impact Accelerator Account at the University of Manchester for £20,000, and through the Invest in Arup award for £10,000. The project will run from January 2016 to January 2017.
CHAPTER 5: Capturing the Social Value of Buildings: the Promise of Social Return on Investment (SROI)

Building and Environment: published

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²NWY Building Engineering, Arup, UK

Abstract

Existing post-occupancy research rarely considers the importance of the sociality of the building user community and its building user group dynamics. A social value agenda is proposed to promote user-centred design within the built environment, by looking beyond physical design to consider the dynamic interactions that exist between people and their built environment within the social context that mediates them. A social impact valuation methodology, Social Return on Investment (SROI), is trialled in three nonclinical case buildings of varying levels of user-centred design and different build types, representing applied social value research. A qualitative comparison of the “social value” of the case buildings considers the physical design, as well as their varying briefing and design processes, organisational set-ups and building management, and the experiences of the building users. However, the financial SROI data is inconsistent with the qualitative narratives, leading to concern over the effectiveness of SROI at capturing the implications of the sociality of the building user community.

Key words

Building user community, post-occupancy evaluation, sociality, Social Return on Investment, social value, user-centred design

5.1 Introduction

The delivery of the built environment is rarely influenced by user needs and preferences; rather conventional business drivers, technical regulations and environmental imperatives are prioritised (Vischer, 2008a). As Macmillan (2006) notes, there is a general reluctance to invest beyond the minimum standards expected in commercial builds, whilst decision-making to increase short term costs for long term gain is
problematic for elected leaders in the public sector. A significant factor in the disregard of user requirements is their qualitative nature which makes measurement and transferability problematic. Whilst a range of evaluation methods and tools currently exist (e.g. the PROBE methodology, Design Quality Indicators, Value in Design) they do not have far-reaching influence on professional design decisions. This is related to the relatively short timeframe of the professional design process in comparison to the longer timeframe required for effective evaluation, a disparity which currently undermines user-centred building design in practice. Furthermore, the qualitative findings of existing evaluation methods lack transferability and have limited applicability to built environment decisions which are necessarily commercial, whilst their objective is consistently about measuring building performance, rather than user experience. A shift in evaluative focus is required to understand the impact of design for building users.

The newly emerging concept of “social value” in the UK has significant potential to overcome the issue of evaluative impact in building design research. The concept has recently achieved traction at policy level being written into the Public Services (Social Value) Act 2012, which came into effect in England and Wales in February 2013. The Act requires that public service contracts take into account the wider value of a project over its entire lifetime, rather than traditional procurement based on cost. The application of the concept of social value to the built environment emphasises the significance of value beyond profit-driven motivations. It is proposed that applied social value research in buildings could facilitate the dissemination of post-occupancy findings in professional learning loops to realise building design that is optimised for users, as well as economic and environmental performance.

This paper draws on existing post-occupancy research on building design and users to develop a perspective relating to the emerging concept of social value. This is fundamentally tied to the triple bottom line of sustainable building design, which emphasises the social element alongside economic and environmental imperatives. It implies a focus on wider society beyond the building, as seen in the use of “social value” by Macmillan (2005, p.X) and in a recent report on built environment research avenues by the Arts and Humanities Research Council (Flood and Lambert, 2012). It also relates to recent calls to widen out from a focus on individual building performance to the role of the built environment at the neighbourhood scale in adaptive processes over time.
(Cole et al., 2013; Cole, 2011). However, in this paper the concept of social value is applied specifically to the internal building user community, rather than society beyond the building, to promote understanding about the value of user-centred design. This represents an original contribution as little published research exists which explicitly tackles the social value of building design from the perspective of building users, being only indirectly addressed through work on the wider value of design (Macmillan, 2006; Macmillan, 2005).

This paper begins by presenting a social value agenda for buildings, representing a unique application of the concept, followed by the presentation of applied social value research to investigate its effective measurement. An overview of the applicability of the concept of social value to buildings is followed by a thematic review of existing post-occupancy work on building design and users. Three main points are covered in relation to the social value of buildings: differing conceptualisations of building users; looking beyond a homogenous, individual user to user groups and nested user units; and the moderating variable of building user group dynamics in occupied buildings. The sociality of building users as a dynamic and contextual community has generally not been a point of interest in previous post-occupancy work, but for social value research in buildings it represents a fundamental element. The results of applying a social valuation methodology called Social Return on Investment (SROI) to three cancer support centres are presented, representing a mixed methods comparison of three case buildings with varying levels of user-centred design. The paper aim is to investigate whether SROI, as an emerging social value methodology in the built environment, can capture the implications of the collective building user community and its social relations, not currently possible through existing post-occupancy methods. A range of qualitative and quantitative financial data provides an account of the social value of each building. The discussion considers the effectiveness of SROI at capturing and measuring the social value of the case buildings, and critiques the ability of SROI to consider the complex relationship between building design, building users of multiple types and units, and building user group dynamics, an empirical agenda for social value research in buildings.
5.2 Social Value and Buildings

The concept of “social value” has recently emerged in the public policy sphere in the UK, due to the Public Services (Social Value) Act 2012 coming into force in England and Wales in February 2013. The Act has been heralded as a shake-up in public service provision, requiring the wider value of a project be taken into account during requests for tender. In relation, Scotland is currently developing the Procurement Reform Bill with similar intentions and government-commissioned research in Northern Ireland is set to evaluate the success of the Social Value Act and assess the impact if a similar bill was introduced (Harper, 2012).

A growing body of independent research has focused on the decision-making behind public service investment in the UK. Think-tanks like the New Economics Foundation (nef) have identified a long term neglect to measure what matters and promote decision-making based on social outcomes rather than financial considerations (Lawlor et al., 2009). Increasingly, the concept of social value has been understood as something actionable. For example, the National Association for Voluntary and Community Action website asserts social value to be about “maximising the impact of public expenditure” (NAVCA, 2012). Its appointment as a legal requirement in public service contracts in England and Wales represents a major accomplishment for this movement. However, some argue that the Act does not support social value aggressively enough (Lord Addington, 2012) due to a lack of regulatory teeth combined with a caveat for Local Authorities to opt out if they cannot meet its requirements for practical reasons.

The concept of social value grew out of early ideas of corporate responsibility, ethical economics, and the social enterprise and valuation literatures (Zadek, 2004; Emerson, 2003; Richmond et al., 2003). Its conceptual ambiguity is made tangible as the products and services generated by organisational enterprise that are of value to wider society (Quarter and Richmond, 2001), giving rise to ideas like “value-based organisations” (Evans and Zadek, 1993[2003], p.63). The necessity of measuring and evidencing the elusive social value of these organisations has become a common goal, leading to the rise of increasingly sophisticated social auditing and accounting techniques (Zadek, 2004). In relation, social enterprise is being encouraged to evidence the social value it produces in order to enhance competitiveness (Nicholls, 2007) and this growing awareness has caused its rapid materialisation in a host of new organisations like the North West Social Value Foundation in England and the Social Value Lab in Scotland.
In addition, novel consultancies, like Social Value in the UK, have emerged which work directly with the third sector to help them navigate the recent proliferation of competitive social entrepreneurs and impact reporting practices (Nicholls, 2009).

This paper capitalises on the timeliness of the social value discourse and its increasingly practical application to public service expenditure and social enterprise impact. It aims to establish a conceptual basis for the association of social value with research on building design and building users. As evidenced by the shake-up in public service procurement in the UK, there is considerable potential to overcome the widespread apathy towards user requirements present in the design of buildings through an engagement with social value. However, some key conceptual considerations are required. Understanding occupied buildings through the social value lens assumes that the building user can fill the role of the “social”, which is typically played by wider society in the public sector and social enterprise literatures. The internal community of the occupied building has not been drawn out in post-occupancy research, which tends to pragmatically address static user outcomes or user interaction with design on an individualised basis. The sociality of building users as a dynamic and contextual community has generally not been a priority, but for social value research in buildings it represents a fundamental feature. The following section reviews existing post-occupancy research on building design and users from a social value perspective to develop a framework for a social value agenda in buildings.

5.3 Literature review

A significant proportion of post-occupancy building research focuses explicitly on the building user as the unit of study. The various approaches found in academic work on building design and users are discussed below in relation to a unified agenda for social value research in buildings. Three key themes are addressed: differences in how building users are conceptualised, looking beyond a homogenous, individual user to user groups and nested user units, and the significance of building user group dynamics as a moderating influence in occupied buildings. The implication of these issues for the sociality and contextuality of the building user community are considered in relation to conducting social value research in buildings.

The post-occupancy building research underpinning this discussion emanates from a wide range of disciplines, including building science, engineering and construction,
environmental psychology, environmental sociology, health studies and medical research, facilities management, and science and technology studies.

5.3.1 Conceptualising building users

In the various literatures on post-occupancy building design with a user-centric focus, there is considerable variation in how the building user is conceptualised. The extensive research on design quality is founded on the notion that design impacts on the building user in a complex manner that is difficult to comprehend and interpret (Macmillan, 2006). This area of research features a wide and varied assortment of empirical, sector-specific studies including work on housing (Howden-Chapman and Chapman, 2012), offices (Haynes, 2007a), hospitals (Varni et al., 2004), schools (Barrett et al., 2013b) and universities (Price et al., 2003), libraries (Martensen and Grønholdt, 2003), retail (Ballantine et al., 2010) and service sector buildings (Kim and Moon, 2009). It is united by the evaluation of design quality and its intangible impacts through the measurement of user outcomes, a pre-defined assortment of health and wellbeing, behaviour and performance related parameters (Watson et al., 2016b). User outcomes include the self-reported, such as user satisfaction or feelings of privacy, and the observed, such as incidence of respiratory disorders or absenteeism (although these categorisations are not finite, for instance, productivity can be self-reported and observed). The user is therefore cast as a passive participant in the process of building design impact, resonating with determinist theories of the built environment. Typically, a relatively simplified causal link is made between design and outcomes in the building user (Vischer, 2008a) with little exploration of moderating contextual issues. The introduction of concepts linked to user agency represents a subtle shift in conceptualisations of the user, transforming their role from a passive to a reactive function. For example, work on sensory design considers cognitive reactions as a moderating influence in the relationship between environment and behaviour (Barrett and Barrett, 2010). Nonetheless, whether conceptualised as passive or reactive, design quality research tends to focus on the impact of design without taking the potential impact of users into account.

Post-occupancy research on green buildings often adopts a more active conceptualisation of the user. For example, science and technologies studies (STS) consider the role of building users in the social structuring of technical energy efficient
design (Knoll, 2015; Rohracher, 2005; Rohracher, 2003). Founded on a theory of mutual interaction between building users and design, the occupation of a building is conceptualised as a dynamic process rather than a static end product, where technical design is continually modified and appropriated by users as they make sense of it and incorporate it into their everyday activities (Guy and Shove, 2000). The original intentions of the designer may be subverted by building users with implications for the performance of green buildings in-use (Berker, 2011; Janda, 2011). In relation, quantitative studies on the causal modelling of design, a subset of design quality work, also recognise the role user agency plays in behavioural decisions affecting the performance of buildings, particularly for energy efficient design (Naticchia and Carbonari, 2010), although agent-based approaches tend to address building performance rather than the impact of design on user experience (Zhang et al., 2011).

This markedly different conceptualisation of building users, and the consequences assigned to their activity, acknowledges the dynamic and contextual nature of occupied buildings. Researching social value in buildings from such a perspective necessitates an understanding that the interactions between design and users are ongoing and fluctuate over time through everyday processes of appropriation. Buildings are irreducible from the social context that mediates how users make sense of and interact with building design. The value judgements, preferences and activities held by a community of building users cannot be discounted from applied social value research.

A separate research area in green buildings relates to adaptive comfort (Brager and de Dear, 1998), representing a paradigm shift away from traditional notions of comfort as a static thermal condition delivered by building design (Nicol, 2011). Adaptive comfort is conceptualised as a dynamic goal to be achieved by design in concert with the rational “thermobehaviour” of the user (de Dear, 2011, p.109), also known as a process of “interactive adaptivity” (Cole et al., 2008). Users are held responsible for achieving their own comfort goals, rather than comfort being a condition delivered by technical design, and they are expected to act proactively to achieve the optimal functioning of design through intelligent and adaptive behaviours. This represents a further transition in thinking about building users: in contrast to passive users being impacted by design and active users interacting mutually with design, the adaptive comfort conceptualisation has proactive users capable of managing the building to ensure its optimal functioning. However, this approach makes assumptions about the level of
understanding and social interaction of building users. Brown and Cole (2009) show that awareness, knowledge and willingness are all significant mediating factors in users’ capacities to interact effectively with environmental controls. In relation, O’Brien and Gunay (2014) found that social norms have an important impact on constraining adaptive behaviour, whilst Huebner et al (2013) found that habit-forming has more significance than knowledge or information provision for comfort-related behaviours. Furthermore, collective environmental control to benefit a community of users as a whole requires a considerable degree of communication, dialogue and sensitivity (Cole et al., 2008). The unique assortment of users occupying a building, their varying levels of environmental know-how and the exclusive set of dynamic relations between them combine to produce an unequivocally contextual subject for social value research. The emerging significance of inter-user relations is addressed in the next section.

5.3.2 Building users and their social relations

Across the post-occupancy literatures there is a perceptible point of difference between accounts of a relatively homogenous, individual user and the significance of user groups at various scales. A great deal of the research from the design quality and green buildings literatures takes an individualised user basis. The empirical focus is the interplay between design and multiple single users rather than a community of users, disregarding the significance of social dynamics between users. The characteristic focus on user outcomes in design quality research necessarily takes the individual user as the unit of analysis, whilst the emphasis on mutual design/user interactions in the green building literature also promotes thinking about individual users. In addition, both areas of research tend to conceptualise a generic user with no defining features. The presence of a homogenous building user individual is commonly found throughout the typological research on design quality, with no further analysis of building users’ social identities (see Table 5.1).
Table 5.1: Summary of the homogenous user types found in different building typologies

<table>
<thead>
<tr>
<th>Building typology</th>
<th>Homogenous user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>Householder (Shaw, 2004)</td>
</tr>
<tr>
<td>Workplaces</td>
<td>Building inhabitant/occupant (Cole et al., 2008); office worker (Haynes, 2007a)</td>
</tr>
<tr>
<td>Hospitals</td>
<td>Patient (Douglas and Douglas, 2004); healthcare professional (Hurst, 2008); visitor (Varni et al., 2004)</td>
</tr>
<tr>
<td>Schools</td>
<td>School child/student (Abdul-Samad and Macmillan, 2004); teacher (Earthman and Lemasters, 2009)</td>
</tr>
<tr>
<td>Universities</td>
<td>Student (Price et al., 2003); teacher/lecturer (Jamieson, 2003); academic researcher (Pinder et al., 2009)</td>
</tr>
<tr>
<td>Libraries</td>
<td>Library user (Shill and Tonner, 2004)</td>
</tr>
<tr>
<td>Retail &amp; service sector</td>
<td>Customer (Areni and Kim, 1994)</td>
</tr>
</tbody>
</table>

However, the social organisation of the user community is increasingly being addressed in some areas of the post-occupancy literature. This work conceptualises users as being organised within groups, although there is little explicit analysis of the relations between them. For example, design quality research commonly addresses user outcomes in multiple user groups within one building. Table 5.1 shows that patient, healthcare professional and visitor users are simultaneously present in hospital buildings, and many hospital sector studies investigate the impact of design on several user groups (Varni et al., 2004). Similarly, some school sector research addresses both student and teacher outcomes to building design (Issa et al., 2011). However, this unproblematic assignment of users into groups does not directly challenge the homogenous individual user conceptualisation. Instead, user outcomes in multiple groups of homogenous individuals tend to be investigated side-by-side within a building sector, without any allusion to the wider user community.

Less common in post-occupancy research are studies that recognise the unique attributes, expectations and preferences of individuals within the user community, their individuality acting as a mediating variable between user and design. Various studies
acknowledge differentiation between individual users, suggesting groups of users exist based on differences in personality (Haynes, 2007b), preferences (Gayton, 2008; Babin et al., 1994) and levels of productivity (Mak and Lui, 2012) in design quality work, individual cognitive reactions in sensory design (Lehman, 2011; Eberhard, 2007) and levels of knowledge in adaptive comfort work (Brown and Cole, 2009). In addition, professional post-occupancy evaluation typically differentiates between user groups based on management grade. Acknowledging users as a set of unique individuals, and conceptualising groups of users based on shared qualities, emphasises the contextual element of occupied buildings where complex sets of social relations exist within and between user groups as part of the wider building community. The application of social practice theory in STS work on green design in the domestic sector represents a subset of post-occupancy research that explicitly tackles the social relations between users, rather than simply acknowledging their existence. Gram-Hanssen’s (2010a) study considers household user groups and discusses the contextual set of social relations that exist at a family level within five households in terms of their heating practices, evidencing that intra-group dynamics between users are highly significant to understanding the reality of occupied buildings. However, post-occupancy research has yet to make significant progress into unravelling the complexities of social relations between users in occupied buildings.

The significance attributed to inter-user interaction as a variable in the relationship between design and user is strengthened by Vischer’s work on “user units” (2008a, p.236). Initially introduced in a discussion of workplace performance (Vischer, 2007), individual, team and organisational units represent a nested scale of productivity. Vischer (2008a) applies the concept to the mutual interaction of design and user at a number of nested units simultaneously (see Figure 5.1). As a result, commercial design should be evaluated against its ability to support the activities of all user units: individual, team and organisational. The concept of nested user units suggests that a further set of social relations exist within and between different scales of user, adding to the complexity of the user community and its interaction with building design. For example, Vischer hypothesises that the interaction of a user unit on design produces an environmental modification, the re-impact of which on both the original unit as well as other user units is currently little understood. The increasing importance of exploring the sociality of the user community and its social relations, both within and between
user groups and within and between user units, provides further traction for a social value research agenda in occupied buildings.

5.3.3 The significance of building user group dynamics

The previous sections have emphasised that an occupied building represents a contextual set of interrelating factors, including unique constellations of individual users, user groups and units, as well as physical design. However, across the post-occupancy literatures on building design and users the contextual nature of occupied buildings has generally been left unaddressed. Whilst its user-centric focus has tended to conceptualise homogenous individuals in a social vacuum, alternative perspectives emphasise social context as a fundamental variable in the user experience of buildings (Vischer, 2008a). Considering social context as a “soft” variable in occupied buildings which mediates the interactions between design and users, it is identified as a combination of institutional norms, culture and management, termed building user group dynamics (Watson et al., 2016b).

Whilst post-occupancy research which recognises the significance of building user group dynamics is noticeably scarce, a range of sector-specific work does consider the influence of organisational norms and management cultures, as found in office workplace, academic workspace, school, care home, and service sectors (see Table 5.2). However, there is no consistent perspective across studies which tend to describe and analyse an array of contextual elements in isolation from relevant thinking in other sectors. Moreover, the majority of this niche area of research addresses building user
group dynamics solely as a mediator of the interaction between design and user, rather than investigating a mutual interaction between all three elements: design, user and context. A social value agenda in buildings is proposed as capable of filling this research gap by promoting thinking about communities of building users, their social relations and the significance of building user group dynamics. The aim of this paper, therefore, is to test whether a social valuation methodology, unlike current post-occupancy methods, is capable of capturing a more complex picture of buildings, users and their group dynamics, conceptualised as the social value of buildings.

Table 5.2: Sector-specific studies and building user group dynamics

<table>
<thead>
<tr>
<th>Building sector</th>
<th>Elements of building user group dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices</td>
<td>Corporate structure (Vischer, 2007)</td>
</tr>
<tr>
<td></td>
<td>Corporate/management culture (Kato et al., 2009; Wells et al., 2007)</td>
</tr>
<tr>
<td></td>
<td>Facilities Management (Bordass et al., 2004)</td>
</tr>
<tr>
<td></td>
<td>Office culture (Brown et al., 2010; Brown and Cole, 2009; Brown and Cole, 2008)</td>
</tr>
<tr>
<td>Academic workspaces</td>
<td>Institutional management (Reisz, 2010)</td>
</tr>
<tr>
<td></td>
<td>Institutional norms (Pinder et al., 2009)</td>
</tr>
<tr>
<td></td>
<td>Work practices (Parkin et al., 2006)</td>
</tr>
<tr>
<td>Schools</td>
<td>School climate (Uline and Tschannen-Moran, 2008)</td>
</tr>
<tr>
<td></td>
<td>Learning climate (Uline et al., 2009)</td>
</tr>
<tr>
<td></td>
<td>Building function (Roberts, 2009)</td>
</tr>
<tr>
<td>Care homes</td>
<td>Management culture &amp; norms (Torrington, 2007)</td>
</tr>
<tr>
<td>Service sector</td>
<td>Human factors of servicescape (Ryu and Han, 2010)</td>
</tr>
<tr>
<td></td>
<td>Facilities Management (Heide et al., 2007)</td>
</tr>
</tbody>
</table>

5.4 Methodology

Developments in post-occupancy research on building design and users have produced a wide-ranging and informative body of work on the complex realities of buildings in-use. However, disseminated findings and feedback are yet to be widely instrumental in the learning loops of sustainable design, and continue to be about building performance rather than user experience. This paper considers the potential of a social valuation methodology, SROI, to capture and measure the social value accruing to the users of three case buildings taken from the nonclinical healthcare sector. A review of existing social valuation methodologies showed SROI to be the most developed with a robust
and standardised methodology (Watson and Whitley, 2016). In this exploratory study, SROI was applied to the case buildings according to its six stage methodology (Nicholls et al., 2012). The case buildings are similar in terms of purpose, size and length of occupation, but have differing levels of user-centred design, purposefully selected in anticipation of differing levels of social value to allow the applicability, performance and sensitivity of SROI to be tested. The comparative findings from each case building also allow evaluation of the effectiveness of SROI at capturing the influence of user group dynamics in the social value of buildings. The selection of the case buildings is outlined below, followed by the mixed methods undertaken in the SROI analyses.

5.4.1 Case building selection

The three case buildings are non-residential cancer support centres in the UK. Nonclinical buildings represent an important gap in post-occupancy research in the healthcare sector, currently dominated by studies on hospital design from either a patient or nursing healthcare professional perspective (Watson et al., 2016b). Research into alternative healthcare spaces, both within and outside of hospitals, and addressing a wider range of building users is less common. Nonclinical environments are also a topical issue due to the significant reform seen in the NHS landscape since the Health and Social Care Act in 2012. Requirements for significant estates efficiency savings (Ellis, 2013) have produced a need for a wider range of settings to deliver care, beyond clinical spaces within NHS ownership (Wearmouth, 2013). Jencks and Heathcote (2010) describe the emerging nonclinical healthcare sector as a new “hybrid building” typology where traditional clinical institutions are morphing into buildings with a range of functions. An ageing population means people are spending longer in healthcare settings, driving a shift towards more varied and humane building types. Currently a third of people in the UK suffer from cancer at some point in their lives, set to rise to 1 in 2 as life expectancy figures increase (Jencks and Heathcote, 2010). Corresponding increases in heart disease and age-related diseases like Alzheimer’s suggest that centres offering “psychological, social and informational guidance” (Jencks and Heathcote, 2010, p.7) will be increasingly in demand. This study represents timely research into an emerging hybrid healthcare building typology set to be highly significant. Furthermore, this type of health facility provides an ideal environment to explore the implications of considering user group dynamics, due to its hybrid character. Building users are not reducible to generic categories as the centres function in a non-clinical, support-focused
manner that differs considerably from standard health facilities. Therefore the social value of these buildings, the interrelations between their physical design, user groups and mediating social dynamics, are of immediate relevance.

The selected cancer support centres are outlined in Table 5.3. They are comparable in terms of size, purpose and have all been completed in the last five years. However, they represent varying levels of user-oriented design, allowing SROI to be trialled in a range of environments to test its applicability and performance. Furthermore, they represent different build types, namely a new build, fit out and structural retrofit, to investigate SROI's applicability regardless of this factor. They also offer comparison across distinct funding, governance, and organisational set-ups, allowing mediating elements such as organisational culture, building management and user group dynamics to be considered within the SROI analyses. This is especially relevant in the context of calls for the NHS to learn from the private and social enterprise healthcare sectors, both of which are understood to lead the way in estate efficiencies (Ellis, 2013), with an anticipated rise in collaborative long-term strategic estates partnerships by the NHS (Wearmouth, 2013).

The case buildings have been restricted to England to ensure comparability of results due to differences across the UK in public sector healthcare policy, and healthcare commissioning and construction processes. However, it should be noted that this is an exploratory study and the case buildings are not intended to act as representative examples at this early stage. The number of cases was based on the resource intensive nature of the SROI methodology to ensure detailed research outputs were produced and a comprehensive evaluation of SROI was possible. The buildings have been anonymised to protect the identities of the research participants and to encourage their candid feedback.

5.4.2 SROI methodology

SROI is a social impact methodology that allows not-for-profit organisations to evidence the wider value of their work. It is based on traditional cost-benefit analysis and assigns a monetary value to social returns using financial proxies, which are compared against the level of investment to produce an SROI ratio of costs to social outcomes. It was originally developed by the Roberts Enterprise Development Fund (REDF) in the US in the mid-1990s. More recently, an emphasis on stakeholder
engagement using a standardised methodology has evolved through the work of the New Economics Foundation (nef) in the UK (Nicholls et al., 2007).

SROI has been critiqued in academic and applied literatures due to what is considered a reductionist approach to monetising qualitative social outcomes. It is often argued that reducing social outcomes to monetary measures is neither possible nor desirable, and the methodology is considered to underestimate the true value created (McLoughlin et al., 2009; Wright et al., 2009). Supporters of SROI argue that its ability to draw attention to otherwise intangible outcomes by presenting them in a commonly recognised unit of value (Nicholls et al., 2012) promotes a broader discussion about what is important. In the case of the intangible benefits of good design, SROI has the potential to ensure user perspectives are taken into account in design and commissioning decisions. However, it is often tempting to disseminate the SROI ratio as the definitive conclusion of an SROI analysis (Wright et al., 2009), yet this is meaningless out of context. Olsen and Lingane (2003) argue that the SROI ratio requires comparison against a projected or previous ratio, whilst the nef framework for SROI emphasises that the ratio should be used in combination with qualitative stakeholder narratives as part of the story of creating value (Nicholls et al., 2012). For the built environment, the variety of data produced by the SROI approach is key for its effective communication to a variety of design professionals, end user clients and organisations.

The SROI methodology has six stages (Nicholls et al., 2012), which are outlined below. A more detailed methodological account is provided in Watson and Whitley’s (2016) study.
<table>
<thead>
<tr>
<th>Case building</th>
<th>Organisation</th>
<th>Build type</th>
<th>Size</th>
<th>Built environment</th>
<th>Clinical/ nonclinical</th>
<th>Rooms provided</th>
<th>Services offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Charitable</td>
<td>New build</td>
<td>360m²</td>
<td>Domestic scale, standalone building within NHS hospital campus</td>
<td>Nonclinical design (homely)</td>
<td>Kitchen, library, private rooms, activity room, office</td>
<td>Psychosocial support, benefits advice, nutritional advice, low impact exercise sessions, arts and crafts sessions</td>
</tr>
<tr>
<td>2</td>
<td>Charitable</td>
<td>Fit out</td>
<td>300m²</td>
<td>Ground floor unit in a mixed-use commercial development in inner city context</td>
<td>Nonclinical design (spa-like)</td>
<td>Reception, library, therapy rooms, activity room, several offices</td>
<td>Psychosocial support, complementary therapies, nutritional advice, low impact exercise sessions</td>
</tr>
<tr>
<td>3</td>
<td>NHS</td>
<td>Structural retrofit</td>
<td>106m²</td>
<td>Nonclinical space within NHS hospital building (between a ward and highly glazed access corridor overlooking a walled garden)</td>
<td>Clinical feel (NHS environment)</td>
<td>Library with reception desk, private consultation booths, several offices</td>
<td>Psychosocial support, benefits advice, signposting service to relevant information</td>
</tr>
</tbody>
</table>
1) Establishing scope and identifying key stakeholders

Scope was established through the selection of the three case buildings and the setting of an analytical boundary around the building user community of each case, excluding wider impacts outside of the buildings from the analyses. A set of semi-structured interviews were carried out with the project teams of the three buildings, including property director, operations director, architect, structural engineer, mechanical and electrical engineer, interior designer, lighting consultant, project manager, and cost manager actors, based on the individuals involved and their availability. The interviews focused on the commissioning process, design brief and briefing process, design process, designers’ intentions and final design, in order to develop a solid understanding of the case buildings. Cost information was also collected at this point, for use later in the SROI process. Semi-structured interviews were also carried out with the centre manager of each building to develop an understanding of their day-to-day functioning and management, and to identify the user groups within each case. All interviews were voice recorded, transcribed and coded using the qualitative analysis software Atlas.ti.

2) Mapping outcomes

A set of focus groups were run at each case building with the identified building user groups including visitors, centre staff, office staff, session leaders, therapists, and volunteers, with approximately five participants in each. Topics under discussion included their user experiences, needs and preferences, how they use the space, the impact of the design, and suggested improvements. The focus groups were voice recorded, transcribed and coded using Atlas.ti.

3) Evidencing outcomes and giving them a value

Quantitative user surveys were developed based on the outcomes identified in Stage 2. The survey data was collated electronically and analysed for descriptive statistics (frequencies and averages) in order to produce quantitative measurement of the outcomes reported by each user group. Table 5.4 outlines the sample sizes and response rates of each user group in the case buildings: the visitor response rates are underestimated, as they are based on the number of visitors that filled out the survey compared to the total number of visits per year, not individual visitors. It should be

An example survey can be found at: http://bit.ly/1SzPNCK
noted that considerably lower visitor response rates were returned for the visitor surveys in case buildings 2 and 3, meaning the SROI data produced is less reliable for these buildings. However, it offers a useful comparison to the results for case building 1.

Table 5.4: User survey response rates

<table>
<thead>
<tr>
<th></th>
<th>Case building 1</th>
<th>Case building 2</th>
<th>Case building 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>77 of 10,517 visits (&gt;0.73%)</td>
<td>5 of 4,913 visits (&gt;0.1%)</td>
<td>5 of 11,860 visits (&gt;0.04%)</td>
</tr>
<tr>
<td>Centre staff</td>
<td>6 of 6 (100%)</td>
<td>5 of 6 (83%)</td>
<td>4 of 4 (100%)</td>
</tr>
<tr>
<td>Session leaders/</td>
<td>5 of 19 (26%)</td>
<td>5 of 12 (42%)</td>
<td>4 of 4 (100%)</td>
</tr>
<tr>
<td>therapists</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteers</td>
<td>7 of 17 (41%)</td>
<td>3 of 15 (20%)</td>
<td>3 of 3 (100%)</td>
</tr>
</tbody>
</table>

The SROI methodology uses financial proxies to place a value on the quantified outcomes. As an inherently flexible, stakeholder-led methodology, SROI is designed to be applicable to the outcomes which have been reported, rather than a set of pre-determined outcomes, via the identification of suitable financial proxies on a case-by-case basis. This represents a strength of SROI, being a methodology that is well suited to capturing diverse user experiences across a variety of built environments. Suitable proxies were identified via primary data from the occupying organisations, for example, average wages and cost-per-hire data, and through an exploratory desk-based literature search of academic, public sector and social enterprise publications relating to the measurement of social impact. Figure 5.2 in the results section outlines some of the financial proxies identified for use in the case buildings and their sources. The total number of individuals in agreement with an outcome was multiplied by the relevant financial proxy to produce the value created by that outcome for that user group in a year.

4) Establishing impact

The values placed on the outcomes were interrogated to establish their impact, prevent over-claiming and enhance credibility (Nicholls et al., 2012). Two specific measures were addressed: deadweight (the proportion of the outcome that would have happened
anyway) and attribution (the proportion of the outcome that can be attributed to the building design). Deadweight and attribution figures were calculated based on the survey data and the percentages removed from the financial proxies in order to reach a final impact-adjusted valuation for each outcome, as shown in Figure 5.2.

5) Calculating the SROI

The calculation of the SROI ratio for each case building involved in-putting the building costs and social returns as figures/m², calculating the SROI ratio, projecting into the future using discounting rates taken from the Green Book (HM Treasury, 2003), and calculating the payback period. As the point of interest is the social value created by the user-centred design of the case buildings, the building costs were inputted as the additional spend above an NHS benchmark. This proved a complex process due to the different build types requiring different benchmark calculations, outlined in Table 5.5.

6) Reporting, using and embedding

An end user SROI report was produced for one of the occupying organisations interested in learning from the findings and currently considering applying SROI to more of its centres. The current paper represents the dissemination of the SROI results with a discussion of the effectiveness of SROI at capturing the social value of the three buildings. Further research has been undertaken to investigate the usefulness of the SROI data for decision-makers and designers of future nonclinical healthcare buildings more widely.

Table 5.5: Inputting the "added cost" of the case buildings

<table>
<thead>
<tr>
<th>Case building</th>
<th>Build type</th>
<th>“Added cost” calculations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New build</td>
<td>Professional fees, contract sum, and furniture, fittings and equipment (FF&amp;E) cost for new build; minus NHS benchmark fees, contract sum and FF&amp;E cost for new build</td>
</tr>
<tr>
<td>2</td>
<td>Fit out</td>
<td>Professional fees, contract sum, and FF&amp;E cost for fit out; plus estimated fees, contract sum, and FF&amp;E cost for core-and-shell unit; minus NHS benchmark fees, contract sum and FF&amp;E cost for new build</td>
</tr>
<tr>
<td>3</td>
<td>Structural retrofit</td>
<td>Professional fees, contract sum, and FF&amp;E cost for retrofit; minus estimated NHS benchmark fees and contract sum for retrofit; minus NHS benchmark FF&amp;E cost for new build</td>
</tr>
</tbody>
</table>
5.5 Results

A qualitative comparison of the social value of the case buildings is presented below, considering their varying briefing and design processes, physical design features, organisational set-ups and building management, and the experiences of the building users. This is followed by the SROI data for each building, including the value created per year for the building users, the social returns in ratio format, and associated payback periods.

5.5.1 Qualitative social value narratives

Case building 1 represents a charitable cancer support centre with a particularly high level of user-centred design with a homely feel. The build developed from the charity’s unusual, qualitative design brief with a focus on the end user. An informal briefing process was led by the charitable CEO and relied on the professional experience of a high calibre architect to interpret the brief in an original manner. The architect was encouraged to visit several existing centres to promote an understanding of how the space would be used. The design process was strongly architect-led and the client was willing to extend the budget if considered critical to achieving the architectural concept. The building is a brightly coloured, domestic scale structure with iconic external facades that sits amongst trees on a sloping site within an NHS hospital campus. It has a bridge entrance, no reception, a sociable kitchen space with a large kitchen table, several small sitting room spaces, a library, a set of small private spaces upstairs, an activity room, and a small staff office. There is plentiful natural light with large operable windows offering views to the trees outside. The kitchen opens onto a spacious balcony. The interior design has a non-institutional style with plaster walls and ceilings, an oak floor, and eccentric but homely furnishings including domestic scale lighting, mainly individual table and floor lamps. The intention of the design team was to create a welcoming space where people feel both comfortable and are given hope through uplifting design. They outlined that the “purpose of the building is to make people feel special and valued”.

The centre runs on a drop-in basis for visiting patients, friends and family to gain psychosocial support from healthcare professionals or attend a timetabled session such as tai chi or creative writing. As there is no reception, volunteers welcome visitors into the kitchen which acts as the first point of contact. Visitors are encouraged to make
themselves at home and use the centre as they wish. For example, a member of staff explained that “we’ve got an everybody’s welcome policy [here] and people can come and use the rooms whenever they want”. It is common for visitors to spend several hours sitting around the kitchen table chatting over a cup of tea, alongside staff and volunteers. The building is considered an integral part of the holistic programme of psychosocial care offered and the centre manager fosters a strong community spirit between the various building user groups producing a warm, friendly atmosphere. She explained, “Well the idea [of the open plan kitchen] is that it encourages openness and a community feeling, and I think it does that. I think people come in and they love sitting round that table and chatting. They may well have a conversation with someone they weren’t expecting to”. This also impacts staff who agreed that “you get to know people a bit better and it’s a better working relationship”. The visitor user group expressed a real love for the building, and the high quality finish, kitchen social hub, plentiful natural light and colourful interiors were particularly praised. For example, a visitor described his first visit: “When I came in and the way the staff greeted you, they’re very professional, not over the top, but very engaging, just friendly, and that adds to the whole feeling as well”. Whilst centre staff took pride in and appreciated their working environment, they experienced problems relating to the building’s lack of capacity and lack of confidential space. This was a cause of concern, for example, “If people are piling into the kitchen and waiting to be seen, at the moment it’s manageable, but...I think about how we are going to meet that demand. It worries me”.

Case building 2 also comprises a charitable cancer support centre, developed as a fit-out of a fully glazed, ground floor retail unit in a large mixed-use development in an inner city context. The developer donated the unit with a £400,000 contribution towards the fit-out. Whilst the core-and-shell unit was not designed with the third sector organisation in mind, the charity acted as the client of the fit-out scheme which has a significant degree of user-oriented design producing a spa-like feel. The project brief was for a sanctuary, a safe, calming and secure environment, at odds with the floor to ceiling glass facades of the space. However, the design concept was necessarily flexible due to limited budget requirements. The design process was led by an interior designer with architect support from within the same company. Due to the unusual funding arrangement, the developer became the acting client in some respects and the charity lost an element of control over the design. The centre has an airy reception area attached
to a more private, library-styled waiting area, a large activity room, a cafe area with a small volunteer kitchen, and upstairs a set of therapy rooms and a spacious staff office. A key design element are curved walls which act like a “second skin” inside the glazed walls providing privacy from a high traffic volume intersection outside, but still allowing natural light to enter through coloured glass panels. The architect explained that “There’s a lot of curves, soft flowing lines…it was about being a very calm, welcoming space [and] it was all designed to flow and be soft and feel comfortable”. The interior design is pleasant but institutional, combining practical elements, especially in the therapy rooms, with a palette of soft colours.

The centre offers an appointment-based system for a range of complementary therapies, with psychosocial support from a healthcare professional and a number of sessions such as ballroom dancing and meditation also available. The design is catered towards the needs of single users, for example, “the way in which the individualism of the rooms delivers the individual therapies has been really well thought through”. Visitors register their arrival at reception and wait in the library area for a therapist to escort them upstairs to deliver their treatment in a private therapy room. Whilst centre staff work in the separated office area, a mixture of visitors, staff, therapists and volunteers eat lunch together in the cafe area. Building users across all groups showed a genuine affection for the building. Visitors were particularly positive about the calm environment providing them with time out for themselves on an individual basis, as opposed to promoting social interaction with others. For example, “I thought well I’m going to take full advantage of it…it’s nice to come here and feel like you’re doing something for you”. However some felt the centre’s high end feel can be intimidating, and receiving a warm welcome at reception is significant to overcoming this issue. Staff and therapists expressed pride in their working environment and felt they were lucky to work there.

Case building 3 is an NHS cancer support centre located within a hospital. As an add-on to an existing scheme which required the re-provision of the support centre, the brief was not clearly defined. The engineer considered it as follows, “I’d say the main aim was to provide more facility, easy access and expose it to more people.” The centre comprises a structural retrofit, built into an empty space in between a ward and an external, fully glazed access corridor across a courtyard garden. It is therefore located on one of the busiest thoroughfares in the hospital, providing a greater degree of accessibility than the previous centre. It has an institutional feel but with an unusual
degree of natural light for an NHS environment. It is made up of an open plan space with a desk for centre staff, considerable shelving housing a wide array of information leaflets, a couple of small sitting areas, and two private consultation booths, whilst along a small access corridor are two offices for the benefits advice and patient information teams. The interior design is neutral with wooden shelving and some bright red furniture. The intention was to create a fresh, bright space that improved on the previous centre in terms of size, location and facilities.

The centre is open during normal working hours and visitors can drop in to gain on-the-spot advice and be signposted to relevant publications or services. In addition, the centre is also used by hospital staff to gain support-related information for their patients. The benefits advice team operate an appointment system, although drop-in centre visitors are often signposted straight through which can cause capacity issues if queues form in the access corridor. Visitors tended to be grateful that the centre is available but are not enthusiastic about its design, with many pinpointing the lack of space and tiny, cupboard-like consultation booths as disappointing and offensive to some. For example, “You feel like you’ve been pushed in a broom cupboard!” The centre staff take a positive attitude and put considerable effort into making the most of what they have, for example, using posters as a way to improve privacy from the glazed corridor without affecting natural light. They also work hard to maintain a friendly, warm atmosphere alongside maintaining visitors’ privacy and dignity in the open plan space. For example, “we react to what the patient wants, you tune in and with some people you know that really they want to be tucked away.” The office-based staff do not have access to natural light and the issue with queues forming is a significant cause of stress.

The qualitative narratives for each case building emphasise the importance of looking beyond physical design to include consideration of the building user community, made up of individual users, user groups and user group dynamics, when thinking about the social value of buildings. Based on this framework, case building 1 appears to have the most social value, with mutually reinforcing aspects of highly user-centred design, open and friendly user relations, and a collective, caring culture, creating an environment that adds value to the user experience. Case building 2 also seems to have significant social value, yet its organisational set-up and institutional design neither encourage the same level of interaction between user groups, nor offer the freedom to use the space as users wish. Case building 3 is considered to have the lowest social value, with substantial
issues around its design from a user perspective, and a lack of cooperative interaction between staff user groups. However, the management dynamics of the centre staff help to overcome the shortcomings of the design by fostering a friendly and warm environment within a clinical setting, reconfirming the applicability of a social value agenda within buildings that takes the user community and its social relations into account.

The act of collating the qualitative narratives shows that SROI is capable of taking the existence of communities of building users and their mediating social relations into account when capturing the social value of buildings, due to its flexible, stakeholder engagement focused methodology. The next section presents the financialised SROI data which, whilst developed out of the qualitative findings, do not align with the social value narratives as expected.

5.5.2 SROI data

The SROI analysis undertaken for each case building allowed the outcomes of design, identified through qualitative stakeholder engagement with the building users, to be quantified and financialised to produce various SROI data. Figure 5.2 outlines the process of identifying suitable financial proxies, their modification and application to the outcomes data collected during the user surveys, followed by the impact establishment measures applied.

The total impact of each outcome reported by the building users of each case building per year is presented in Table 5.6. The design of case building 1 produced the highest annual impact at £375/m², over one and a half times greater than the impact produced by both case building 2 at £229/m², and case building 3 at £221/m². These figures are consistent with the qualitative findings about the case buildings in that case building 1 is expected to produce the greatest returns for the building users due to its considerable social value narrative. However, case building 3 was not expected to produce impact equivalent to that of case building 2, based on the lack of social value evidenced in the narrative.
Figure 5.2: Application of financial proxies to outcomes in the built environment

Table 5.6: SROI data per case building

<table>
<thead>
<tr>
<th>Case building</th>
<th>Total impact</th>
<th>Total impact/m²</th>
<th>“Added cost” of design</th>
<th>“Added cost” of design/m²</th>
<th>SROI ratio</th>
<th>Payback period/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>£134,991</td>
<td>£375</td>
<td>£1,732,869</td>
<td>£4,814</td>
<td>£1:£0.08</td>
<td>12 years 6 months</td>
</tr>
<tr>
<td>2</td>
<td>£68,764</td>
<td>£229</td>
<td>£923,629</td>
<td>£3,079</td>
<td>£1:£0.07</td>
<td>15 year 2 months</td>
</tr>
<tr>
<td>3</td>
<td>£23,445</td>
<td>£221</td>
<td>£1,037,937</td>
<td>£9,792</td>
<td>£1:£0.02</td>
<td>44 years 4 months</td>
</tr>
</tbody>
</table>
Inputting the “added cost” of the case buildings above a typical NHS benchmark spend for an equivalent facility allowed the social returns to be calculated as SROI ratios, also presented in Table 5.6. The process of calculating the “added cost” of the case buildings, via a commercial estimate and NHS benchmark of the contract sum, professional fees and FF&E costs, is provided in Figure 5.3. The cost information was collected during the project team interviews at the beginning of the SROI process. It should be noted that the structural nature of the retrofit of case building 3, developing an empty space in between an existing building and an external fully glazed corridor, was considerably more expensive than a typical retrofit scheme. Furthermore, the “added cost” of case building 1 is for a new build, case building 2 is for a fit out and the original shell-and-core unit, whereas case building 3 is for a retrofit only and therefore not directly comparable.

The ratios show that for every £1 spent on case building 1, over and above the NHS benchmark, £0.08 was produced in social returns for the building users. However, for every £1 spent on case building 2, over and above the NHS benchmark, £0.07 was produced in social returns. Due to the considerably higher spend on professional fees beyond the NHS benchmark in case building 1 in comparison to case building 2, the social returns do not reflect the qualitative narratives for each building. It should be noted that the “added cost” figure includes the estimated cost of the core-and-shell unit for case building 2 to allow direct comparison, as outlined in Table 5.5 and Figure 5.3. However, the ratio for case building 3 is not directly comparable as it represents the return on the retrofit scheme only, at £0.02 to every £1 spent over and above the NHS benchmark. The payback period for case building 1 is 12 years and 6 months, for case building 2 is 15 years and 2 months and for case building 3 (retrofit only) is 44 years and 4 months. The application of discounting rates of 3.5% for the first 30 years and 3% thereafter, taken from the Green Book, allowed the ratios to be projected into the future, as shown in Table 5.7. SROI ratios are presented for each case building at useful time points, 10 years being the typical amount of time before a re-fit is required and 60 years being the typical lifetime of design, to show the social returns over these time frames.
The financialised SROI results do not align with the qualitative social value narratives as would be expected. Whilst the total impact/m² figures show that case building 1 produces the greatest impact at £375/m², case building 3 produces a higher level of impact at £221/m² than would be expected from the qualitative accounts and almost equals the impact of case building 2 at £229/m². However, in terms of social returns
calculated against the cost of designing the case buildings (as additional spends above an NHS benchmark), the returns of case building 3 fall considerably to £0.02 per every additional £1 spent on the design above the benchmark, and well below case buildings 1 and 2 at returns of £0.08 and £0.07 respectively. Whilst the lowest ratio for case building 3 cannot be directly compared as it represents the return on a retrofit rather than a new build, it confirms the qualitative findings as the ratio would decrease further if the costs of the original building were also included. Yet, the ratios also show that case building 2 is generating returns that are almost identical to case building 1, not consistent with the considerable social value evidenced in the narrative of case building 1 compared with case building 2.

The importance of a social value agenda in buildings that considers communities of building users, their social relations and the significance of building user group dynamics, alongside physical building design, is evidenced by the qualitative findings. The case buildings represent three unique constellations of design, users and contextual relations coming together to produce varying degrees of social value. However, the social returns data from the applied social value research is not consistent with the qualitative narratives. The following discussion considers why this is the case in relation to the effectiveness of SROI at capturing and measuring social value, and the implications of the financial SROI data for future design.

5.6 Discussion

The qualitative narrative for case building 1 evidenced mutually reinforcing elements of user-centred design, user groups willing and able to interact positively, and a collective and caring organisational culture. However, the social returns generated are barely greater than those of case building 2, where pleasant yet institutional design and a stricter organisational set-up limits both social interaction between user groups as well as how they use the space. The inconsistency between the qualitative narratives and the SROI ratios is discussed according to three related issues, considered in turn below.

The immediate reflection based on the inconsistency of the ratios with the qualitative narratives is that the social value of the case buildings is not effectively captured in the financialised SROI data. This would explain why the notably high social value of case building 1 was not demonstrated in the ratios. SROI is designed as a methodology to
measure the outcomes experienced by stakeholders. It is not designed to take into consideration why outcomes have come to pass or what factors are involved in producing them. It could be considered, therefore, that SROI is not equipped to capture and measure the social relations of the building user community, including contextual user group dynamics. Whilst the methodology facilitates the collection of qualitative and quantitative data relating to a wider notion of social value, these data are not explicitly captured in the monetised social returns which represent a simplified account of the value created. The financial results could be argued to not fully capture the interrelations between building design, user community and its contextual dynamics conveyed by the qualitative narratives, and as a result the social value of the buildings is only partially measured by SROI.

On reconsideration, however, the ratios can be held as consistent with the narratives in that case building 1 does offer the best returns, just without as large a margin as expected. An alternative argument, therefore, is that the contextual elements constituting social value are indirectly captured by SROI, through the outcomes that building users experience. Whilst not measured outright, the social relations of the building user community cannot be detached from the experiences of building users within a built environment and their influence is unavoidably felt in the outcomes reported. Nevertheless, SROI is designed to strip away much of the empirical detail captured in the qualitative and quantitative stages of the methodology, including rich post-occupancy feedback about the building design, in order to place a monetised value on the identified social outcomes and produce the financial ratios. The collection of qualitative narratives and quantified post-occupancy data means they can be used to complement the financialised results and promote a deeper understanding, but they are not explicitly included in the returns. It is reasoned that SROI does not directly capture the sociality of the building user community, but its effect cannot be removed from the experiences of building users meaning measurement of user outcomes is fundamentally influenced by this set of contextual variables.14

An alternative inference from the ratios is that the social value narratives do not effectively capture the true impact of case building 2, leading to a higher ratio than expected. However, the narratives are directly based upon the results of stakeholder engagement, making this the primary evidence about social value.
A further implication of the unexpected social returns data is the issue of whether calculating the returns per m² is a coherent strategy. It seems a logical step to ensure that comparisons between the case buildings are rigorous. However, looking at the total impact figures for the full building footprints, case building 1 produces considerably greater impact at £134,991, almost double that produced by case building 2 at £68,764, and over five times that produced by case building 3 at £23,445, which is fully consistent with the social value narratives. This raises questions about the reliability of looking at social value as a product per m²: is it correct to assume that the benefits accruing to building users are directly affected by building footprint, and if not, does measuring it in this way present a warped view of a larger footprint (i.e. case building 1) by diluting the social returns of its design? This cannot be answered within the limits of the current study and deserves further attention.

The discussion has considered the implications of the inconsistency found between the qualitative narratives and the financial SROI data. Where typical post-occupancy methods measure physical design based on building performance, SROI measures outcomes in building users. Neither methodology is capable of directly measuring the social value of buildings, a mutual interaction between physical building design, communities of building users and the significance of building user group dynamics. SROI is, however, capable of drawing attention to the social value of buildings through the detailed qualitative and quantitative data it collates, but it cannot specifically take into account the value produced by the sociality of the building user community.

5.7 Conclusion

Existing post-occupancy research relating to user priorities in buildings has yet to achieve significant dissemination in the learning loops of sustainable urban design. The newly emerging concept of social value in the UK has significant potential to overcome the issue of evaluative impact in building design research. A conceptual basis for the association of social value with this research field is established through the synthesis of recent thinking in post-occupancy research in relation to social value, emphasising the lack of research acknowledging the sociality of the user community. Typical post-occupancy research addresses the relationship between design and individual building users, overlooking the importance of their social organisation as a community of building users which is fundamental to understanding what is happening in occupied
buildings. The physical design of a building is one element in conjunction with the sociality of the user community and its contextual dynamics. A social value agenda in buildings could help fill this research gap by promoting thinking about communities of building users, their social relations and the significance of building user group dynamics.

The potential of SROI, a social valuation methodology, to capture and measure the social value of buildings was trialled through its application to three case buildings taken from the nonclinical healthcare sector. The qualitative narratives collated for each case building as part of the methodology emphasise the importance of looking beyond physical design to include consideration of the building user community, made up of individual users, user groups and user group dynamics, when thinking about the social value of buildings. However, the financialised social returns were inconsistent with these qualitative narratives, raising questions over the effectiveness of SROI at capturing the social value of buildings. Whilst the methodology facilitates the collection of detailed and informative qualitative and quantitative data relating to a wider notion of social value, these data are not explicitly captured in the monetised social returns which represent a simplified account of the value created. Where typical post-occupancy methods measure physical design based on building performance, SROI measures outcomes in building users. Neither methodology is capable of directly measuring the social value of buildings, a mutual interaction between physical building design, communities of building users and the significance of building user group dynamics. SROI is, however, capable of drawing attention to the social value of buildings through the detailed qualitative and quantitative data it collates, but it cannot specifically take into account the value produced by the sociality of the building user community.

Further research is required to trial SROI in different ways, targeting different build types, specific design features and, significantly, the social dynamics of communities of building users to understand its potential. The study of other building typologies is crucial to develop understanding about how SROI could be used to capture social value beyond the relatively small-scale environments used in this exploratory study. Larger buildings with more complex building communities represent an interesting challenge for this sort of research, for example, commercial offices with multiple occupying organisations, buildings controlled by a central building management system and its impact on user experience, or typologies like hospitals or prisons where a strict set of
rules and regulations inhibit certain user groups. SROI is an inherently flexible methodology being directed by stakeholder engagement to ensure the quantification of the most relevant outcomes, suggesting it has the capability to uncover and capture a diversity of experiences across a variety of built environments and organisational cultures.

It could also be possible then to use SROI to explicitly capture the implications of the sociality of the building user community, alongside physical design, when measuring the social value of buildings by asking building users to identify the outcomes they experience as a result. It is likely that this process would require significantly greater time and resources in order to deeply engage with stakeholders to gather a reliable picture of their experiences of design and the user community within a mediating social context. In relation, the impact establishment stage of SROI would also require considerable resources to produce a set of estimates that are reliable and trustworthy. The importance of recognising the uniqueness of individual users and their social dynamics within the wider building user community must be offset by practical considerations, both methodological and in terms of the resources available, to manage the collection of what could become a prohibitive amount of information. This is a complex line of inquiry and would be best sought through multiple visits and the development of a mutual dialogue with a small number of stakeholders, rather than through a large scale survey method. Ethnographic research methods would also be a highly applicable addition to SROI for the study of the sociality of the building user community and its impacts on the social value of buildings.
CHAPTER 6: Practices of (E)valuation in the Built Environment: Social Return on Investment (SROI) and Sociotechnical Inquiry

Environment and Planning B: Planning and Design: to be submitted

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Abstract

The study of valuation practices represents a sociotechnical research gap in the built environment, significant for understanding the limited traction of existing post-occupancy methodologies in the learning loops of design. This paper evaluates the usefulness of a social valuation methodology, Social Return on Investment (SROI), as a built environment decision-making tool. Qualitative results are presented from a set of interviews with designers and professional decision-makers involved in nonclinical healthcare projects to gather their reactions to the results of applying SROI to a cancer support centre in the UK. A key finding is that SROI has limited usefulness as a design decision-making tool, yet its ability to measure the impact of a building in the form of the value generated for the building users has considerable potential to inform commissioning and investment decisions. The accessibility of its methodology and transferability of its results suggests that SROI is well-suited as a tool for end users, clients and commissioners, as much as expert design professionals. As long-standing registers of expert value relating to technical building performance are being displaced by new stakeholder-driven registers of value around user experience, SROI represents a new development in lay (e)valuation practices in the built environment.

Key words

Built environment, decision-making, learning loops, Social Return on Investment, user-centred design, valuation practices

6.1 Introduction

Two decades worth of interest in the design quality of the built environment (Younger et al., 2008; Macmillan, 2006; Egan, 1998) has shown the value of buildings to extend beyond the purely economic to their usability and the ways that people experience
design. Growing awareness of the implications of design on occupant satisfaction, productivity and quality of life outcomes has led to the development of a wide range of evaluation methods for assessing occupied buildings, including the Probe methodology (Bordass et al., 2001), Design Quality Indicator (Gann and Whyte, 2003; Gann et al., 2003), and Achieving Excellence Design Evaluation Toolkit (AEDET) (Ruddock and Aouad, 2009). However, their limited traction in the learning loops of design means future development is not informed by occupant feedback in a widespread, consistent manner (Vischer, 2009; Preiser and Vischer, 2005; Whyte and Gann, 2001). Furthermore, these methods typically aim to capture and measure superficial causal links between design and user outcomes, without fully analysing the complex interactions between buildings and users.

The sociotechnical research agenda takes a distinct analytic focus on the mutual relations between humans and technologies, positioning technological innovation and diffusion within a broad and contested social terrain. A sociotechnical system is defined as a cluster of diverse elements comprising a seamless web (Hughes, 1986), emphasising the interrelating nature of technical, economic, cultural, and political aspects (Geels, 2005). It is the ever-changing assemblage of these social elements that orchestrates opportunity for the uptake of new technologies (Guy, 2006). Here, it is assumed that the social cannot be divorced from the technical at any point, each being intermeshed in a matrix of interrelating elements. Following broader sociotechnical research priorities relating to the innovation of technologies and their appropriation through practices of consumption (Lie and Sørensen, 1996; Silverstone et al., 1992), the sociotechnical research agenda in the built environment encompasses both the design and use phases of buildings (Rohracher, 2003; Rohracher, 2001). However, more recent sociotechnical work related to valuation practices has yet to diffuse into its scholarship of the built environment.

This paper applies sociotechnical inquiry to the built environment to assess the usefulness of a social valuation methodology, Social Return on Investment (SROI), as a process of evaluating building design from a user perspective. Where typical sociotechnical-informed research in buildings is focused on users, this study addresses how design professionals and built environment decision-makers view and use different types of evidence. A review of existing sociotechnical work in the built environment is presented, including its focus on environmental innovation in the design of buildings,
and more recent work on buildings in-use and the consumption and appropriation of their technical design. Developments in the evaluation of building design, and the effective dissemination of findings, are proposed as a worthwhile direction for sociotechnical scholars’ attention, specifically new methodologies for the post-occupancy analysis of buildings that promote learning in the built environment. Qualitative results are presented from a set of interviews with design professionals and industry decision-makers involved in nonclinical healthcare projects to gather their reactions and opinions on the results of applying SROI to a cancer support centre in the UK. The interviewees’ interest in the early results of applied social value research in the built environment is consistent with SROI’s current popularity in the third, public and, increasingly, the private sector (The Crown Estate, 2013; Heady and Keen, 2010; Mulgan, 2010). The paper centres on the usefulness of SROI as an evaluation and dissemination tool, reflecting on its potential as a new development in (e)valuation practices in the built environment.

6.2 Design, use, (e)valuation

The sociotechnical research agenda within the built environment is a relatively niche portion of this academic field which has sought to expose the social context that inevitably structures every design process (Yaneva and Guy, 2008). The achievement of sustainable architecture has been a significant point of inquiry, driving investigation of the clusters of elements that structure the diffusion of energy efficient technologies in buildings (Fischer and Guy, 2009; Brand and Karvonen, 2007; Guy, 2006; Guy and Shove, 2000; Shove, 1998). Sociotechnical research typically deals with the design phase of buildings, with empirical work exploring the emergence of energy efficient design in specific spatial and temporal contexts (Guy, 2002). The design process is conceptualised as a black box hiding complex sets of social dynamics, described as ‘architecture in the making’ (Yaneva, 2009, p.5). The contested processes by which energy efficient building design is realised has been central to sociotechnical inquiry in the built environment, conceptualised as a technological innovation structured by an array of interrelating social, cultural, and political elements.

A subset of sociotechnical research in buildings looks past the achievement of energy efficient design to its embedding and use. In particular, it offers a novel approach to understanding the ‘performance gap’ (Fedoruk et al., 2015; Bordass et al., 2004) that
frequently exists between the anticipated and the actual performance of energy efficient technologies in the built environment. Conceptualising the sustainable building as a sociotechnical artefact suggests that the social cannot be separated from the technical during the use of those energy efficient technologies. Thus, building users are a significant focus of this research agenda. The mutual interactions between buildings and users represent the context within which sustainable building technologies function on a day-to-day basis, the choices and activities of users shaping technologies, and in some cases, subverting those technologies through processes of appropriation (Berker, 2011; Janda, 2011; Aune et al., 2009; Rohracher, 2003; Guy and Shove, 2000), with a direct impact on performance. The significance of interactions between building design and users has been further researched through the application of social practice theory to the built environment, facilitating analysis of the embedded routines that are intuitively carried out by building users. Empirical applications of practice theory have been increasingly employed in energy-related studies in the built environment (Gram-Hanssen, 2010a; Gram-Hanssen, 2010b; Hargreaves et al., 2010; Crosbie and Guy, 2008; Aune, 2007; Shove, 2003).

Following broader sociotechnical research priorities relating to the innovation, diffusion and appropriation of technologies, the sociotechnical agenda in the built environment has considered both its design and its use. However, more recent sociotechnical advances in relation to the study of valuation (giving value) and evaluative (assessing how something attains a certain type of value) practices (Lamont, 2012) have not been under study in the built environment. Growing interest in valuation practices in the wider sociotechnical literature is seen as a result of the entrenchment of neoliberalism in western markets and the consequent rise in new public management tools such as quantitative performance measures and benchmarking techniques (Lamont, 2012). The sociotechnical study of valuation practices is noticeably established in certain areas, including the creation and organisation of value in financial markets and business practices (Kornberger et al., 2015; Bessy and Chauvin, 2013; Muniesa, 2011; MacKenzie, 2006; MacKenzie, 2005; Carruthers and Stinchcombe, 1999). It is also well developed in the field of life sciences and medicine (Mittra and Tait, 2012; Sjögren and Helgesson, 2007), representing a research program which considers how values are enacted, what is considered valuable, how registers of value are ordered as well as displaced, and links to economic value (Dussauge et al., 2015). The development of
these empirically-minded valuation agendas has driven an interest in the sub-processes, the everyday steps, that make up evaluative practices and are therefore more readily defined and studied (Lamont, 2012). Typical processes under study are categorisation dynamics, such as classifying and standardising, and legitimisation dynamics, such as contesting, stabilising and institutionalising (Lamont, 2012). A useful point of admission is the study of valuation at its margins, being the place where existing practices are under constant negotiation, values are being undone and redone, and new ideas, techniques and devices are set in motion (Mennicken and Sjögren, 2015). It is at the frontiers of more accepted practices that questions of power and legitimisation are played out. Finally, the implications of valuation practices are also under debate, including the significance of material tools and instruments, known as valuation devices, against more mercurial cultural trends and social influences for the promotion and embedding of specific evaluative practices in policy and practice in the long term (Zuiderent-Jerak and van Egmond, 2015). Thus, the study of evaluative practices is a diverse empirical program that interrogates the everyday sub-processes that constitute valuation whilst simultaneously addressing the dynamic relationship between intangible culture and material devices which drives its evolution over time.

Despite this growing body of work, the study of valuation practices in the built environment is not an explicitly defined area of sociotechnical research. A degree of associated thinking can be found in relation to sustainable architecture, for example, Oliveira (2013a; 2013b) discusses institutional logics in the built environment sector and the emergence of a “technical mode of evaluation in sustainable architecture” (2013b, p.1). The existence of value systems at play within the design process has been studied in sociotechnical research for years, including the existence of competing environmental logics which produce a plurality of architectural responses with ethical implications for designers (Farmer and Guy, 2010; Guy and Moore, 2007; Guy and Farmer, 2001), the complex sets of outlooks, assumptions and beliefs holding alternative design practices together (Moore and Karvonen, 2008; Brand and Karvonen, 2007), and the ways that perceptions held by designers about the needs and preferences of imagined end users, known as user representations, are inscribed into the built environment (Lewis, 2015; Berker, 2011). Furthermore, sociotechnical scholars have considered ethical implications relating to design as a normative, moral practice (Farmer and Guy, 2010; Brain, 2005), and the impact of designers’ choices on both urban form
and wider social change (Yaneva and Guy, 2008; Coutard and Guy, 2007). In a recent study, Rydin (2016) analyses how the valuation of environmental sustainability has promoted new forms of investment in the prime sector of the commercial property market, whilst Brown et al. (2016) consider how environmental certification creates value for the tenants of non-residential buildings.

Evidently, pockets of values-related sociotechnical research in the built environment exist yet the potential for a more developed agenda for the study of (e)valuation practices in the built environment is considerable, in particular, going beyond sustainable architecture to the burgeoning design quality and post-occupancy literatures. Enduring interest in the value of design (Younger et al., 2008; Macmillan, 2006; Egan, 1998), the rise of user-centred design priorities (Watson et al., 2016b; Vischer, 2008a), and the wider attention being placed on health and wellbeing outcomes of design more recently (Marmot and Ucci, 2015; Jones and Grigoriou, 2014; Ulrich, 1984) suggest that long-standing registers of value in the built environment are being re-ordered to include the benefits experienced by building users, as well as economic and environmental drivers. In relation, recent academic work has sought to understand the value of architecture as a profession and how to communicate the cultural value of architectural expertise in the design process more persuasively to end user clients (Samuel, 2016; Samuel, 2015), whilst the Design Council has published research addressing why the economic value of design is underestimated, including architectural design (Design Council, 2015). Mounting recognition of the importance of learning from building users about what works and what does not, and successfully implementing this learning in future design, has produced a wide range of post-occupancy evaluation tools for buildings, for example, the PROBE methodology (Cohen et al., 2001b) and the Design Quality Indicator (Gann and Whyte, 2003). More recently, the launch of the WELL Building Standard offers a design certification system based on a scientific evidence base for health and wellness outcomes (Gillis and Gatersleben, 2015). However, the lack of widespread traction of such methods in commissioning, design and construction processes has inhibited the formation of successful learning loops (Leaman et al., 2010; Stevenson and Leaman, 2010; Stevenson, 2009). This ongoing issue represents a prime opportunity for sociotechnical scholarship to investigate the (e)valuation practices at play in the built environment.
A small number of sociotechnical studies have begun to address evaluation in the built environment, typically providing a critique of existing post-occupancy evaluation (POE) methods, for example, POE’s technical focus is considered a limitation by Oladokun et al. (2012), and Chiu et al. (2014) promote a sociotechnically-informed POE methodology that takes into account the mutuality of the relations between buildings and people, conceptualised as a process of interactive adaptation. However, a study by Watson et al. (2016a) calls for a shift in analytic focus away from the evaluation of building performance to the capture and measurement of the outcomes felt by building users, representing a further important research gap for the sociotechnical study of (e)valuation practices in the built environment. They consider the potential of social valuation methods to capture the impact of design on building users, which are typically based on a stakeholder engagement approach with the ability to quantify complex social outcomes and disseminate the findings in a more impactful way.

SROI is a social impact methodology that allows not-for-profit organisations to evidence the wider value of their work. Based on traditional cost-benefit analysis, it was originally developed by the Roberts Enterprise Development Fund (REDF) in the US in the mid-1990s. It leverages a financial valuation technique with significant potential to demonstrate the social value of good design in the built environment. More recently, an emphasis on stakeholder engagement using a standardised methodology has evolved through the work of the New Economics Foundation (nef) in the UK. The SROI methodology has six stages (Nicholls et al., 2012):

1) Establishing scope and identifying key stakeholders
2) Mapping outcomes
3) Evidencing outcomes and giving them a value
4) Establishing impact
5) Calculating the SROI
6) Reporting, using and embedding

Qualitative stakeholder engagement techniques are employed to identify outcomes arising from the intervention under analysis. The outcomes are then quantified using appropriate indicators in conjunction with the stakeholders, before a monetary value is assigned to each outcome by means of suitable financial proxies. Several impact establishment processes are carried out to prevent over-claiming and ensure the validity.
of the results, including deadweight, displacement, attribution, and drop-off measures. Finally, the monetised social returns are projected into the future using discounting rates, compared against the original level of investment to produce an SROI ratio of costs to social outcomes, and the payback period is calculated, representing a powerful dissemination metric.

SROI is an increasingly popular and embedded practice in the third and public sectors (Davies et al., 2016; Musto, 2015; Shaheen, 2011; Heady and Keen, 2010; Mulgan, 2010), and interest from commercial industry is also apparent (Veolia, 2014; The Crown Estate, 2013). Watson and Whitley (2016) offer a critical account of SROI and its application to the built environment, including the challenges faced, modifications required and recommendations for future applications, whilst Watson et al (2016a) discuss the effectiveness of SROI at capturing the social value of buildings, presenting the various qualitative, quantitative and financial data outputs, and the production of the final SROI ratios and payback periods.

6.3 Methodology

This paper investigates the usefulness of SROI as a decision-making tool in the built environment, conceptualised as a new development in (e)valuation practices. Where sociotechnical research in buildings is typically focused on users, this study addresses how design professionals and built environment decision-makers view and use different types of evidence. A set of semi-structured interviews were carried out with a range of designers and professional decision-makers from the nonclinical healthcare sector. SROI is well-suited to the context of charitable healthcare projects being originally designed for social enterprise, whilst many of the interviewees are required to demonstrate value for money to charitable trustees and NHS boards. Nevertheless, SROI’s considerable position of influence currently within the third sector is anticipated to enhance the transferability of post-occupancy findings presented through its framework to a wider audience.

Interviewees included two different groups: the first comprised design professionals from the project teams of three cancer support centres. Recruited during the SROI analysis of the case buildings, they were made up of three architects, three engineers, two interior designers and a lighting consultant. The associated semi-structured
interviews did not involve discussion of SROI data, as they were conducted during the early stage of the analysis itself. Rather they were asked their speculative opinions on the SROI methodology and its potential usefulness to the design process, including any barriers they could see to it being used in this way. The opinions of this set of designers helps to broaden out the findings from the second set of interviewees.

The second group was identified based on their current involvement in a live nonclinical healthcare building project for a new cancer support centre. The client is committed to high quality, user-centred design throughout its portfolio of cancer support centres. Surprisingly, however, they have no robust feedback process to ensure learning takes place in future projects. The case-based recruitment approach secured ten interviewees for whom the SROI data had direct relevance, facilitating analysis of its potential utility to real world decision-making activities. The interviewees comprised five NHS managers (four clinicians and an estates director with an engineering background), four executive board members from the charitable organisation, and the project architect of the new centre. For this group, the semi-structured interviews were dialogic in nature, the key component being the disclosure of anonymised SROI data to elicit the reactions and opinions of the interviewees. Examples of the qualitative user narratives, quantitative summaries of agreement to reported outcomes and the impact of design features, and the monetised SROI results produced are shown in Figure 6.1, Figure 6.2, Figure 6.3 and Table 6.1.

The interviews were conducted in a particularly flexible manner to allow open discussion of the SROI methodology, the process of applying it to a cancer support centre, and the data produced. Specific questions related to the usefulness of the SROI methodology overall, the various types of data produced, and whether the interviewees felt they could be incorporated into their project-related processes. The interviews focused on the SROI research carried out at case building 1, where a higher volume of data was collected compared to the other case buildings. All interview data was recorded electronically and transcribed. Thematic analysis was conducted using the qualitative analysis software Atlas.ti to identify interviewees’ understanding and

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15 The client of the new cancer support centre is also the occupier of case building 1. For more information about the case buildings, see Watson et al. (2016a).
engagement with SROI, their opinion on its potential application, and any concerns about its limitations.

Figure 6.1: Qualitative narrative

Michael* was diagnosed in 2013. His nurse recommended [redacted] as a source of advice and information. He was initially wary as he would usually shy away from group situations, but the unusual green exterior surrounded by trees made him curious as it was so different from the rest of the hospital. Once inside, Michael liked the fact there was no reception and he could wander into the informal kitchen which acts as the heart of the building. He found the interior was light and airy with colourful, high quality finishes which drew him in:

"It feels a very enticing, interesting space and it makes you feel very vibrant inside, but calm and relaxed. There's a quality in the artwork through to the wooden floors, the whole thing is fantastic."

He always pops into [redacted] after his monthly visits to the oncology department as he finds it a nice place to have a cup of tea and see a friendly face. He forgets he is at a hospital when he is inside the centre.

"You can see the hospital but I don't look out and think that's a hospital. The building does absorb you from that externally although you can actually see it, which is quite unique really."

He has also taken part in several tai chi classes and finds the building is well-suited to a meditative approach to relaxation:

"It has a positive energy when you come in...Clarity is very easy here."

Michael believes the building plays an important role in allowing the staff to operate in a different way to traditional healthcare settings:

"I find [the staff] friendly and open, not pushy, just very good natured in the way they do things and extremely good the way they approach things. So I think that is a very important part, but I think that the building is as equal because it creates the environment where you can do that. There is never a feeling of tension about the people that work here."

(Visitor, 2014)

*Names have been changed to maintain participant anonymity)
### Figure 6.2: Quantitative summary: outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased wellbeing</td>
<td>95%</td>
</tr>
<tr>
<td>Increased relationship building</td>
<td>92%</td>
</tr>
<tr>
<td>Higher quality of care/services</td>
<td>93%</td>
</tr>
<tr>
<td>Increased beneficial effect from care/services</td>
<td>90%</td>
</tr>
<tr>
<td>Increased first visit intention</td>
<td>88%</td>
</tr>
<tr>
<td>Increased re-visit intention</td>
<td>91%</td>
</tr>
<tr>
<td>Longer visit intention</td>
<td>96%</td>
</tr>
<tr>
<td>Reduced intention to access psychosocial support services in NHS environments</td>
<td>69%</td>
</tr>
</tbody>
</table>

### Figure 6.3: Quantitative summary: design features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Impact on a 1 to 7 scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playful exterior</td>
<td>5.9</td>
</tr>
<tr>
<td>High quality space</td>
<td>6.6</td>
</tr>
<tr>
<td>Nonclinical environment</td>
<td>6.8</td>
</tr>
<tr>
<td>Homely environment</td>
<td>6.6</td>
</tr>
<tr>
<td>Open plan layout (staircases, landings)</td>
<td>6.2</td>
</tr>
<tr>
<td>Open plan layout (kitchens)</td>
<td>6.3</td>
</tr>
<tr>
<td>Kitchen as social hub</td>
<td>6.7</td>
</tr>
<tr>
<td>Kitchen table as point of contact</td>
<td>6.5</td>
</tr>
<tr>
<td>Kitchen size and layout</td>
<td>6.5</td>
</tr>
<tr>
<td>Balconies</td>
<td>6.4</td>
</tr>
<tr>
<td>Variety of spaces</td>
<td>6.5</td>
</tr>
<tr>
<td>Availability of small private spaces</td>
<td>6.4</td>
</tr>
<tr>
<td>Large activity room</td>
<td>6.5</td>
</tr>
<tr>
<td>Dividing wall in activity room</td>
<td>5.8</td>
</tr>
<tr>
<td>Colourful/quirky interiors</td>
<td>6.5</td>
</tr>
<tr>
<td>Choice of soft furnishings/furniture</td>
<td>6.3</td>
</tr>
<tr>
<td>Lack of soft furnishings/furniture</td>
<td>4.2</td>
</tr>
<tr>
<td>Lighting (table/ floor lamps)</td>
<td>5.9</td>
</tr>
<tr>
<td>Window design (large/ openable)</td>
<td>6.4</td>
</tr>
<tr>
<td>Acoustics</td>
<td>6.2</td>
</tr>
<tr>
<td>Heating controls</td>
<td>5.9</td>
</tr>
<tr>
<td>Lack of space/ capacity</td>
<td>4.5</td>
</tr>
<tr>
<td>Sloping site</td>
<td>5.0</td>
</tr>
<tr>
<td>Steps outside</td>
<td>5.1</td>
</tr>
<tr>
<td>Bridge entrance</td>
<td>5.6</td>
</tr>
<tr>
<td>Staircases inside</td>
<td>5.7</td>
</tr>
<tr>
<td>Lift inside</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Table 6.1: Monetised SROI data

<table>
<thead>
<tr>
<th>Case building</th>
<th>Floor plan (m²)</th>
<th>Total impact</th>
<th>Total impact/m²</th>
<th>SROI ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>1</td>
<td>360</td>
<td>£134,991</td>
<td>£375</td>
<td>£1 : £0.08</td>
</tr>
<tr>
<td>2</td>
<td>300</td>
<td>£68,764</td>
<td>£229</td>
<td>£1 : £0.07</td>
</tr>
<tr>
<td>3</td>
<td>106</td>
<td>£23,445</td>
<td>£221</td>
<td>£1 : £0.02</td>
</tr>
</tbody>
</table>

Adapted from Watson and Whitley (2016)

6.4 SROI as a decision-making tool

The potential strengths and weaknesses of SROI as a decision-making tool in the built environment are presented according to five key themes: methodological engagement, comparing qualitative and quantitative data, trusting monetised data, communicating with different audiences, and potential applications for SROI.

6.4.1 Methodological engagement

The interviewees showed differing levels of engagement with the SROI methodology. Many commented on the appropriateness of SROI to the high quality, user-oriented environment of the case building, questioning its wider applicability to a more complex clinical environment. Initial reservations about robustly separating the impact of the building design from human factors such as building management and the services on offer were common, particularly from the charitable and clinical interviewees.

“How do we know that it was truly the building and it’s not actually the interaction they’ve had with the person?” (charitable)

The architect asked whether there was a “ground zero”, such as the neighbouring NHS oncology department, from which the impact of the centre’s design was compared to during the analysis. After talking through the SROI methodology and its impact establishment stage including a measure of attribution, the interviewees appreciated its inbuilt reflexivity and conservative nature: “I think what’s really helpful is that you’re reflecting quite a lot through it…I can’t put that in, I’ve got to take that out, which is giving me more confidence that it’s a bit more robust” (charitable). Many interviewees queried the inter-relatedness of the outcomes, displaying a considerable degree of
understanding and engagement in the methodology. Additional outcomes and their potential inclusion in the analysis were also discussed, for example, enhanced reputation and brand due to the high quality design, improved fundraising activities and increased opportunities to engage with arts and cultural audiences, emphasising the interest of the charitable executive members.

6.4.2 Comparing qualitative and quantitative data

The stakeholder engagement focus of SROI was widely praised by the interviewees, being directly relevant in the healthcare sector. The NHS clinicians especially felt that it was “more than a return on investment”, being able to capture people’s stories in a quasi-scientific manner and bridge the social and the material. The combination of qualitative and quantitative data collected was deemed a particular strength allowing the findings to be verified across the various data sources.

The quantitative summaries produced, namely descriptive statistics related to outcomes and the impact of design features, was received with interest, particularly by the charitable executive members as the case building is part of their centre portfolio. Whilst there is no formal learning procedure in place, their qualitative design brief is constantly evolving and the data collected was considered useful to this process.

“This [data] would allow us to seriously think about how we’re evaluating against the brief…giving us a fuller picture in terms of what we might do differently in the future or whether particular things have worked well in these centres.” (charitable)

However, the NHS estates director had a contrasting view:

“I just think people…who work with buildings understand the impact of well designed, refurbished, good quality space…Maybe it puts a figure on it so it makes it more credible. But it tells them what they already know I think.” (estates director)

The qualitative narratives were received more favourably as the context to the quantitative results, promoting understanding about the scores of particular outcomes or design features:

“I think the stats on their own are helpful in giving a picture about the bits that work well… But when there are things that are slightly more complex, I think it’s
helpful to have the context that surrounds it, because they could be misleading.” (clinician)

It is worth noting that this data is similar to typical POE findings, with the exception that SROI’s stakeholder engagement focus produces richer qualitative narratives, showing that post-occupancy findings do have traction with decision-makers interested in design quality (Hadjri and Crozier, 2009).

6.4.3 Trusting monetised data

Acceptance of financial proxies as an approximation of the value created by each outcome, rather than as absolute substitutes, was complex. Some interviewees were very critical, particularly the NHS clinicians and estates director, and many questioned the choice of particular proxies, wanting “to know much more about where you’ve got those proxies from, how in date they are, their relevance to this population”. Proxies based on primary data, like average salaries or cost-per-hire figures, were more readily accepted those from the subjective wellbeing approach (Fujiwara and Campbell, 2011), like the value of improved wellbeing to an individual, representing a tension between objectivity and subjectivity. However, the project architect and the charitable executive members were more comfortable with using financial proxies to represent otherwise intangible outcomes: “I think it’s very easy to pick it apart, but then what is the alternative?” This suggests that SROI is more palatable to certain audiences, particularly those interested in learning about user experiences, whereas those that consider data collection unnecessary are more likely to consider the financialisation process unreliable.

The monetised SROI data also received mixed feedback. The project architect was very positive, calling it original to address the “people element” of buildings in a holistic, quantitative manner when most quantification is related to profit (or cost)/m². This illustrates an understanding of buildings as lived environments, as opposed to an instrumental perspective of buildings purely as revenue streams. Whilst the clinicians accepted the financial data as complimentary to the quantified summaries, the NHS estates director disliked the subjectivity, stating “there’s as much of an art at arriving at some of these figures as there is a science.” He preferred rounded estimates rather than exact figures, which he called “delusions of accuracy”. A charitable interviewee suggested that a range of ratios would be more impactful by allowing for contextual factors like varying footfall each year. This was echoed by several interviewees:
“To be transparent I think you have to say, this is what the range is between x and y and we’re going to go in the middle of it, or whatever we decide would be the right methodology.” (charitable)

“A range is better I think because it’s making allowance for it not being truly scientific, but you’re giving enough for people to make a judgement.” (clinician)

The impact of contextual variables which change year-on-year on the accuracy of projecting the ratio into the future was also queried. A charitable executive member considered that “it may well be that we change the staff team and they’ll have different [opinions] that would impact on the [result]”. All interviewees, and the charitable interviewees in particular, were interested in whether the ratios were “good” or “as expected” in comparison to other built environments, including how they could be improved, for example, by projecting the yearly ratio over the full lease period of the land plot.

6.4.4 Communicating with different audiences

Using SROI to disseminate post-occupancy feedback in a more user-centred way required explicit qualification that the impact under study was created by the built environment and not the services offered within the building. This represented a common early misconception across many interviews, likely a factor of the building typology. The same issue would apply in other buildings offering a service, for example, healthcare, welfare support, retail and leisure environments, whereas residential, commercial and educational buildings are less likely to be affected.

The original design teams felt that SROI would need to produce clear, tangible, and reliable results to be effective. A property director explained that “it’s about making it believable…with as much certainty as you can, and as simply as you can”. The leading problem raised by the second group of interviewees was the financialisation techniques within SROI being seen as unreliable, particularly where the proxies come from, how the value calculations are made, and the fact that variable ratios can be generated. They were concerned about how receptive people would be:

“If [people] realise that it’s built on weak foundations, or foundations that could move quite a bit one way or the other, then …it’s likely to be discounted.” (estates director)
The estates director worried that questions about robustness could overshadow the actual message about the value created; “I think that’s the danger with this, people will try to shoot down the number”. In relation, some felt that the ratios are less impactful than presenting the value created by each outcome, or even the original quantitative data, being more complex to communicate effectively. A clinician stated that “the more simple you can make the explanation of it, maybe in a graphic or something, then the more useful that final ratio will be”. However, the payback period was considered a very useful dissemination tool by the interviewees as it is a self-evident measure of the return on investment.

These findings suggest that different audiences will receive the various data and metrics produced in diverse ways. Therefore, having a variety of outputs, including qualitative, quantitative and monetised data, represents a significant strength of SROI and can be delivered as appropriate. The project architect’s main concern was how design professionals would receive SROI data, especially if they consider it surplus to their own expertise in a particular building typology. This worry was borne out as several interviewees commented that there may be “pushback” from the architectural profession due to scepticism over SROI’s resource intensive methodology that produces a common sense end result.

“I’m not sure how many architects will buy into the thing itself, we’re very…sceptical of things which aren’t yet proven to be valuable.” (architect)

“It depends on the arrogance of the design team. If they think they know best, rather than the user…then they may pooh-pooh this [and] say that you’ve just stated the obvious about design.” (clinician)

In effect, SROI could be seen as a challenge to the professional judgment of designers, representing a tension between expert knowledge and user experience. Furthermore, the estates director believed that NHS trust boards may see the subjective methodology as open to manipulation to extract the desired decision, potentially causing disengagement with the findings.

“They’d suspect that there’s enough latitude in how you work out the [social returns] bit of the ratio that it has been tailored to get an outcome from the board…It’s knowing your audience. Will they think this guy’s [sic] built up some
woolly case and is really trying it on, or will your audience appreciate that you’ve gone to some depth to put some numbers on it?” (estates director)

For the charitable interviewees, the main concern was regarding public relations and how to release financial data without being open to criticism. A longer term ratio paints a more positive picture about the value created by their centre than a yearly ratio, whilst the payback period represents a clearer message than the ratio. They also felt that excluding organisational outcomes, like brand enhancement, would be necessary to avoid accusations of bias.

“We’d just have to be careful about how [organisational reputation] was put back into it so that we were transparent about it, and maybe leaving it out means it’s not skewed or biased.” (charitable)

It seems that the delivery of the findings is highly significant for their effective reception. This was emphasised by several of the design team interviewees who commented that simple and concise information would be far preferred, even by seasoned funders or donors.

“The average person in the street will look at things quite simply, however sophisticated they are…Do you need to spend this much money? Is the money that I’m going to give you going to be properly spent?” (property director)

Therefore, the majority of interviewees felt that it was important to consider the audience before deciding how to utilise SROI results, particularly financial valuations.

“It’s who this is for. Trustees or board members tend to be finance people so this can tick their boxes. It’s not necessarily going to convince the likes of us where we’re wanting to know what the impact is for the patients and the quality, we want to know their stories…So it’s about knowing your audience, and another tool useful for making those kinds of decisions, as long as it’s not the only tool.” (clinician)

Consideration of the appropriateness of SROI for the target audience is key to its effectiveness as a dissemination tool. It appears that some audiences, such as financially-minded funders, donors and trustee boards, would be receptive to monetised ratios: “My accountant chairman will love this!” (charitable). However, others such as
expert designers and scientifically-minded professionals might not be so keen on data based on lay perspectives and have concerns over the financialisation process.

6.4.5 Applications for SROI

The majority of interviewees were genuinely interested in the SROI results, which prompted wide discussion about the design, the building’s usage, as well as operational considerations about preparing NHS staff for the transition into working in a cancer support centre environment. As the charitable CEO outlined, “you can actually start to have your ROI working much better and effectively for you because you’ve thought about that induction piece for staff”. The general viewpoint across both groups of interviewees was that whilst SROI could not be the only tool used, it provides useful insights to inform complex operational, design, and commissioning decisions.

The quantitative summaries about the impact of design features and the corresponding qualitative narratives were considered a useful shortcut to participative design by a clinical manager, providing cost savings during operational planning processes.

“Personally if it was me and somebody said use these data to support your design, you don’t need to involve patients, I’d go, great, let’s use this and we’ll do one round of patient [engagement]. So instead of doing six rounds, let’s just show them [the patients] where we’ve got to and chances are it’ll have nailed most of it, because you’ve used [SROI]. So it could speed up design, it could speed up patient influence and improve it. Could it save you money? I suspect so.” (clinician)

The project architect also commented that having this information from the project start would help in allocating more of the budget to elements that are identified as important.

“It can change or moderate where to focus design, because as an architect you’re assigned a budget and you’re managing where the money is going to be in the building. So you can decide a higher specification for… a higher office space because they can use it more, or on soft furnishings.” (architect)

Whilst this viewpoint was shared by several of the design professionals during the earlier set of interviews, the quantitative summaries and qualitative narratives are similar to the findings already available through existing POE techniques. The point of
difference for SROI is the production of financial returns data, yet professionals predisposed to learning about previous buildings do not require this to draw their attention to user experiences (Hadjri and Crozier, 2009).

Furthermore, financial SROI data was widely considered to be impractical when it comes to specific design decisions. Whilst it gives an overall picture of value created, the detail about the outcomes and design features is not reflected. It may have some use for higher level decisions regarding overall design specification, allowing the estimated value created for the users to be taken into account. The clinical managers suggested that it could prevent “corner-cutting” within the cash-strapped culture of the NHS by proving it as a “false economy”. This was reinforced by an interior designer’s views about overcoming the cost-driven nature of the NHS during the design team interviews. The project architect felt that financialising the value produced by design would help to draw attention to post-occupancy issues and thereby limit value engineering in design-and-build models if the client understood the latent value of the proposed design. He explained that contractors “try to cut corners and…it’s important to prove that [high quality design] has a value”. One of the engineers from the design team interviews argued that SROI would help to “reign in grand architectural plans” and bring a focus back to the end user. Both suggested that incorporating SROI as part of an early work stage would ensure consideration of the end user during concept development and prevent client comments from undermining its inclusion, as well as after completion to evidence what worked and feed this into the next project. This indicates that SROI can be used as a tool to influence higher level design decisions by shifting the focus back to the user.

The ratios were of direct relevance for the charitable executive members. They expressed numerous ideas about how they could be used, including comparing the ratios of all centres across their portfolio, and across similar nonclinical environments externally, to direct commissioning decisions (including procuring an architect), in the development of the brief (which directly informs design decisions), to ensure future centres yield the “highest return on investment possible” from a user perspective, and to inform refurbishment decisions to boost the ratio of existing centres.

“If you did the same test on our other centres, would some of them perform better than this one. So that could help inform decisions if some buildings are in fact
working better for us; for the commissioning process, thinking about the quality of the architect as well as the brief and client role.” (charitable)

“If we were going back to refurbish our centres in 10 years’ time, how can we take this and bring them all up to a par...So if [centre x] actually compared unfavourably to [centre y]...where do you need to put your investment to make it work hard for you for the next ten years of its life?” (charitable)

Their interest in how the SROI methodology could be put to work was further evidenced by questions about when an analysis is typically carried out, and whether they could use it predictively as well as retrospectively to confirm the return on investment is as intended. As such, they interpreted SROI as a planning tool to inform the early stages of commissioning, procuring and designing the brief, as well as a useful evaluation tool to justify investment in the built environment.

“So we could look at what the value added would be over a 10 year period, and then look at what the additional cost is of investing in a higher quality building at the outset and whether that’s offset over a ten year period.” (charitable)

“I think I can see the use being when people come to design buildings and how conventional they are versus wanting something where they spend a little more time thinking about the environment; or trying to justify why the internal environment is just at that higher spec; or why you’re getting the architects in a little bit more.” (charitable)

The clinical managers and the charitable executive members both agreed that the return on investment figures would be useful to present to commissioners, funders, trustees and donors, to complement qualitative case study narratives, as an empirical approach to show the value of spending on high quality user-centred builds. The monetised findings could also be presented to other NHS trusts to help promote the value of commissioning their own centre.

“When you show facts and figures to a board...they want to hear the qualitative sides of things, but they’re also business people so [SROI data] is going to relate to them as well. What’s nice is that you can relate to both sides.” (clinician)
The charitable interviewees felt being able to portray the benefits in a more sophisticated manner to large donors would be particularly advantageous in attracting their funding.

“In terms of currency and dialogue with potential donors, to be able to say to them, I know we spend a lot on our buildings but this is the return we get …that’s powerful.” (charitable)

“This sort of information helps us strengthen our argument about the importance of environment on wellbeing to encourage more people to invest in us. I think that’s the bit that’s really helpful, so that it’s not seen as being fancy. It gives us a robust argument, and… if donors were to understand this is the impact that the buildings have from a return on investment, they might be more likely to contribute to the build, and then the ongoing programme.” (charitable)

The time consuming nature of SROI was considered as a potential issue to its application, however, particularly on smaller scale projects where a lack of space for formalised feedback loops was reported. It was suggested that SROI would be easier to incorporate into larger projects alongside environmental impact assessment processes. However, one of the engineers advised that getting SROI into the same league as recognised environmental standards like LEED or BREEAM would require considerable effort to promote its usefulness to architects. This was backed up by an architect’s views on the uptake of assessment tools.

“The construction industry is quite a brutal industry and it tends to work based on how much money someone is going to make...The first question is what do I get out of this [new tool]? What does it make me?” (architect)

Issues were also identified within the wider healthcare sector context. An NHS clinician explained that understanding the value created for an individual, termed the “people question”, is often sought by healthcare decision-makers rather than the amalgamation of value to all user groups, as provided by SROI.

“We’re always in fear that people will use financial figures and actually it hides some of the real depth of what’s going on…it’s an ethical issue, ultimately. It’s are we looking at the greater good of all or versus one”. (clinician)
The interview findings emphasise a variety of issues regarding engagement with the complex SROI methodology, comparing qualitative and quantitative data, trust around monetised data, the importance of delivery when communicating the results, and their potential application to high level investment decisions. The findings reveal that SROI has limited potential as a tool for decision-making during the design process. Whilst several interviewees suggested it could be included as part of an early work stage as a useful source of information, many others felt it represented an unnecessary, resource intensive step that could equally be achieved through the application of common sense and designers’ expertise. The project architect was very positive about the quantitative and qualitative data produced and its potential use in high level specification decisions, for example, concentrating more of the budget into the kitchen which was shown to hold significant value for the building users. Yet the financialised data offered by SROI is often too far removed from the complex, dynamic interactions between users and design to be able to reliably inform detailed design decisions. As a result, SROI does not offer anything remarkably different from POE data which is currently not valued by designers and rarely utilised. SROI’s point of difference is the monetisation of value created yet this data is at a general level making it inappropriate for design decision-making and, unless the value of design to building users becomes a marketable standard, the financial element of SROI is unlikely to generate interest from designers or promote project-to-project learning.

Conversely, there was a great deal of interest in applying SROI to commissioning, funding and investment activities. The process of taking the NHS managers and charitable executive members through the SROI methodology, its application to a cancer support centre, and sharing the various types of data generated, opened up a dialogue about the design of the building, the feedback on how it is used and its impacts, and how to learn from the findings. The interviewees demonstrated a considerable degree of interest in post-occupancy issues in the nonclinical healthcare sector. However, it is essential for findings to be accessible and, critically, focus on people rather than building design. The importance of understanding what is happening from a user perspective is particularly valued in this sector, perhaps more so than it is currently in more commercial typologies, due to the overall focus on helping people rather than producing profit. As a result, the SROI methodology seemed to resonate with the majority of the healthcare and third sector professionals interviewed, with the
interesting exception of the estates director, with an engineering background, further
evidencing the low value currently placed on learning about user-centred imperatives by
design professionals. This set of interviewees discussed the potential usefulness of
SROI as a kind of accounting tool to capture the value created by design for building
users, information which could then be presented to trustee boards, funders or potential
donors to promote user-centred decisions. Furthermore, they showed genuine
consideration about the inclusion of value relating to the occupying organisation, such
as enhanced brand reputation, improved fundraising, and increased opportunities to
engage with wider audiences due to their built environments, emphasising the potential
usefulness of SROI to these decision-makers, and the emergence of a different set of
values in relation to their buildings. The following section discusses the implications of
SROI as an emerging practice of (e)valuation in the built environment.

6.5 (E)valuation practices in the built environment

The following discussion considers SROI as a new development in (e)valuation
practices in the built environment, including its potential to displace existing registers of
value around technical building performance, legitimise the user experience of buildings,
and facilitate wider decision-making processes in the design and construction sector.

The ready engagement of the interviewees with both the results and the methodology of
SROI suggests that understanding the people perspective of buildings is increasingly
being recognised as important and valuable. SROI directly challenges the accepted
technical representation of value propagated by existing post-occupancy methodologies
that measure building performance. POE represents a valuation device (Zuiderent-Jerak
and van Egmond, 2015) that is part of the prevailing institutional logic promoting a
“technical mode of evaluation in sustainable architecture” (Oliveira, 2013b, p.1). This
logic is made up of patterns of activity across the individuals and organisations of the
design and construction industry related to technical building performance, thereby
reproducing buildings based on technical learning rather than user experience. Instead,
SROI measures outcomes experienced by building users and, in so doing, authorises a
different type of non-expert value and its significance for learning about the design and
occupation of buildings. Although well-established in the social impact sector
(Sanfilippo et al., 2009), its diffusion as a new valuation device in the built environment
contests the focus on technical building performance and could help to institutionalise a
more stakeholder-driven logic. As Mennicken and Sjogren (2015) argue, it is the study of valuation at its margins where existing value systems are problematized and negotiated, allowing new ideas, devices and practices to evolve. Whilst the predominant technical grammar of worth (Lamont, 2012) favours evaluation based on energy efficiency and building performance, a user-centred grammar would support evaluation based on accounts of user experience.

However, the dissemination of user-driven learning about buildings requires consideration. Whilst POE addresses building performance, it produces a qualitative style of valuation in the form of value mapping (Mulgan et al., 2006a), limiting its uptake in the learning loops of design (Vischer, 2009; Preiser and Vischer, 2005; Whyte and Gann, 2001). SROI generates a range of valuation forms, including qualitative user narratives, quantitative outcomes data, and monetised valuations and return on investment figures (Watson et al., 2016a). Communicating post-occupancy data using SROI highlighted that some findings work better than others. The stakeholder engagement aspect was very successful as it allowed the quantitative data to be contextualised with the qualitative narratives, acting as an evidence base for the numbers and offering clarification for unexpected results. This proved especially useful when delivering negative findings such as increased stress due to the built environment. Presenting the monetised data such as the value created by each outcome, SROI ratio and payback period received a more mixed reaction. The complex processes of applying financial proxies and impact establishment techniques to the outcomes proved difficult to communicate effectively and generated some confusion about where the numbers came from. Whilst some interviewees bought into the concept and engaged readily with the figures, the subjectivity of SROI and the accuracy of the presented values was a hindrance to the engagement of other interviewees. The main issue is the financialisation techniques within SROI being seen as unreliable and associated concerns over the robustness of the financial figures becoming the main focus, rather than the overall message about the value created.

Trust issues around numbers, particularly monetised SROI data, suggests that communicating people-driven values about buildings in calculative valuation language is not yet fully accepted in the built environment. Lamont (2012) discusses the limits of numerical forms of evaluation and emphasises the role of human judgement in valuation practices, a concept previously termed qualculation (Callon and Law, 2005; Cochoy,
In effect, SROI serves as a tool to influence decision-making based on individual preferences, making it its appropriateness for the target audience and its likely reception a key consideration for its utility as a valuation device. It seems that some audiences, such as financially-minded funders, donors and trustee boards, would be receptive, while others such as expert designers and scientifically-minded professionals might not be due to the data being based on subjective perspectives, seeming like common sense, and concerns over the financialisation process. However, the variety of qualitative, quantitative and monetised data types produced by SROI means that through careful selection of the appropriate delivery metrics, it has the potential to engage a variety of built environment audiences, including end user clients, commissioners, designers and project teams. This represents a significant strength of SROI as a new valuation device that can drive new practices of user-focused (e)valuation in the built environment.

The interview results suggest that SROI has greater potential to effect change during commissioning, funding and investment activities, rather than during the design process itself. SROI’s point of difference from existing POE methods is the assigning of monetary value to the evaluation results, yet this data is at a general level and considerably removed from the complex, dynamic interactions between users and design. As a result, the financial valuation element of SROI is unlikely to inform detailed design decisions through project-to-project learning. However, it does have potential as a kind of accounting tool to capture the value created by design for building users, information which can then be used by commissioners to inform similar user-centred decisions, by clients to evidence the value of their investment, or presented to future clients as an evidence base during tendering processes. This role would be further enhanced through the inclusion of value relating to the occupying organisation, for example, through productivity gains, enhanced brand reputation or improved fundraising due to the built environment. SROI, therefore, represents a valuation device with considerable potential as a high level investment tool to drive thinking about a different kind of value in design, and generate an evidence base for an emerging set of values in relation to buildings.

In this regard, SROI has broader applicability beyond nonclinical healthcare settings, its flexible methodology being malleable to measuring outcomes valuable to specific environments. For example, in commercial build types, real estate asset management (Warren, 2006) and facilities management strategies (Price and Akhlaghi, 1999) are
well established to promote the best return on investment from the built environment, and SROI could help to capture and quantify the impact of design on performance-related outcomes to inform these (e)valuation practices. Furthermore, it is likely to be increasingly relevant and applicable to a variety of building typologies as the developing health and wellbeing agenda (Francis et al., 2016; Wheeler et al., 2016; Alker et al., 2014; Jones and Grigoriou, 2014) causes a shift in registers of value in the built environment. SROI is well placed to support this growing institutional awareness about the impact of design on users in the design and construction industry. Being originally developed for the social enterprise sector, both its methodology and results are more accessible to a wider range of lay audiences than typical POE methodologies created for design professionals to evaluate complex aspects of building performance like indoor environmental quality, daylighting and acoustics. In comparison, SROI captures the experiences of people and is a process that commissioners, clients and occupiers can carry out for themselves. This runs counter to the paternalism of the design profession towards end users which does not currently place a value on engaging with and learning from their experiences. Mennicken and Sjogren (2015) argue that power dynamics become visible at the margins of valuation where existing value systems are renegotiated, including questions over what is included and what is excluded. Ultimately, SROI provides an opening for the opinions and preferences of users to be incorporated in decisions about the built environment. Furthermore, it represents a means for the organisations and even individuals that will suffer from ill-considered built environments to engage with and learn about the impact of design for themselves, and potentially inform future design decisions for their own benefit. The potential for “pushback” from the architectural profession towards an evidence base that is telling them what they already know, combined with SROI’s current popularity (Heady and Keen, 2010; Mulgan, 2010) and accessibility, suggests that it is best placed as a tool for building users rather than designers. As long established registers of value are increasingly being reorganised along user lines, SROI represents a new development in lay, stakeholder-informed (e)valuation practices in the built environment.

### 6.6 Conclusions

The study of (e)valuation practices in the built environment represents a gap in sociotechnical research in buildings. The long-standing prioritisation of environmental
and economic logics of value in the built environment, how those values are beginning to shift towards a social logic focused on user-centred priorities, and its translation into new developments in the evaluation of buildings represent prime areas for sociotechnical inquiry.

This paper has considered SROI as a new development in (e)valuation practices in the built environment. SROI directly challenges the accepted technical representation of value propagated by POE methodologies that measure building performance. Instead, SROI measures outcomes experienced by building users and, in so doing, authorises a different type of non-expert value and its significance for learning about the design and occupation of buildings. The interviewees’ interest and enthusiasm for the early results of applied social value research in the built environment is consistent with SROI’s current popularity across the public and third sectors, and increasingly in industry. Disseminating post-occupancy findings about the built environment through devices such as SROI, which produce a variety of data and metrics, is anticipated to enhance their transferability to different audiences and facilitate the uptake of stakeholder-driven learning. However, its usefulness as a design decision-making tool appears to be limited, as monetised SROI data gives an overall account of value and cannot paint a detailed picture about the dynamic relationship between users and design. Yet the ability of SROI to evidence the value generated by a building for the users has considerable potential to inform decision-making in high level commissioning and investment processes. The current popularity of SROI, its accessibility as a stakeholder-driven methodology, and the transferability of its results have the potential to get user-centred design issues onto the negotiating table, and driven by end users, clients and commissioners as much as expert designers. Furthermore, its relevance to a wide range of building typologies will continue to increase as health and wellbeing rise up the public agenda. Its point of difference is that it comprises both an evaluation and a valuation device, being about assessing how buildings attain value for building users, as well as assigning monetary value to those outcomes. SROI focuses on non-expert perspectives of buildings through stakeholder engagement rather than expert perspectives of buildings through building performance, revealing and capturing new types of values in the built environment. As long established registers of value are increasingly being reorganised along user lines, SROI represents a new development in lay (e)valuation practices in the built environment.
The findings presented in this paper suggest that the built environment represents a rich site for the growth of an empirical valuographic research programme (Dussauge et al., 2015), similar to that found in areas such as the study of financial markets (MacKenzie, 2005) and the life sciences (Mitra and Tait, 2012). Areas in need of research include how economic profit-making and technical building performance have come to be understood as the dominant logics of value for buildings, by what means these registers are ordered and reproduced, and consideration of how this could be otherwise in relation to the needs and preferences of building users. Whilst the current paper has focused on the potential diffusion of SROI as a valuation device, deeper investigation of the socio-cultural context of the design and construction sector, and its dynamic relationship with material devices such as SROI, is needed to understand how the reordering of value based on user experience of buildings might be achieved in the long term.
CHAPTER 7: The prospective relationship between Social Return on Investment (SROI) and the learning loops of sustainable design

The following chapter comprises a set of closing discussions and reflections about the research presented in this thesis, ultimately concluding on the potential relationship between SROI and the learning loops of sustainable design (Leaman et al., 2010; Preiser and Vischer, 2005; Whyte and Gann, 2001). The research has critically trialled SROI in the built environment to investigate the effective measurement and dissemination of the social value of buildings and its potential influence on learning in design and commissioning processes. Its key accomplishments are theoretical, methodological, empirical and practical in nature. Theoretically, the thesis makes two key contributions to sociotechnical inquiry in the built environment. Firstly, it conceptualises the social value of buildings as the dynamic interaction between physical building design, building users and the mediating context of scalar social relations in the building user community. By bringing attention to the social context of occupied buildings, the thesis shows that building user group dynamics are an important sociotechnical element of occupied buildings (Vischer, 2008a) that are often overlooked. Secondly, the thesis advances current work on valuation practices within the setting of the built environment. SROI is conceptualised as a new development in lay (e)valuation practices, representing a combination of both evaluative and valuation elements with an accessible stakeholder-driven focus that has considerable potential to inform decision-making in high level investment and funding decisions, rather than technical design decisions. This represents a prime area for future sociotechnical research in the built environment, specifically, to investigate how the complex reality of social value in occupied buildings is understood by a range of actors, and explore the implications for user-centred learning as new registers of value are established in the commercial property sector due to the growing importance of health and wellbeing in the built environment (Francis et al., 2016; Wheeler et al., 2016; Alker et al., 2014; Jones and Grigoriou, 2014).

In terms of its methodological contribution, the thesis furthers current thinking about post-occupancy methodologies by proposing an important shift in evaluative focus to measuring the outcomes experienced by people, rather than technical building performance. This shift is exemplified by the exploratory application of SROI to the case buildings, presented as a stage-by-stage account in an accessible and replicable manner, followed by critical reflection of this process to explain the challenges faced
and the lessons learnt. As a result, the thesis represents a unique source of learning about the practical undertaking of user-centred, post-occupancy methods in buildings, which are due to become ever important as the health and wellbeing agenda increases in authority.

The thesis has also produced two important empirical contributions. The initial achievement is in the form of the first SROI results in the built environment: a variety of qualitative narratives, quantitative summaries and monetised data. The effectiveness of SROI and its findings is questioned in terms of its ability to fully capture the social value of buildings, particularly, the contextual influence of the building user community on the relationship between design and people. This raises questions about the point of difference of SROI, its valuation element, which is argued to necessarily simplify the richer picture captured in the qualitative and quantitative findings. The monetised SROI data (the valuation element) is reasoned to offer complementary information to the richer post-occupancy findings (the evaluative element), rather than being a replacement, with the added benefit of drawing attention to user experience due to the transferable, calculative language. The thesis offers a second, qualitative empirical contribution by addressing the potential application of SROI to decision-making processes in the design and commissioning of buildings. Through discussion with professional decision-makers, it has uncovered some of the important ways that designers, clients and commissioners view and use the different types of evidence produced by valuation practices in the built environment and, in so doing, has shown that influencing learning loops can be achieved outside of the design process itself, through informed investment and funding decisions.

Finally, the thesis makes a key contribution to practice through the latent potential of SROI to complement the health and wellbeing agenda, which is growing at considerable pace. The relationship that has been maintained with both the CASE partner, Arup, and with the occupier of case building 1 is evidence of the growing interest in methodologies that can capture previously unknowable impacts of buildings, and begin to inform commissioning, tendering, high level design, briefing and evidencing activities in a variety of organisational contexts, from commercial industry through to charitable projects. A key part of the appeal of SROI is its calculative language which offers something new when looking at human factors in the design and construction sector. For Arup, the potential of SROI to evidence that investing in the early stages of
the design process to ensure considered and informed decision-making based on learning from previous projects, was of significant interest. The ongoing post-doctoral collaboration to develop the findings of the thesis through the development of a wellbeing valuation approach is further evidence for the impact of this work in practice, and the impact it will continue to have going forward.

This final chapter begins by revisiting each of the four research objectives to offer a set of concluding remarks, before providing a summary reflection on how the peer-reviewed publications cohere as a unique contribution to knowledge. A broader discussion of the prospective role of SROI as a decision-making tool in the learning loops of the sustainable built environment is presented. The applied nature of the project and associated industry engagement activities are commented on, followed by the limitations of the current study and avenues for future research. A closing discussion of the wider implications of the study findings relate to the marketization of sustainability in the commercial property industry.

7.1 Research objectives

The four research objectives presented in Chapter 1 are revisited below, offering a set of concluding remarks.

Objective 1: to conceptualise the “social value” of buildings

This thesis promotes a social value agenda for buildings which represents a unique application of the concept. Understanding occupied buildings through the social value lens assumes that the building user can fill the role of the “social” which is typically played by wider society in the public sector and social enterprise literatures (Public Services (Social Value) Act 2012; Social Value Hub, 2016). The internal community of the occupied building has not been drawn out in post-occupancy research, which tends to pragmatically address static user outcomes or user interaction with design on an individualised basis (Vischer, 2008a). Yet, human relations are an unequivocal presence in occupied buildings; the relationship between building design and building users does not occur in a social vacuum. The sociality of building users as a dynamic and contextual community has not been a point of interest, but for social value research in buildings it represents a fundamental feature.
The thesis develops a conceptual framework for the social value of buildings through consideration of three related issues. Firstly, the existence of differing conceptualisations of building users across the various post-occupancy literatures is significant. The depiction of passive subjects being impacted by building design in design quality work (Howden-Chapman and Chapman, 2012; Haynes, 2008a; Varni et al., 2004) has somewhat given way to a more reactive role in sensory design research (Barrett et al., 2013a; Barrett and Barrett, 2010). However, science and technology studies within the built environment consider sets of active users interacting mutually with design, capable of subverting its intended functionality (Berker, 2011; Janda, 2011), whilst adaptive comfort conceptualisations show proactive users capable of directing building design to ensure its optimal functioning (Nicol, 2011; Cole et al., 2008). This necessarily requires consideration of building users as individuals with unique assortments of knowledge, motivations and social relationships, promoting the importance of understanding the dynamics existing between users. Secondly, the emerging significance of inter-user relations promotes consideration of the social organisation of building users. Recognition of their individuality as a mediating variable between user and design suggests groups of users exist based on these inherent differences in personality (Haynes, 2007b), preference (Gayton, 2008; Babin et al., 1994) and role (Mak and Lui, 2012). Acknowledging users as sets of unique individuals and conceptualising groups of users based on shared qualities, emphasises the contextual element of occupied buildings where complex sets of social relations exist within and between user groups as part of the wider building community. The significance attributed to inter-user interaction is further strengthened in respect to mutual interaction of design and user occurring at a number of nested units simultaneously (Vischer, 2008a). The concept of nested user units suggests that a further set of social relations exist within and between different scales of user, adding to the complexity of the user community and its interaction with building design. Thirdly, the contextual nature of occupied buildings is highly relevant as a kind of “soft” variable which mediates the interactions between design and users. It is defined as a combination of institutional norms, culture and management, termed building user group dynamics. The social value of buildings is thus conceptualised in this thesis as the mutual interaction between all three elements of occupied buildings: physical design, active users, and the social relations of the dynamic building user community, as shown in Figure 7.1. Pushing current research boundaries towards a social value agenda requires looking beyond
physical design to consider the dynamic interactions that exist between people and their built environment within the social context that mediates them.

**Figure 7.1: Conceptualisation of the social value of buildings**

**Objective 2: to develop and apply SROI in buildings**

The thesis recognises the emerging “social value” agenda in the public and third sectors of the UK which has produced methodological developments in social impact assessment, dovetailing with requirements to capture post-occupancy feedback from building users in a more meaningful and transferable way (Macmillan, 2006). The review of existing social impact valuation tools in the third chapter identifies SROI as a well-developed methodology with significant potential for measuring and disseminating the impact of design on building users through the financialisation of social value. Its exploratory application to three cancer support centres in this thesis represents an account of the first applied social value research in the built environment. The results summaries in Chapter 3 and 6, and full results presented in Chapter 4 and 5, show the potential of SROI to generate novel insights about the value of buildings for end users and its ability to communicate these findings in a powerful manner. The critical reflection of the SROI methodology in Chapter 3 includes the general and technical challenges faced and associated modifications made to SROI as a result. At a general level, a key consideration is the design of SROI to measure a change before and after an intervention, whereas building users do not experience design “before” a building, meaning the use of self-reported experiences was necessary. In relation, SROI does not untangle the causal relationships that produce these social outcomes; it simply captures
and measures their impact. This is problematic for a full representation of the social value of buildings as the dynamic interactions between design and users mediated by their social context. Furthermore, the data-crunching and calculation stage of SROI, which produces the monetised metrics, is far removed from the qualitative and quantitative data collected during the stakeholder engagement activities, causing further concerns around its ability to drive learning. Finally, using an NHS benchmark to calculate the “added cost” of the case buildings can also be considered controversial, suggesting that no outcomes of would be felt in an NHS building. However, the impact establishment measure of deadweight removes the proportion of the outcomes that would have happened anyway, i.e. in a typical NHS environment.

The technical challenges of applying SROI to buildings are also discussed in Chapter 3. They include the interrelatedness of the outcomes which requires that only a select few are claimed for to prevent double-counting, namely, wellbeing, performance, and NHS savings (due to reduced intention to access psychosocial support services through GP environments). Maintaining access to stakeholders throughout the SROI process was problematic and resulted in a quantitative approach to gather all information through a set of user surveys. However, this became extremely complex, requiring a separate survey for each user group in each building, and being of a length and complexity that was off-putting to some building users. The application of financial proxies to the outcomes is also a difficult process, requiring extensive consideration and desk-based analysis to adjust yearly values into hourly values, more appropriate to the length of time people spent in the buildings. The impact establishment measures of deadweight and attribution were considered appropriate to the built environment, whereas drop-off was actually found to increase over time, an unexpected finding deserving of further research. Calculation of the SROI ratio is another complex element: producing the “added cost” of each building through the removal of an NHS benchmark was further complicated due to the different build types of the three buildings. However, whilst a variety of general and technical issues were encountered during the exploratory application of SROI to the case buildings, the flexible nature of SROI was found to be modifiable, regardless of outcomes reported, end users identified, or build type.

This thesis represents a unique source of learning about employing user-centred post-occupancy methods in buildings, based on the lessons learnt from applying SROI to the built environment for the first time. The main lessons outlined in Chapter 3 include
reducing the number of project team interviews to conserve time and resources: client, architect and commercial manager was considered adequate. Instead, spending time and resources on setting up a stakeholder dialogue with building users to gather a richer dataset from a smaller number of individuals, was considered to be preferable to implementing large surveys to gather all necessary data with implications for misinterpretation. Finally, a streamlined SROI process is possible by focusing on pre-identified outcomes from stage 3 onwards, rather than collecting data about all reported outcomes yet only including a select few in the final valuation to avoid over-claiming. Finally, carrying out qualitative stakeholder engagement is strongly advised to ensure that the SROI analysis is founded on the experiences of the building users, at which point the outcomes for measurement can be identified.

Whilst a results summary is included in Chapter 3, a fuller set of SROI results are presented in Chapter 4, an end user report for the occupier of case building 1 (low return rates for the visitor surveys in the other case buildings meant the presentation of their corresponding results would be unreliable). The SROI report emphasises the complex stages of analysis required by the methodology, which is both time consuming and resource intensive. However, it also shows the range of data available for dissemination, including qualitative narratives, quantitative post-occupancy summaries, and monetised SROI data, ratio metrics and payback periods. This emphasises that the process of SROI is equally important to the monetised end product due to the generation of a variety of post-occupancy information about buildings and users, with dissemination potential across a wide range of audiences.

**Objective 3: to critically evaluate the effectiveness of SROI to capture and measure the social value of buildings**

The effectiveness of SROI was debated in Chapter 5 which discusses how the inconsistency found between the qualitative social value narratives and the financial data for the case buildings challenges SROI’s ability to capture and measure the social value of buildings. Where typical post-occupancy methods measure physical design based on building performance, SROI measures outcomes experienced by building users. Neither methodology is capable of directly measuring the social value of buildings, defined in this thesis as a mutual interaction between physical building design, active building users and building user group dynamics. SROI is, however, capable of
drawing attention to the social value of buildings through the detailed qualitative and quantitative data it collates, but it cannot explicitly measure the impact of the sociality of the building user community.

The discussion presented in Chapter 5 argues that the SROI methodology is designed to measure the outcomes experienced by stakeholders without specific identification of why outcomes have come to pass or what factors are involved in producing them. Whilst it facilitates the collection of detailed and informative qualitative and quantitative data relating to a wider notion of social value, these data are not explicitly captured in the monetised social returns which represent a simplified account of the value created. The methodology necessarily requires that much of the empirical detail captured in the qualitative and quantitative stages of the methodology, including rich post-occupancy feedback about occupied buildings, are stripped away in order to place a monetised value on the identified social outcomes and produce the financial ratios. The collection of this mixed methods data complements the monetised SROI results and promotes a deeper understanding, if presented alongside the ratios. Yet, the monetised SROI results do not explicitly capture the interrelations between building design, building users and the social dynamics of the user community and, as a result, the social value of buildings is only partially measured by SROI.

However, SROI is considered capable of indirectly capturing the influence of the contextual elements which constitute social value through its basis in stakeholder perspectives. Whilst not measured outright, the social relations of the building user community cannot be detached from the experiences of building users within a built environment and their influence is unavoidably felt in the outcomes reported. Therefore, this thesis reasons that SROI does not directly measure the sociality of the building user community, but the measurement of user outcomes is fundamentally influenced by this set of contextual variables.

Theoretically, SROI does have the potential to measure the social value of buildings through a deeper analysis of what is happening between design and users in the context of their social dynamics. Chapter 5 concludes that as an inherently flexible methodology that is directed by stakeholder engagement to ensure the quantification of the most relevant outcomes (Nicholls et al., 2012), SROI could be modified to explicitly capture the impact of the sociality of the building user community, alongside physical design,
when measuring the social value of buildings. As well as asking building users to identify the outcomes they experience as a result of design, they could also consider the impact of the building’s institutional norms, organisational culture and management strategies. However, this is clearly a much more complex line of inquiry and it is likely that it would require significantly greater time and resources in order to deeply engage with stakeholders to gather a reliable picture of their experiences of the building design and the user community, within the mediating social context. Innovative stakeholder engagement methods would be required to extract this sort of information, probably best attempted through multiple visits and the development of a mutual dialogue with a small number of stakeholders. Ethnographic research methods would also be a highly applicable addition to SROI for the study of the sociality of the building user community and its impacts on the social value of buildings.

It is also possible to consider user groups and scalar user units (Vischer, 2008a) directly in the SROI process. For example, outcomes accruing to organisational users could be included in the analysis, as evidenced in Chapter 6 by the interest of the charitable executive interviewees in relation to brand enhancement, improved fundraising, and improved awareness outcomes. Indeed, the SROI analysis presented in Chapter 4 includes the NHS as a stakeholder for a cost saving outcome due to the visitors being less inclined to access support services in GP environments, as opposed to the case building environment. Again, this modification of SROI would require greater time and resources, involving a deeper level of engagement with the participants and more complex analysis of the results, especially in buildings with larger user communities or where they are structured more hierarchically.

*Objective 4: to investigate the usefulness of SROI as a learning and decision-making tool in building design and commissioning processes.*

The thesis also offers the first empirical account of SROI’s usefulness to design professionals and built environment decision-makers. Chapter 6 reveals that SROI has limited potential as a tool for detailed decisions taken during the design process itself. Whilst several interviewees suggested it could be included as part of an early work stage as a helpful source of information, many others felt it represented an unnecessary, resource intensive step that could equally be achieved through the application of common sense and designers’ expertise. However, the project architect was very
positive about the quantitative and qualitative data produced and its potential use in high
level specification decisions, for example, concentrating more of the budget into the
kitchen which was shown to hold significant value for the building users. Yet the
discussion found that the financialised data offered by SROI is often too far removed
from the complex, dynamic interactions between users and design to be able to reliably
inform detailed design decisions. As a result, it does not offer anything remarkably
different from typical post-occupancy evaluation data which is not widely valued by
designers nor utilised in a consistent manner. Whilst SROI does produce a much richer
source of information, directly informed by stakeholder engagement activities, its point
of difference is the monetisation of value created. It is a valuation device as well as an
evaluation tool. Nonetheless, the monetised data is at a general level making it
inappropriate for design decision-making and, unless the value of design to building
users becomes a marketable standard, the financial element of SROI is unlikely to
generate interest from designers or promote project-to-project learning.

However, the results of Chapter 6 identified a great deal of interest in applying SROI to
commissioning, funding and investment activities. It successfully opened up a dialogue
with the interviewees about building design, occupant feedback, and how to learn from
the findings. The interviewees demonstrated a considerable degree of interest in post-
occupancy issues in the nonclinical healthcare sector. It is essential for findings to be
accessible and, critically, to focus on people rather than physical design. The
importance of understanding what is happening from a user perspective is particularly
valued in this sector, perhaps more so than in more commercial typologies, due to the
overall focus on helping people rather than producing profit. As a result, the SROI
methodology seemed to resonate with the majority of the healthcare and third sector
professionals interviewed, with the interesting exception of the estates director from an
engineering background, further evidencing the low value currently placed on learning
about user-centred imperatives by design professionals. This set of interviewees
discussed the potential usefulness of SROI as a kind of accounting tool to capture the
value created by design for building users, information which could then be presented to
trustee boards, funders or potential donors to promote user-centred decisions. This
finding has considerable overlap with the engagement issues discussed by the extensive
sustainable procurement literature (Klein, 2015; Meehan and Bryde, 2015; Brammer
and Walker, 2011; Meehan and Bryde, 2011; McCrudden, 2004) and the drive for
socially-informed decisions in the public sector, as enshrined in the Public Services (Social Value) Act 2012. Furthermore, the interviewees showed genuine consideration about the inclusion of value relating to the occupying organisation, such as enhanced brand reputation, improved fundraising, and increased opportunities to engage with wider audiences due to their built environments, emphasising the potential usefulness of SROI to these decision-makers, and the emergence of a different set of values in relation to their buildings.

Overall, Chapter 6 finds that whilst SROI’s usefulness as a design decision-making tool is limited, its ability to evidence the value generated by a building for the users has considerable potential to inform decision-making as an early stage investment evaluation tool. In this regard, it has broader applicability beyond nonclinical healthcare settings, its methodology being malleable to the measurement of outcomes valued within specific environments. In commercial build types, for example, real estate asset management (Warren, 2006) and facilities management strategies (Price and Akhlaghi, 1999; Price, 2002) are well-established to promote the best return on investment from the built environment and SROI could help to inform these practices by quantifying the impact of design on performance-related outcomes. Furthermore, its popularity, accessible methodology and the transferability of its results can help drive the issue of user-centred design onto the negotiating table. Originally developed for the social enterprise sector, both the SROI methodology and its results are transferable to a wider range of lay audiences than typical post-occupancy evaluation, created for design professionals to evaluate complex aspects of building performance. SROI captures the experiences of people and is a process that commissioners, clients and occupiers can carry out for themselves. This runs counter to widespread paternalism in the design profession towards end users which does not currently place a value on engaging with and learning from their experiences. In effect, it provides an opening for the opinions and preferences of users to be included in decisions about the built environment. This thesis proposes that SROI represents a means for the end users of built environments to engage with and learn about the impact of design for themselves, and potentially inform future design decisions for their own benefit. Anticipated pushback from the architectural profession, combined with SROI’s current popularity and accessibility, suggests that it has considerable potential as a tool for lay end users, clients and commissioners, as much as expert design professionals.
7.2 Reflecting on the peer-reviewed publications

The research presented in this thesis has critically trialled SROI in the built environment to investigate the effective measurement of the social value of buildings and its potential influence on learning in design and commissioning processes, through the critical application of SROI. The thesis is presented in an alternative format of four peer-reviewed publications (three published, one to be submitted) which cohere as an interdisciplinary body of work with a unique contribution to knowledge. Whilst the four publications cover a range of topics, the cumulative focus is a theoretically-informed, yet applied project which has investigated SROI in a new context: the built environment. They present the methodological trial of SROI in three case buildings, critique its ability to capture the social value of buildings and investigate its potential usefulness to decision-makers, rather than specifically exploring knowledge transfer processes in relation to learning in the design and construction industry. The main factor in this choice was the evident interest of external industry and practitioner audiences in the methodological aspects of SROI, specifically, how it could be applied to buildings and what the results would look like. The need to pilot SROI in the built environment before exploring questions around its application to learning in design and commissioning processes is discussed in more detail in Section 7.4. The next step based on the research presented in this thesis is to explore knowledge transfer and learning processes in the design and construction sector in relation to calculative practices like SROI. However, until these practices exist more widely they cannot be studied effectively. Several recent studies present similar endeavours to trace the relationship between valuation practices and environmental sustainability in the commercial property sector (Brown et al., 2016; Rydin, 2016). The significant growth currently being experienced in the health and wellbeing agenda in the built environment suggests that an evolving network of knowledge, learning and evaluation activities across the design and construction sector will embody a rich site for future sociotechnical scholarship of valuation practices.

The papers presented in this thesis constitute the first applied study of SROI in the built environment, grounded in the sociotechnical literature. The first paper, ‘Re-conceiving building design quality: a review of building users in their social context’, sets up the post-occupancy focus of the project by reviewing the design quality literature by building typology in relation to its handling of building users. It has an implicit sociotechnical perspective, emphasising the need to consider social context when
analysing the impact of building technologies. It defines this social context as a combination of organisational cultures, management strategies, and social norms and practices, termed building user group dynamics. This paper provides an outline of the fuller definition of social value that comes in the third paper, ‘Capturing the social value of buildings: the promise of Social Return on Investment (SROI)’. The third paper offers a comprehensive review across design quality, post-occupancy and science and technology study research in relation to how building users are conceptualised. The need to recognise the agency and individualities of users and their social organisation in scalar communities of building users is emphasised, before the social value of buildings is defined as the mutual interrelations between physical design, active users and building user group dynamics. Again an implicit sociotechnical foundation is present.

The second paper, ‘Applying Social Return on Investment (SROI) to buildings’, relates the defined social value agenda to the current lack of people-centred evaluation in the built environment. The need for an evaluative shift towards measuring the outcomes experienced by people, rather than technical building performance represents its key argument. Social impact methodologies are proposed as capable of fulfilling this gap, and after a wide-ranging review, SROI is identified as the most developed methodology. This is a deliberately applied publication, presenting a step-by-step account of applying SROI to the case buildings, followed by the empirical lessons learnt from this process. It does not develop a theoretical argument; rather it fulfils a methodological requirement to understand how a framework designed to measure changes brought about by charitable projects can be applicable to occupied buildings. It includes a summary of the monetised SROI data produced as a result, and draws attention to its ability to pinpoint that investment in designer professional fees appears to produce greater impact for building users than investment in construction or fit-out stages of buildings.

The effectiveness of SROI at capturing the social value of buildings, the mutual interrelations between design, users and their social context, is debated in the results and discussion sections of the third paper. The decision to present a more detailed set of SROI results in this paper, as opposed to the applied publication above, is mainly to evaluate SROI in relation to the sociotechnically-informed conceptualisation of buildings and users it develops, as well as the word restrictions of the peer-review process. Whilst SROI clearly produces a range of interesting information from a practice viewpoint, including qualitative narratives and monetised returns, its inability
to directly capture mediating influences related to organisational culture, management strategies and social norms is a key finding from a conceptual standing.

The final paper, ‘Practices of (e)valuation in the built environment: Social Return on Investment (SROI) and sociotechnical inquiry’, complements the conceptual achievements of the first and third papers by drawing on recent work on valuation practices. The increasing proliferation of numerical calculation and financialisation across policy and practice spheres (Chiapello, 2014) has produced a diverse area of scholarship, from financial markets (MacKenzie, 2006) through to medical and life sciences (Dussauge et al., 2015). The built environment has rarely featured, yet post-occupancy learning is inundated with valuation systems and devices. This paper satisfies the fourth research objective relating to the potential usefulness of SROI in design and commissioning processes. It presents empirical findings from the interviews with design professionals and built environment decision-makers, and makes the case for the continued study of valuation practices, such as SROI, in the built environment.

On a more practical outlook, the paper finds that due to the results of SROI being qualitative, quantitative and monetised in nature, it has widespread traction with a range of audiences, allowing the most appropriate delivery vehicle to be selected. Whilst SROI has a limited usefulness for informing detailed design decisions, it is argued to have considerable potential as a high level investment tool for commissioning and investment decisions. The paper also proposes that the accessibility of the SROI methodology, being designed for charities, and the transferability of the results mean SROI is well-placed for use by end user clients, commissioners and funders, as much as expert designers. Its important conceptual contribution is to outline SROI as a development in lay (e)valuation practices in the built environment, being inclusive in nature and representing both an evaluation and a valuation device in one. Its potential relationship with user-centred learning in buildings is therefore extremely promising, being obtainable to designers, commissioners and end user populations, and producing a wide array of information about buildings and users.

7.3 SROI as a tool for learning in the built environment

Understanding the complex relationship between buildings and users is difficult. Being able to capture these interactions and learn what has worked previously to inform
building projects in the future is even more difficult. Existing post-occupancy methodologies have struggled to effectively and consistently generate learning about the complex realities of occupied buildings. The research presented in this thesis has found that SROI is a tool with considerable potential to inform decision-making processes about buildings and users. The first and most important, differentiating factor about SROI compared to existing post-occupancy methodologies like POE is that it measures people not buildings. It represents an evaluative shift to measuring the outcomes experienced by building users, rather than measuring the technical performance of buildings. In so doing, it provides a rich new source of information about buildings and users that is complementary to POE, as opposed to succeeding POE.

A second point of difference is that SROI develops a relationship between evaluative and valuation elements. POE is exclusively an evaluation tool, aiming to assess how specific, pre-determined technical features of building design attain value from a user perspective. SROI also has an evaluative element, but it is inherently stakeholder-driven, involving extensive qualitative activity, and flexible, being able to holistically consider how any assortment of things experienced by building users, including design features, organisational cultures and strategic management strategies, attain value. In addition, it is also a valuation device, giving financial value to those outcomes experienced by building users. It is a new development in (e)valuation practices in the built environment. As a result, it has considerable potential to drive new learning about buildings and users, and in new domains, specifically, commissioning, funding and investment decisions, as much as in design decisions.

Thirdly, SROI produces a range of information in the form of qualitative user narratives, quantitative summaries, and an assortment of monetised SROI data (value figures, return on investment ratios, and payback periods), due to its (e)valuative nature. As a result, SROI catches the attention of decision-makers due to its transferable metrics, the product of valuation, and then drives deeper learning about the interactions between buildings and users through the informative quantitative summaries and qualitative narratives, the products of stakeholder-driven evaluation. SROI therefore has enhanced potential as a tool for learning, due to the variety of information generated, compared to POE.
However, it also has several limitations. In the same way that POE assesses how specific environmental conditions attain value for building users, SROI can assess how specific aspects of buildings reported by stakeholders, such as design features, elements of culture or particular management strategies, attain value for building users. This information is presented as a set of quantitative summaries. Yet, SROI cannot easily assign value to these specific aspects; in this research it has been used to offer a holistic picture of the value created by a building. Further research is required to trial SROI in different ways, targeting particular design features or, significantly, specific cultural elements or management strategies, to understand its potential in this regard. Public sector research published by the Design Council (2013) has used SROI in this way to understand the impact of providing information through instructive interior design solutions in accident and emergency departments to reduce incidents of aggression and violence. Based on its inherently flexible methodology and stakeholder engagement focus, SROI has the capability to uncover and capture the impact of a diverse range of built environment features and cultural elements. However, this would require greater time and resources in order to reliably separate the impact of other factors from that which is under study, most likely through developing a mutual dialogue with a small number of stakeholders and employing ethnographic methods for a deeper level of analysis.

Secondly, the monetised information produced through the valuation element of SROI cannot drive learning on its own. It can direct learning, acting as a signpost towards buildings that are producing particularly high or low degrees of value for the building users. These buildings represent sources of potential learning for decision-makers as long as they are willing to look at the qualitative and quantitative results to understand why certain environments have produced better results than others.

Regardless of these issues, SROI has considerable potential to drive learning in new domains relating to commissioning, funding and investment decisions, as much as design decisions. The use of calculative language naturally resonates particularly well with audiences that deal with financial information on a day-to-day basis. Furthermore, both the SROI methodology and its results are accessible, being intended for use in the third sector as opposed to POE which is developed and carried out by design experts. SROI represents a tool that can drive learning in an inclusive manner across a wider set of professional groups, including end user clients, commissioners and funders.
Based on the empirical results of this thesis, the potential of SROI to inform investment decisions is illustrated by its ability to evidence the value of spending during the early stages of the design process, to ensure considered and informed design decisions are made. The results summary presented in Table 3.9 from Chapter 3 shows that case building 1 produces considerably greater impact per year for its building users at £375/m² compared with £229/m² for case building 2. The main difference in investment is clear: £294/m² was spent on the professional fees for case building 2, representing only 36.5% of that spent on fees for case building 1 at £805/m². Higher investment in the professional fees of the design team produces greater impact for building users than investment during construction or fit-out. Whilst further research is required to test the validity of this result, the data illustrates the latent potential of SROI to inform the timing of high-level commissioning, funding and investment decisions. Furthermore, this has ramifications for early design and briefing processes, promoting that greater care and time is spent to generate maximum return through user-centred design solutions.

A well-established research literature exists on the management of value during design and construction (Ashworth and Hogg, 2014; Kelly et al., 2014; Best, 1999). The futility of initial cost savings during pre-project processes is well-documented, as hidden costs down the line during construction and hand-over are caused by unforeseen problems through a lack of planning. However, this is an issue framed in terms of value management for the client or developer, as opposed to considering the social returns for building users through design. This raises interesting questions relating to the social value of buildings and where the best return on investment lies in the built environment development process. Further research is required to understand how SROI could be used to promote value management for end users, and to explore its potential in the learning loops of organisational decision-making cultures.

7.4 Research in practice

A considerable degree of industry and practice engagement was sought during the course of the project with a variety of commercial, public sector, think tank and charitable contacts, as well as maintaining a collaborative relationship with Arup and the occupier of case building 1. This section reflects on this process, including the
response of these contacts to the project, how this affected the development of the research and some thoughts on its implications for practice in future.

These activities represented an iterative process of engagement, the main result of which was an applied focus on carrying out a set of SROI analyses in case buildings, as opposed to exploring how methods like SROI could play a role to drive user-centred learning in knowledge transfer processes in the built environment. The early discussions with contacts from Arup and the SROI Network made it clear that much of the interest was methodological, specifically, how SROI could be applied to buildings and what it would produce. Whilst there was some dialogue based on their opinions about how it could be used in decision-making processes, this was a difficult conversation to have without any tangible evidence of what SROI would look like when applied to the built environment. Therefore, it became evident from an early stage that the project should act as a pilot for SROI in buildings before the questions around its application to the learning loops of design could be explored.

A great deal of the engagement during the intermediate stage of the project was practical, relating to how to actually do SROI in buildings, asking advice about anticipated challenges, identifying proxies and carrying out impact establishment, as well as seeking potential interviewees for the second phase. Due to the considerable amount of time spent on the applied SROI phase of the project, these contacts were not used and the case-based approach to focus on a current non-clinical healthcare project and speak to the various actors involved was decided upon, as a resource-effective solution. Nevertheless, engaging with a wider set of design professionals, commissioners, investors and end user clients would be a valuable exercise to further develop the empirical findings about how SROI could be used in the learning loops of design.

Producing real world impact was a key motivating factor for the study and taking an applied approach has allowed the project to produce tangible social value research in buildings with a set of SROI results for dissemination. Being able to present SROI results was of considerable benefit when engaging with practitioners from industry, public sector and think tank audiences in the later stages of the project. It was noticeable that actually seeing the results from a real life building made the SROI method much more relatable and practitioners naturally began to consider how SROI might work for
them. For example, a very positive relationship developed with the Feeling Good Foundation, a research group based in London specifically looking at wellbeing issues in the built environment, leading to an invitation to present the results at an evening seminar. This would not have been a possibility without the applied focus of the project. Furthermore, the level of interest obtained from the occupying organisation of case building 1 would never have arisen without a set of results relating to their centre, allowing them to consider how else SROI could be used. If the project had been undertaken as an ethnographic exploration of potential interest in SROI and its application to learning processes in the design and construction sector, it would have produced a conjectural account of “what if” scenarios lacking potential for continuing engagement.

The various industry engagement activities carried out during the project have added value to the research by informing its applied emphasis, supporting the SROI analysis and providing insight into the sort of reactions anticipated in response to the results. Furthermore, it has provided clarity on how to enhance the usefulness of SROI to design and construction decision-makers. It is unlikely that the majority of projects would feature SROI in its full form, being time and resource intensive. Only projects with a pre-existing ethos for learning about the impact on end users would be likely to apply SROI in a form of best practice, with little likelihood for widespread learning from the results. Based on industry reaction, it seems that streamlining the SROI process would facilitate its take-up in learning and decision-making activities more broadly. Whilst SROI might be seen as a “nice to have”, providing a concrete and relatively simple process to follow could transform it into an exercise that adds considerable value to a project with relatively minimal effort. In particular, attaching SROI to the health and wellbeing agenda is a sure way of promoting its usefulness, due to its rising profile among designers, commissioners and end user clients alike. This is an interesting development that has only become apparent in the last couple of years, approximately half way through the project, yet already represents a significant driver for change (Francis et al., 2016; Wheeler et al., 2016; Alker et al., 2014; Jones and Grigoriou, 2014).

Another avenue for enhancing the usefulness of SROI relates to the CASE partner’s interest in the potential of SROI to evidence the value of learning from previous projects and investing in the early stages of the design process to produce considered
built environments, designed with the end user in mind. The SROI results presented in Table 3.9 in Chapter 3 suggest that SROI could produce monetised evidence for spending in professional fees, as opposed to construction or FF&E costs, to produce the greatest impact in terms of outcomes experienced by building users. The development of this application for SROI represents an interesting research opportunity, requiring its application to a larger number of buildings and across a wider set of typologies, including clinical healthcare, commercial, retail, education, and residential, in order to gather a comprehensive evidence base for user-centred investment in the early stages of the design process. In comparison to the previous point about streamlining the SROI process, it would be necessary to carry out a more extensive number of project team interviews for each building during the first stage of the SROI methodology to establish scope, in order to ensure the spend on professional fees is contextualised with the associated briefing and design activities. Therefore, this represents an extensive research program, requiring the full SROI methodology is adhered to without streamlining. However, its end result could be extremely impactful to practice if investment at the beginning of the design process can be shown to add value faster than it adds cost.

7.5 Limitations of the study

The research presented in this thesis represents a limited study, and a number of anticipated criticisms are reflected on below.

The research takes a small sample size of three case buildings with differing build types and occupying organisations, the findings from which are based on a great deal of qualitative work with project teams, building user groups, and design professionals and built environment decision-makers. The number of cases was deliberate due to the resource intensive nature of the SROI methodology, to ensure the production of detailed research outputs and facilitate a comprehensive evaluation of SROI, both as a methodology and as a potential decision-making tool for design professionals. The research is applied in nature, focusing on the application of the SROI methodology in a new context as opposed to the generation of comparative results about the design quality of the three buildings, as shown by the data presented in this thesis. The results and discussions have focused on the application, effectiveness and usefulness of SROI, not the building-specific results. The variation in build types and their distinct funding, governance, and organisational set-ups meant that SROI’s ability to handle mediating
elements such as organisational culture, building management, and user group dynamics could be addressed. This study represents the first step in applied social value research in buildings and is therefore exploratory in nature. Its methodological recommendations and findings offer the opportunity to conduct more focused studies related to arising points of interest.

In relation, the research necessarily focuses on a single building typology in order to meaningfully trial SROI for the first time in a relevant context. The nonclinical healthcare sector represents a timely and interesting emerging building typology, as discussed in Chapter 5. The recent rationalisation of NHS estates, proliferation of alternative healthcare spaces and changing procurement pathways to ensure investment in quality means SROI could play a role to inform these series of changes. For example, new healthcare spaces such as health and wellbeing centres (Building Better Healthcare, 2015) and private rehabilitation centres (Building Better Healthcare, 2014; Building Better Healthcare, 2012) are expected to drive significant public cost savings, making the social value of these environments highly relevant.

Nevertheless, the applicability of SROI to other building typologies is worthy of attention. Nonclinical buildings represent an emerging typology that is offering, in this case, a health-related service and this was one of the key factors in the applicability of SROI to understand how the environments are performing for the visitor user group. Many other typologies offer a service in some way, from clinical healthcare, support and welfare buildings, to retail spaces and leisure environments, schools and universities. Understanding the impact of the environment on the experience and behaviour of visitor/consumer user groups makes SROI of direct relevance. In terms of other healthcare, welfare and support spaces, the stakeholder-driven methodology of SROI has a great deal of fit in a sector that seeks to help people. However, this sort of in-depth and time-intensive analysis would likely be streamlined for gathering customer feedback in commercial retail or leisure environments, where punchy consumer surveys are typically in use.

In the higher education sector, performance against student experience criteria is now an important area for institutions to compete on a national and, increasingly, an international stage (Grove, 2015). SROI could provide a useful framework for capturing the impact of investment in campus and hall of residence environments on student
outcomes, from wellbeing and relationship building, through to academic attainment and even employment prospects in the long term. Based on the huge population of end users in this sector, a mixture of stakeholder engagement with a representative sample could then inform a large scale survey across large swathes of the student cohort to generate extremely robust results. In comparison, school environments would be a less straightforward prospect, requiring considerable thought about conducting stakeholder engagement with children and younger people about their experiences of the built environment. There is a precedent for the use of innovative, participatory methodologies like role playing, photo diaries and drawing techniques in design quality research, especially with children in primary schools (Barrett et al., 2011; Burke, 2007; Clark-Ibáñez, 2004).

The applicability of SROI to other building typologies, namely those that do not provide a service function in some way, is also pertinent. The residential sector does share some important links with SROI, in particular, considerable attention has been drawn by the value of social housing (Trotter et al., 2014; Aspden et al., 2012). Applying SROI to understand the impact of home environments on the people living in them would require considerable recruitment activities as housing is a diffuse sector with small numbers of building users in each dwelling. Social housing estates, large residential apartment blocks or new developments would be a sensible starting point in terms of selecting a group of stakeholders. The kind of outcomes being reported are likely to be considerably different to those found in the current project, making the qualitative stakeholder engagement stage of high importance to understanding user experiences and preferences. Furthermore, there is likely to be significant variation in outcomes being reported across variables like housing type, age, size, style, urban/rural location, etc. Identifying a consistent set of financial proxies could also cause some difficulty if a wide range of bespoke outcomes are uncovered in different contexts. However, the potential to further understanding of the social value of these spaces for the families occupying them, particularly in terms of their social relations and dynamics as very small communities of building users would be fascinating.

The commercial office sector is another typology that does not provide a service to building users; rather the impact of these environments is associated with employee wellbeing and productivity, and recruitment, retention and turn-over outcomes. The applicability of SROI to commercial typologies is closely related to its valuation
techniques to produce return on investment figures. As discussed, SROI could help inform strategic asset management processes (Anyangwe, 2012; Warren, 2006; Levin, 2005) by promoting the value of investing in employee-friendly workplaces. However, from a methodological point of view, the stakeholder-driven nature of the early SROI stages is likely to be side-lined in favour of pre-existing tools that can be administered without qualitative activity. A streamlined version of SROI that is specifically modified with commercial environments in mind would be of considerable interest to this sector.

A final point of consideration is the implication of energy efficient design and its intangible impacts on users for the social value agenda in buildings. A subset of design quality research exists which addresses green buildings and the impact on user experience, including work on the quality of green workplace design (Zhang and Altan, 2011; Kato et al., 2009), green schools (Issa et al., 2011), sustainable housing (Bullen et al., 2008; Bahaj and James, 2007), green retrofit in social housing (Aspden et al., 2012), and urban gardens (Dunnett and Qasim, 2000). However, the link between social value and environmental sustainability comes to the fore in the literature on adaptive re-use, buildings designed to be flexible for future changing requirements. Instead of form following function, which is now understood to change significantly over a building’s lifetime, the functionality to design for is flexibility (Macmillan, 2006). The literature promotes the holistic integration of adaptive re-use within the three drivers of economic, environmental and social sustainable development (Bullen, 2007). This is also linked to work on the obsolescence of office buildings (Allehaux and Tessier, 2002). The implications of this research area for SROI are interesting, which is typically used by charitable organisations to take into account the environmental benefits of their work, alongside social impacts. Thus, SROI has the potential to capture and disseminate the benefits of green design from an environmental perspective, alongside the co-benefits for building users, in a novel, financialised metric.

7.6 Future research

A range of research opportunities have emerged over the course of this project that represent interesting and valuable avenues for further academic attention.

The rise of the wellbeing agenda in the built environment is a prime area for future research, and the findings from the case buildings showed wellbeing to be a key
outcome across all building user groups. There are a host of recent research initiatives in relation to wellbeing in the built environment, including the ESRC What Works for Wellbeing centre (https://whatworkswellbeing.org/), the Feeling Good Foundation (Jones and Grigoriou, 2014), the recent publications form the World and UK Green Building Councils on health and wellbeing in office, retail and residential built environments (Francis et al., 2016; Wheeler et al., 2016; Alker et al., 2014), and an article on the role of place-making and health and wellbeing on the British Academy “Where We Live Now” blog (Curtis, 2015). Whilst a proliferation of methodologies associated with measuring wellbeing in individuals, selected populations, or across whole nations exist, there are very few studies addressing the measurement of experiential wellbeing in the built environment. The post-doctoral collaboration with Arup, funded through the ESRC Impact Accelerator Account at the University of Manchester since January 2016, directly addresses this research gap through the development and validation of a multi-item scale to measure wellbeing outcomes in building users and, in combination with SROI, represents the development of a wellbeing valuation approach in the built environment.

In relation, the social value of the public realm and urban spaces between buildings is also a timely topic (Department for Communities and Local Government, 2012; Worpole and Knox, 2007). Currently, social value is not taken into account in the planning process and SROI has the potential to promote the value of good design for public health and wellbeing on an extensive scale. For example, recent work (Treeconomics, 2015) to value the co-benefits of street trees in an urban context has led the Royal Borough of Kensington and Chelsea (2016) to fine developers for the removal of trees within their plans. There is huge scope for research that explores the impact of public realm design on urban inhabitants, its effective measurement and dissemination, and the implications for public health.

A key finding from the applied social value research was the lack of drop-off reported by the user groups in relation to the outcomes of design. This is an unexpected result as the SROI methodology is designed to address the decline of outcomes over time. The implications of the impact of design being either constant or increasing over occupation are significant and require further attention. The notion of people ‘falling in love’ with buildings and gaining increasing returns over time could be explored using place attachment theory (Williams et al., 1992) and the implication of place-dependency
versus place-identity. The tripartite model of person, process and place (Scannell and Gifford, 2010) represents a useful conceptual framework, the person element facilitating analysis of attachment in relation to the social dynamics of the building user community, based on either an individual sense of liking or a community sense of meaning, with links to feelings of pride about buildings acting to hinder outcome drop-off. The process of forming an attachment to the built environment is related to Tuan’s (1974) concept of topophilia, whilst the place element considers social as well as physical aspects in attachment (Hidalgo and Hernandez, 2001), further promoting a conceptualisation of the mutual relations between design, users and their social context.

A further point of departure from the current study is the interplay between expert and lay perspectives in relation to the social value of buildings. The potential of SROI to engage lay audiences in the learning loops of user-centred design offers a new development for valuation practices in the built environment. Research with wider groups of clients, commissioners and end users to explore how SROI might evidence their needs, preferences and the outcomes of design and promote user-led learning during early stages of development represents an exciting sociotechnical research avenue.

In relation, there is surprisingly little research published on the sociotechnical study of the built environment regarding expert design decisions (Steen, 2015), as well as value management in construction (Kelly et al., 2014; Best, 1999), and property valuation and real estate work (Schneider, 2013; Myers et al., 2007; Lützkendorf and Lorenz, 2005). Consideration of how applied social value research might inform these literatures in relation to the colonisation of widespread activities by financialised valuation practices (Chiapello, 2014) is highly relevant. For example, a recent study by Rydin (2016) examines the role of sustainability in valuation practices in the commercial property market. Whilst the design and construction sector and real estate industry are already based on financial valuation and profit-making, user-centred design is not currently accounted for. In the context of a growing health and wellbeing agenda, the financial valuation of end user perspectives represents a logical progression towards their inclusion on a widespread and consistent basis. Analysis of this changing resister of value and the practices that follow would be an impactful endeavour.
Finally, the implications of technology for the social value agenda in the built environment and beyond have considerable research possibility. There are two related themes to consider: technology as a driver for change in building design in various sectors, and the application of technology in design. Relating to the former, improvements in technology are causing user needs and preferences to change. For example, communication and information technologies are closely entwined with the propagation of remote activities which in turn has promoted the ‘groundedness’ of buildings as places (Ludwig and Starr, 2005). As a result, exploring value-adding design elements to encourage the contextual advantages of buildings as places is a strength to be utilised in the face of changing competition from networked digital technologies. The latter theme relates to the harnessing of new technologies to improve user experience (Foresight, 2012b), for example, through smart environments, improved interior conditions, and flexible and adaptable environments for changing future requirements, representing key areas for future scholarship. Furthermore, employing technology in design to promote desired user behaviours, whether sustainable, healthy or commercially-driven, embodies extensive opportunities for research on social value in the built environment.

7.7 Wider implications of the research

The introduction to this thesis outlined the enduring need to close the learning loops of sustainable building design and promote triple-bottom line thinking. The recent explosion of interest in health and wellbeing in the built environment suggests that user-centred priorities are gaining ground alongside traditional economic and environmental imperatives in the design and construction industry. This represents a timely and exciting opportunity for the diffusion of innovative methodologies that can capture, measure and disseminate the impact of the built environment to inform commissioning, tendering, high level design and briefing processes, and post-occupancy assessment at a range of scales across a variety of contexts.

SROI has huge applicability to the health and wellbeing agenda, being stakeholder-driven, accessible, and producing a range of transferable results. A key part of the appeal is its calculative nature which offers something new when looking at human factors and, crucially, can tap into the monetised language around the “business case for wellbeing”. As new registers of value become established, SROI has the capacity to
promote a new user-centred market in the commercial property sector. Rydin’s (2016) study of valuation practices in relation to the sustainability of commercial property demonstrates that calculative devices like energy ratings play a significant part in portfolio investment decisions. That financial valuation will come to play a defining role in the emerging health and wellbeing sector in commercial property is a likely prospect.

There is a multitude of ways that SROI could inform this new market, from generating early demand for user-friendly buildings in client and commissioner groups, to becoming an established assessment and categorisation tool by accounting for the intangible value of the built environment. As an inclusive methodology, its appeal across a wide range of audiences could promote a more nuanced understanding about the interactions between buildings and users. However, there is a high chance that a wellbeing market will become dominated by simplified differentiation between various brackets of a “wellbeing score”. SROI could even help cause this eventuality due to the seductive quality of the SROI ratio as a standalone metric. In the same way that designing for environmental sustainability can be reduced to energy-related add-ons, like solar panels or wind turbines, rather than designing for sustainability from the beginning, wellbeing could become the short-hand for superficial, quick fixes that hoodwink clients and gain Grade A labels without the early stage investment in client briefing and collaborative design processes that SROI has shown to be valuable.

As the significance of wellbeing in the commercial property market emerges, the importance of thorough and robust learning loops in the design process will become evident and the need for user-centred valuation practices unavoidable. Currently, the wellbeing sector is at a fledgling stage with most traction seen in the UK and North America, and some recent interest reported in Australia. However, the centrality of productivity gains to the wellbeing rhetoric, being amenable to valuation, is likely to accelerate the diffusion of these practices across design and construction sectors in an increasing number of geographical contexts.
REFERENCES


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Department for Communities and Local Government (2012). Re-imagining urban spaces to help revitalise our high streets. London: Crown Copyright.


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APPENDIX A: Interview schedule for project team

*Design:*

What is your professional background and how did you come to be involved in the project?

How was the building commissioned and procured? Was the project team assembled by the client or developer?

What was the aim for the design in your opinion?

Where did the original vision for the design come from? Which individuals really pushed this vision?

Has the vision been met in your opinion? What was the client’s opinion?

How was the end user pictured? Were their needs and preferences considered?

Were any design decisions taken to enhance end user experience? If so, which were most significant in your opinion? Did they result in specific architectural design features?

At what stage did the fit-out and interior design occur? Who manages this aspect? What sort of interaction was there between the architect and interior designer?

What was the aim for the fit-out and has this been achieved? What was the inspiration for this design?

Were any original aspirations for the space not able to be realised? What were the barriers to this?

*Occupancy and operation:*

How was the handover process managed?

How does the centre operate on a day-to-day basis?

How is it managed? Is there a facilities manager?

Are you or were you involved in monitoring it’s usage in any way?
**SROI:**

What was the contract sum? What was your percentage fee of the contract sum? What was the FF&E cost?

Do you think that limiting professional fees is a good way to save on project costs overall?

Were any savings made during this project? Were there circumstances where quality was prioritised over cost?
APPENDIX B: Interview schedule for centre manager

How did you come to be employed at the centre? What does your job role entail?

*Professional opinion as centre manager:*

What is the purpose of this building?

In what ways does the building suit its purpose? In what ways does it not?

Do you think the space is used to its full potential?

To what extent are you involved with the building and its operation?

Is there a facilities manager? What is the relationship with the landlord like?

What do you do if something breaks/fails? What is the speed and effectiveness of the response? Does this system work in your opinion?

How are the interiors maintained? Are furnishings refreshed or is art work circulated?

Are you involved in managing/monitoring centre usage in any way? Does anyone?

What is the initial reaction of people to the building?

What aspects of the building impact on people and how (feelings v behaviour)?

Ask about specific design features reported by project teams and ask how they impact people.

Are there different groups of people that use the centre in different ways? How do they interact?

Are there times when these user groups clash or when there is tension in how they want to use the space?

*Personal opinion as building user:*

What is your personal opinion of the building? What aspects do you like? What aspects don’t you like?

What design features have affected you? How you feel here and how you use the space?
Can you achieve everything you need to do in the space?

What aspects of the design help you to achieve what you need to do? Are there any design aspects that restrict what you need to do?

Describe the temperature, air quality, light levels, acoustics?

How does the building work in different seasons and weathers? In summer/winter? Dry/rainy weather? Sunny/dull?

How would you improve the building if you could?
APPENDIX C: Focus group recruitment flyer

Are you a visitor, therapist or volunteer at [name of institution]?
What is your experience of the building?
How does the design of the centre impact on your time here?

If you are interested in talking about your experience of the centre and how you use it, then I would love to hear from you.

I am a PhD student at the University of Manchester. I am currently carrying out some research at various cancer support centres across the UK. My interest lies in how the design, the users and the management come together in these special healthcare environments to create a place of value.

I am looking for participants to take part in a one-off focus group at [name of institution]. A focus group is an informal chat between a small group of people, discussing a specific topic. The discussion would be focused on the building and how you experience and use it, rather than your personal health.

The focus group will be between 30 - 45 minutes. They will be informal and friendly, in a supportive environment. You will have the opportunity to talk about your experiences and use of the centre, and be able to talk to others about their experiences.

There will be 5 people in the focus group, [name], centre manager, will also be available to provide reassurance for the participants.

If you are interested in taking part, please leave your name and contact details on the form overleaf.

You are not agreeing to take part by signing up – you can take as much time as you need to make up your mind. I will email you with an information sheet to help you decide. If you have any questions at all, please get in touch with me. I would be delighted to hear from you, answer any questions and provide further information.

My email address is: kelly.watson@manchester.ac.uk. Alternatively, you can talk to [name] for more information.

Thank you for reading this poster and enjoy your time at [name of institution].
APPENDIX D: Participant information sheet

Learning loops in sustainable urban design: applying Social Return on Investment (SROI) to buildings

Participant Information Sheet

You are being invited to take part in a study as part of a PhD project, based at the University of Manchester. Before you decide it is important you understand why the study is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

Who will conduct the study?

Kelly Watson: PhD Student, School of Environment and Development, University of Manchester, Oxford Road, Manchester, M13 9PL. Email: Kelly.Watson@manchester.ac.uk

Title of the study

Understanding how learning is fed back into the design of sustainable buildings: applying a new measurement method called Social Return on Investment (SROI) to buildings

What is the aim of the study?

The main aim of the study is to investigate how to measure whether buildings are ‘user friendly’ and how this might help professionals learn how to design and build better buildings in the future, using a new measurement method called SROI.

Why have I been chosen?

You have been chosen as you are a user of

A range of different users at the centre will be involved in the study, including some of the managers and staff, volunteers, therapists and visitors.

What would I be asked to do if I took part?

You would be involved in a focus group with up to 4 other participants. A focus group is a group discussion about a particular topic, in this case, about your opinion of the centre, its design and management, and how you use the building. This will last for 30-45 minutes.

In addition, you would be invited to fill out a short survey asking some questions about your opinions of the centre and how you use it.
What happens to the data collected?

The data will be used by the researcher in a PhD project at the University of Manchester. It will be analysed and presented in a set of academic papers that will be published in academic journals. All data will be anonymous and there will be no mention of individual participants.

How is confidentiality maintained?

The data will be collected anonymously. It will be stored on a secure university server which is password protected and accessible to the researcher only. When the data is analysed it will be done anonymously so that no links can be made back to the original participants.

Will I be paid for participating in the study?

You will not be paid for your participation.

What is the duration of the study?

The study will last for 30-45 minutes in a focus group, with an option to complete a survey taking about 10 minutes.

Where will the study be conducted?

The study will be conducted entirely at [redacted].

Will the outcomes of the study be published?

The results will be published in a set of academic papers, printed in academic journals. In addition, a report will be provided to the manager of [redacted] and to the charity itself.

Criminal Records Check

The researcher has completed a criminal records check, for your peace of mind.

What if something goes wrong?

If there are any issues regarding this research that you would prefer not to discuss with the researcher, please contact the Research Practice and Governance Co-ordinator by either writing to "The Research Practice and Governance Co-ordinator, Research Office, Christie Building, The University of Manchester, Oxford Road, Manchester M13 9PL", by emailing Research-Governance@manchester.ac.uk, or by telephoning 0161 275 7583 or 275 8093.
APPENDIX E: Focus group schedule

What are your opinions of the building? What do you like about it? What don’t you like?

Are there any specific design features that have affected how you feel or how you use the space? (Positively or negatively)

Can you achieve everything you need or want to do in the space?

What aspects of the design help you to do what you need or want to do?

Are there any situations where you’ve found the building has restricted you or made things difficult?

What are your opinions of the environmental conditions (temperature, light levels, air quality, acoustics) and in different weathers and seasons?

What are your opinions on how the building is managed? What do you like? What don’t you like?

Does the way the building is managed affect how you feel in the space or how you use it?

Please can you summarise what the building provides for you when you spend time here?

How would you change the building if you could?
APPENDIX F: User survey
### Rating the design features

Please rate the significance of the design features, in terms of how much they impact you when you are in the building.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playful exterior</td>
<td>Very high</td>
</tr>
<tr>
<td>High quality space</td>
<td>Very high</td>
</tr>
<tr>
<td>Nonclinical environment</td>
<td>Very high</td>
</tr>
<tr>
<td>Pleasant environment</td>
<td>Very high</td>
</tr>
<tr>
<td>Open plan layout (inner/lower)</td>
<td>Very high</td>
</tr>
<tr>
<td>Open plan layout (kitchen/balconies)</td>
<td>Very high</td>
</tr>
<tr>
<td>Kitchen as social hub</td>
<td>Very high</td>
</tr>
<tr>
<td>Kitchen table as point of contact</td>
<td>Very high</td>
</tr>
<tr>
<td>Kitchen size and layout</td>
<td>Very high</td>
</tr>
<tr>
<td>Balconies</td>
<td>Very high</td>
</tr>
<tr>
<td>Variety of spaces</td>
<td>Very high</td>
</tr>
<tr>
<td>Availability of small private spaces</td>
<td>Very high</td>
</tr>
<tr>
<td>Large activity room</td>
<td>Very high</td>
</tr>
<tr>
<td>Dividing wall (activity room)</td>
<td>Very high</td>
</tr>
<tr>
<td>Colourful/brilliant interiors</td>
<td>Very high</td>
</tr>
<tr>
<td>Choice of soft furnishings/furniture</td>
<td>Very high</td>
</tr>
<tr>
<td>Lack of soft furnishings/furniture</td>
<td>Very high</td>
</tr>
<tr>
<td>Lighting (table/floor lamps)</td>
<td>Very high</td>
</tr>
<tr>
<td>Window design (large operable)</td>
<td>Very high</td>
</tr>
<tr>
<td>Acoustics</td>
<td>Very high</td>
</tr>
<tr>
<td>Heating controls</td>
<td>Very high</td>
</tr>
<tr>
<td>Lack of spaces/capacity</td>
<td>Very high</td>
</tr>
<tr>
<td>Sloping site</td>
<td>Very high</td>
</tr>
<tr>
<td>Stairs outside</td>
<td>Very high</td>
</tr>
<tr>
<td>Bride entrance</td>
<td>Very high</td>
</tr>
<tr>
<td>Staircase inside</td>
<td>Very high</td>
</tr>
<tr>
<td>Lift inside</td>
<td>Very high</td>
</tr>
</tbody>
</table>

### Rating the outcomes

Do you experience the same level of wellbeing when you visit as when you first visited?

<table>
<thead>
<tr>
<th>How similar</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Very high</td>
</tr>
<tr>
<td>Less</td>
<td>Very high</td>
</tr>
<tr>
<td>No change</td>
<td>Very high</td>
</tr>
</tbody>
</table>

### How does the building affect you?

Please tick:

<table>
<thead>
<tr>
<th>How much better</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Very high</td>
</tr>
<tr>
<td>Less</td>
<td>Very high</td>
</tr>
<tr>
<td>No change</td>
<td>Very high</td>
</tr>
</tbody>
</table>

Do you experience the same level of relationship building when you visit as when you first visited?

<table>
<thead>
<tr>
<th>How similar</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Very high</td>
</tr>
<tr>
<td>Less</td>
<td>Very high</td>
</tr>
<tr>
<td>No change</td>
<td>Very high</td>
</tr>
</tbody>
</table>

Do you have the same belief in a high quality of care when you visit as when you first visited?

<table>
<thead>
<tr>
<th>How similar</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Very high</td>
</tr>
<tr>
<td>Less</td>
<td>Very high</td>
</tr>
<tr>
<td>No change</td>
<td>Very high</td>
</tr>
</tbody>
</table>

Do you think the quality of care providers at is improved as a result of being in this building?

<table>
<thead>
<tr>
<th>How much improved</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Very high</td>
</tr>
<tr>
<td>Less</td>
<td>Very high</td>
</tr>
<tr>
<td>No change</td>
<td>Very high</td>
</tr>
</tbody>
</table>

[Further questions on how the building affects the user's experience and beliefs, including questions about the quality of care and improvements from visits.]
## APPENDIX G: SROI spreadsheet

<table>
<thead>
<tr>
<th>Building User Group</th>
<th>Total population</th>
<th>Outcome</th>
<th>Indicator description</th>
<th>Data collection</th>
<th>Outcome incidence</th>
<th>Financial proxy description</th>
<th>Proxy</th>
<th>Annual value produced</th>
<th>Deadweight description</th>
<th>Deadweight proportion</th>
<th>Annual value produced minus deadweight</th>
<th>Attribution proportion</th>
<th>Annual value produced minus deadweight and attribution</th>
<th>Impact per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>10,517</td>
<td>Wellbeing</td>
<td>Number of visitors reporting wellbeing because of building design</td>
<td>Survey</td>
<td>0.95</td>
<td>$901.15 Value of relief from depression or anxiety, adjusted for average number of hours spent in the centre per visitor per year</td>
<td>£9.61</td>
<td>£36,026.67</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.65</td>
<td>£35,669.44</td>
<td>0.85</td>
<td>£28,568.02</td>
<td>£28,568.02</td>
</tr>
<tr>
<td>Centre staff</td>
<td>6</td>
<td>Wellbeing</td>
<td>Number of staff reporting wellbeing because of building design</td>
<td>Survey</td>
<td>0.83</td>
<td>4.08 Value of relief from depression or anxiety, adjusted for average number of hours worked in the centre per year</td>
<td>£5,723.65</td>
<td>£33,483.75</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.75</td>
<td>£8,370.94</td>
<td>0.60</td>
<td>£5,022.56</td>
<td>£5,022.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stress</td>
<td>Number of staff reporting increased stress</td>
<td>Survey</td>
<td>0.20</td>
<td>1.20 Cost of suffering from depression or anxiety, adjusted to average number of hours worked in the centre per year</td>
<td>£5,723.65</td>
<td>£8,068.37</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.75</td>
<td>£2,017.09</td>
<td>0.55</td>
<td>£1,109.40</td>
<td>£1,109.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Care performance</td>
<td>Number of staff reporting improved performance because of building design</td>
<td>Survey</td>
<td>0.83</td>
<td>4.08 Annual wage, per year</td>
<td>£27,241.00</td>
<td>£135,660.18</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.77</td>
<td>£31,201.84</td>
<td>0.70</td>
<td>£21,841.29</td>
<td>£21,841.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Office performance</td>
<td>Number of staff reporting reduced productivity because of building design</td>
<td>Survey</td>
<td>0.50</td>
<td>3.00 Average wage, per year</td>
<td>£27,241.00</td>
<td>£81,723.00</td>
<td>Percentage of outcome not reported as reduced</td>
<td>0.80</td>
<td>£16,344.60</td>
<td>0.70</td>
<td>£11,441.22</td>
<td>£11,441.22</td>
</tr>
<tr>
<td>Session staff</td>
<td>10</td>
<td>Wellbeing</td>
<td>Number of session leaders reporting wellbeing because of building design</td>
<td>Survey</td>
<td>1.00</td>
<td>19.00 Value of relief from depression or anxiety, adjusted for average total number of hours in the centre per year</td>
<td>£806.46</td>
<td>£15,322.73</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.7</td>
<td>£4,936.82</td>
<td>0.55</td>
<td>£2,528.25</td>
<td>£2,528.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Care performance</td>
<td>Number of session leaders reporting improved performance because of building design</td>
<td>Survey</td>
<td>0.75</td>
<td>14.25 Average wage per hour by average no of hours worked by SLo per year</td>
<td>£8,058.80</td>
<td>£86,337.90</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.7</td>
<td>£25,061.37</td>
<td>0.70</td>
<td>£18,130.96</td>
<td>£18,130.96</td>
</tr>
<tr>
<td>Volunteers</td>
<td>17</td>
<td>Wellbeing</td>
<td>Number of volunteers reporting wellbeing because of building design</td>
<td>Survey</td>
<td>0.86</td>
<td>14.62 Value of relief from depression or anxiety, adjusted for average total number of hours in the centre per year</td>
<td>£941.81</td>
<td>£13,769.32</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.7</td>
<td>£4,434.80</td>
<td>0.80</td>
<td>£3,204.64</td>
<td>£3,204.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Care performance</td>
<td>Number of volunteers reporting improved performance because of building design</td>
<td>Survey</td>
<td>0.86</td>
<td>14.62 Minimum wage per hour for over 21s in UK, per average no of hours volunteered per year</td>
<td>£1,236.76</td>
<td>£18,081.43</td>
<td>Percentage of outcome not reported as improved/increased</td>
<td>0.7</td>
<td>£4,637.89</td>
<td>0.95</td>
<td>£4,637.89</td>
<td>£4,637.89</td>
</tr>
<tr>
<td>NHS</td>
<td>1</td>
<td>Cost savings to NHS</td>
<td>Number of visitors reporting less likely to access psychosocial services through NHS</td>
<td>Survey</td>
<td>0.69</td>
<td>7256.73 Unit cost per GP visit</td>
<td>£34.00</td>
<td>£246,728.82</td>
<td>Percentage of outcome not reported as less likely</td>
<td>0.67</td>
<td>£81,420.51</td>
<td>0.70</td>
<td>£63,508.00</td>
<td>£63,508.00</td>
</tr>
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Total Impact: £134,990.99
Total impact/m²: £374.37
Costs/m²: £4,796.00
SROI Ratio: 0.08
Impact after 10 years/m²: £2,749.75
Costs/m²: £4,796.00
SROI ratio: 0.08
Impact after 50 years/m²: £15,058.78
Costs/m²: £4,796.00
SROI ratio: 0.32
Impact after 100 years/m²: £37,497.50
Costs/m²: £4,796.00
SROI ratio: 0.78

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Present value: £130,426.07 £126,015.53 £121,754.14 £117,638.85 £113,658.79 £109,815.26 £106,101.70 £102,513.72 £99,047.07 £95,697.65 £92,461.50 £89,334.79 £86,313.80 £83,394.97 £80,574.65

Present value/m2: £362.29 £350.04 £338.21 £326.77 £315.72 £305.04 £294.73 £284.76 £275.13 £265.83 £256.84 £248.15 £239.76 £231.65 £223.82

Costs/m2: £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00 £4,796.00

SROI ratio: £0.08 £0.07 £0.07 £0.07 £0.07 £0.06 £0.06 £0.06 £0.06 £0.05 £0.05 £0.05 £0.05 £0.05 £0.05
APPENDIX H: Peer-reviewed publication, Chapter Two

Re-conceiving building design quality: A review of building users in their social context

Kelly J. Watson¹, James Evans¹, Andrew Karvonen¹ and Tim Whitley²

Abstract
Considerable overlap exists between post-occupancy research evaluating building design quality and the concept of ‘social value’, popularised by its recent application to issues of the public realm. To outline this potential research agenda, the paper reviews design quality research on buildings in relation to users and their social context where the term ‘social context’ refers to building user group dynamics, a combination of organisational cultures, management strategies, and social norms and practices. The review is conducted across five key building types, namely housing, workplaces, healthcare, education, and the retail/service sector. Research commonalities and gaps are identified in order to build a more comprehensive picture of the design quality literature and its handling of users in their social context. The key findings concerning each building type are presented visually. It is concluded that the design quality field comprises a patchwork of relatively isolated studies of various building types, with significant potential for theoretical and empirical development through interdisciplinary collaboration. Users tend to be conceived as anonymous and autonomous individuals with little analysis of user identity or interaction. Further, the contextual impact of user group dynamics on the relationship between building design and building user is rarely addressed in the literature. Producing a more nuanced understanding of users in situ is proposed as an important area for future design quality research.

Keywords
Building user, Building user group dynamics, Design quality, Social context, Social value, Typology of buildings

Accepted: 8 October 2014

Introduction
Design quality research
A significant proportion of the research that exists on buildings addresses post-occupancy issues, rather than design process, and how they relate to the quality and functioning of the building in use. The literature is split between studies whose primary goal is to gather data about building users in order to evaluate design quality¹ and those that focus on assessing economic profit² or environmental performance.³ A variety of approaches exist which identify user experience as the unit of analysis but they vary considerably according to their theoretical underpinnings. As outlined by Vischer,¹ deterministic perspectives that view user behaviour as a result of the environment are located at one end of the conceptual spectrum opposite social constructivist approaches which emphasise the importance of social context over the built environment in explaining behaviour. Over the last 20 years, the majority of empirical publications on design quality have

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Email: Kelly.Watson@manchester.ac.uk

Downloaded from sagepub.com at University of Manchester Library on July 10, 2016
APPENDIX I: Peer-reviewed publication, Chapter Three

Applying Social Return on Investment (SROI) to the built environment

Kelly J. Watson and Tim Whitley

School of Environment, Education and Development, University of Manchester, Manchester, UK; Anup, Manchester, UK

ABSTRACT

The effective measurement and dissemination of the impact of design on building users requires an evaluative shift away from measuring building performance towards measuring the outcomes experienced by people. This agenda shares considerable overlap with the emerging concept of ‘social value’ and it is proposed that social impact valuation methods could fill the post-occupancy quantification gap. A review of the social impact sector identifies Social Return on Investment (SROI) as the most developed method with a robust framework for implementation. SROI generates monetized results, anticipated to enhance transferability compared with typical post-occupancy evaluation summaries and facilitate the dissemination and usefulness of findings within the design and construction industry. An in-depth account is presented of a study that trials the six stage SROI method in three non-clinical healthcare buildings; interviews, focus groups, user surveys and financial valuation techniques are used. The SROI results are summarized and the discussion provides critical reflection on the application of SROI to the built environment; the technical challenges faced, the modifications made as a result, and the lessons learnt from this process. The conclusion offers practical recommendations for future applications of SROI to the built environment.

Introduction

There has been a growing interest in the design quality of the built environment in the UK since the late 1990s (Macmillan, 2006). A long line of built environment tools have been designed and promoted in order to capture post-occupancy feedback from users of building design and public space. According to Mcginn et al. (2006) comprehensive review, these methods have tended to be based on multi-criteria analysis (MCA) and the weighting and scoring of pre-identified criteria, for example, the Design Quality Indicator (DQI), as well as environmental economics-based approaches such as stated and revealed preference studies, and impacts-based approaches. Value mapping in the built environment is currently dominated by MCA approaches. For example, the UK healthcare sector employs a number of MCA-based assessment tools including the Achieving Excellence Design Evaluation Toolkit (AEDET), a Staff and Patient Environment Calibration Tool (ASPECT) and Patient-Led Assessment of the Care Environment (PLACE).

There are three distinct problems with the MCA approach. The first is a lack of transferability in the results of MCA-based methods, as they tend to be qualitative in nature (Vischer, 2009). In order for best practice to be disseminated effectively, there is a requirement for robust quantification of post-occupancy feedback beyond MCA-based scores. Secondly, the result’s lack reliability for decision-making that is necessarily based on economic valuation. The design and construction industry is profit-based, yet user feedback is not presented in a way that can be easily factored into project budgets. Third, post-occupancy methods often emphasize building performance rather than user experience. A shift in evaluative focus is required to understand the impact of design for building users (Watson, Evans, Karvonen, & Whitley, 2016a). The subject of analysis should be the outcomes experienced by people rather than predetermined criteria, for example, the outputs of design like build quality or function, specific physical aspects like indoor air quality or acoustics, or fixed user outcomes like satisfaction and productivity, which are typically measured.
Capturing the social value of buildings: The promise of Social Return on Investment (SROI)

Kelly J. Watson a, James Evans a, Andrew Karvonen a, Tim Whittleby b

a School of Environment, Education and Development, University of Manchester, Oxford Road, Manchester, M13 9PL, UK
b M&Y Building Engineering gp, Arup, 6th Floor, 3 Piccadilly Place, Manchester, M1 3PN, UK

ABSTRACT

Existing post-occupancy research rarely considers the importance of the sociality of the building user community and its building user group dynamics. A social value agenda is proposed to promote user-centred design within the built environment, by looking beyond physical design to consider the dynamic interactions that exist between people and their built environment within the social context that mediates them. A social impact valuation methodology, Social Return on Investment (SROI), is trialled in three non-technical case buildings of varying levels of user-centred design and different building types, representing applied social value research. A qualitative comparison of the “social value” of the case buildings considers the physical design, as well as their varying briefing and design processes, organisational set-ups and building management, and the experiences of the building users. However, the financial SROI data is inconsistent with the qualitative narratives, leading to concern over the effectiveness of SROIs in capturing the implications of the sociality of the building user community.

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Keywords:
Building user community
Post-occupancy evaluation
Social Return on Investment
Social value
User-centred design

1. Introduction

The delivery of the built environment is rarely influenced by user needs and preferences; rather conventional business drivers, technical regulations and environmental imperatives are prioritised [1]. As Macmillan [2] notes, there is a general reluctance to invest beyond the minimum standards expected in commercial buildings whilst decision-making to increase short-term costs for long-term gain is problematic for elected leaders in the public sector. A significant factor in the disregard of user requirements is their qualitative nature which makes measurement and transferability problematic. Whilst a range of evaluation methods and tools currently exist (e.g., the PROBE methodology, Design Quality Indicators, Value in Design) they do not have far-reaching influence on professional design decisions. This is related to the relatively short timeframe of the professional design process in comparison to the longer timeframe required for effective evaluation, a disparity which currently undermines user-centred building design in practice. Furthermore, the qualitative findings of existing evaluation methods lack transferability and have limited applicability to built environment decisions which are necessarily commercial, whilst their objective is consistently about measuring building performance, rather than user experience. A shift in evaluative focus is required to understand the impact of design for building users.

The newly emerging concept of “social value” in the UK has significant potential to overcome the issue of effective impact in building design research. The concept has recently achieved traction at policy level by being written into the Public Services (Social Value) Act 2012 [3], which came into effect in England and Wales in February 2013. The Act requires that public service contracts take into account the wider value of a project over its entire lifetime, rather than traditional procurement based on cost. The application of the concept of social value to the built environment emphasises the significance of value beyond profit-driven motivations. It is proposed that applied social value research in buildings could facilitate the dissemination of post-occupation findings in professional learning loops to realise building design that is optimised for users, as well as economic and environmental performance.

This paper draws on existing post-occupancy research on building design and users to develop a perspective relating to the emerging concept of social value. This is fundamentally tied to the triple bottom line of sustainable building design, which emphasises

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