UK COLLABORATIVE CENTRE FOR HOUSING EVIDENCE

Design value at the neighbourhood scale

What does it mean and how do we measure it?

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Executive Summary

Creating well-designed neighbourhoods is widely accepted as an important policy objective across the different national Governments in the UK. National policies tend to agree that a well-designed neighbourhood typically has a permeable and legible street network, integrates mixed use and mixed tenure development, encourages community, offers access to high quality open space, and promotes walking and other modes of active travel, while also achieving a level of architectural distinctiveness and thus a robust sense of place.

However, in spite of the positive policy rhetoric, design is often undervalued in the wider planning, procurement and development process. In the wider built environment community and literature around it there is limited agreement on what constitutes good design, how the value of design is defined and categorised, and what should be prioritised in decision-making and procurement. There is also a lack of evidence collected on good design and its impacts. This can make it hard to discuss the value of design in the context of the many other values that shape new places, and it is often an uphill battle to promote the value of good neighbourhood design beyond the converted. Unsurprisingly design outcomes on new housing developments are often poor and fail to live up to the aspirations of UK policy and guidance.

This interdisciplinary review of UK-based academic refereed literature, grey literature and policy documents relating to the design value at the neighbourhood scale sets out the current state of knowledge in this area.

What is design value?

Design value is a broad concept which overlaps with numerous related terms. While there is consensus that good design adds value to homes and neighbourhoods, there is less agreement about what values are most important in the design process and the delivery of new neighbourhoods.

Design value is experienced from a variety of perspectives. It is at least in part subjective, which means in order to enable design value to take its place alongside other forms of evidence, a range of robust qualitative and quantitative data is needed. The evidence also suggests that the experiences of people living in new homes and neighbourhoods must be central to any definition of design value.

In order to provide clarity on the outcomes of design, design value can be disaggregated into a series of value types. Three commonly used value types are social, environmental and economic. Although there is considerable overlap between them and a tendency in the literature to emphasise the economic value of design, they provide a useful organising structure for discussions of design value.

Value can be delivered through the design process, for example by architects and planners working with communities, or by developers managing a procurement and development process. Design value can be measured in the long- or the short-term.

Design value is discussed in the literature at a range of scales, but there are several good reasons to focus on the neighbourhood scale. A neighbourhood focus goes beyond the narrow strictures of a building or site, but also limits the focus to an area which can be influenced by the design of individual sites. However, other scales of evaluation are needed that evaluate the impact of a neighbourhood on wider urban systems and regional dynamics.

Measuring and promoting design value

Market valuation is a broadly applied economic methodology, but better measures of social and environmental value are needed to assist with the production of robust economic models. There are some existing and emerging methods for measuring social and environmental value, but these do not appear to be widely used. There is also currently limited data on the social and environmental value of new neighbourhoods. A paucity of 'post-occupancy evaluation' across the housing sector means that we have very little information on what users value in new neighbourhoods.

To influence design outcomes at the neighbourhood scale it is crucial to understand the different actors and processes involved. Key decision-makers include national policymakers, local government officers and councillors, national and local design bodies and consultancies, and the development industry. Central and local government policy and guidance is a key way in which design value can influence practice. Design value can also be promoted through: the effective deployment of design professionals, community consultation; procurement; codes, regulations and guidance; design review; the planning application stage; effective project management, as well as monitoring and assessment after completion. Ultimately, however, policymakers and decision-makers must be prepared to demand that development outcomes meet the aspirations of policy and guidance through the use of the aforementioned tools.

The widely cited 'Building for Life' measures may be taken as a useful starting point because they were developed rigorously, draw on a range of key research and policy, and have already been broadly adopted within industry. There is scope, however, to develop this system to further encompass wider sustainability and social values. Systems are needed to ensure the development of robust qualitative and quantitative data, and to enable design value to be considered alongside other forms of evidence.

A working definition of design value

A working definition of design value at a neighbourhood scale should reference its three dimensions: social, economic and environmental value; its position in both processes of decision making and the assessment of development outcomes; and the individual metrics used to assess it. It must also acknowledge its subjectivity and the need to draw on a range of perspectives and evidence types. Whilst there is wide agreement that environmental value can be measured through carbon, work is needed to agree measures of social value as well as economic value in this context.

1. Introduction

1.1. Why is design value important?

The 'value' of well-designed neighbourhoods is foregrounded in UK planning policies as a route to achieving more sustainable and healthy communities. Policy for neighbourhood design in all of the four nations broadly agrees that well-designed places have a permeable and legible street network, integrate mixed use and mixed tenure development, offer equitable access to open space, promote walking and other modes of active travel, while also achieving architectural distinctiveness (e.g. MHCLG 2018; Scottish Government 2013a; Welsh Government 2016a; Department for the Environment Northern Ireland 2014).

The most recent iteration of the *National Planning Policy Framework* (NPPF) in England (2018) states that creating well-designed places is fundamental to successful planning and that "[g]ood design is a key aspect of sustainable development" (MHCLG, 2018, p. 38). In Scotland, the government's 2013 statement on place and architecture, Creating Places, makes an explicit link between 'design' and 'value'. It states that "[d]esign provides value by delivering good buildings and places that enhance the quality of our lives" (Scottish Government, 2013a, p. 9), and highlights how design can enhance the social, environmental and economic value of places, as well as their physical and functional value. Similar commitments to design value are also made in current Welsh and Northern Ireland planning policy, where the creation of well-designed places is linked to wider health and wellbeing aspirations in both nations (Welsh Government, 2016b, p. 131; Department of the Environment Northern Ireland, 2015, p. 15).

1.2. Research Aim

Despite the policy rhetoric, newly-built neighbourhoods that are well-designed tend to be the exception rather than the rule. Design is often undervalued both in the procurement of new development and in the planning decision-making process and, as a result, the quality of new housing at a neighbourhood scale typically fails to meet the aspirations of policymakers.

In light of the current UK policy emphasis on well-designed places, our evidence review has two substantive aims: (1) to explore the ways in which 'design value' is defined in both the academic and non-academic literature, and (2) to identify existing methods of measuring and promoting 'design value'. Our overall objective is to establish the foundations for an accessible evidence base to inform housing and planning decision-makers about the value of design.

This report is produced by a cross disciplinary group of researchers at the UK Collaborative Centre for Housing Evidence and, as such, it focuses on design in the housing sector and examines sources that specifically consider the value of design at the neighbourhood scale. We have therefore sought to provide an evidence base for understanding how the terminology associated with 'design value' is currently used and applied in both the scholarly (academic) and grey literature (non-academic) that is relevant across housing disciplines.

1.3. Methodology

The methodology for this evidence review is underpinned by review guidance agreed by the research team. Adopting this consistent approach ensured that the multiple researchers involved in the review worked from a common framework and undertook a transparent and systematic review. The common framework specified:

- The scope of the review;

- The sources reviewed (including academic indices and policy/practice websites and keywords);

- The key steps in the review process, including criteria for assessment. (See APPENDIX 3 for the details)

The evidence review does not attempt to be a fully comprehensive account of design value at the neighbourhood scale. As described above, we restricted the scope in several ways to provide focus, and ultimately to make the number of documents manageable. We consider the inevitable research gaps in some detail in the concluding chapter.

1.3.1. Scope of the Review

We decided to focus on recent discussions about design value and examined sources that were produced over a twenty-year period from 1998 – 2018. The start date was determined by the beginning of the 'urban renaissance' agenda initiated by New Labour in the late 1990s. This wide-ranging urban policy programme saw the potential value of design and architecture highlighted in a range of policy directives and planning guidance and also led to investment in design advocacy and review by new government agencies, including the Commission for Architecture and the Built Environment in England (1999), Architecture and Design Scotland (2005), the Design Commission for Wales (2002) and the Ministry Advisory Group for Architecture and the Built Environment in Northern Ireland (2007) (See Punter (2011), DCAL (2006) and Carmona et al. (2017) for further details).

The review also incorporates the ten years following the 2007-08 Financial Crash and the subsequent recession. During this time, and under a new deregulatory central government, design and the built environment lost status as a core focus of policy. More recently, however, interest in creating well-designed places appears to have picked up again. This is demonstrated by the policy statements on good design and design value issued by the four governments in the UK (outlined in Section 1.1). The renewed policy focus on design has also emerged in parallel (although not always linked) to the aim of delivering an accelerated number of homes, particularly in England.

We made a pragmatic decision to focus only on UK-sources however a paucity of evidence generated by a 2018 call for evidence by the Architects Council for Europe led by the University of Reading suggests that design value is not well understood at a European level either, although there are some important and influential pockets of evidence based activity, for example the renowned international work of Gehl architects based in Copenhagen, Denmark. A report currently being prepared for Shelter by Nicholas Falke of URBED *Learning from International Examples of Affordable Housing,* is likely to be an important contribution to the field. The review did not include technical material, for example examination of energy use, for similar reasons. This may have impacted on the inclusion of the sustainability agenda in our findings.

We also limited our focus to the 'neighbourhood' scale to ensure that our study was relevant to policymakers making decisions about how new housing-led developments help create places. This focus allows for the consideration of, urban design issues beyond that of the dwelling including the public spaces between units, while avoiding the complexity of considering design in the context of urban systems and regional dynamics. A provisional understanding of the term neighbourhood was used, essentially including developments of a scale that significantly impacts on the public realm and local community. Some sources we reviewed gave broad criteria for the kinds of issues that relate to neighbourhood scale (e.g. BREEAM, 2017) but no clear definition of 'neighbourhood' emerged from the review.

Other than excluding obviously poor research or irrelevant articles, we did not make judgements about the quality of the outputs we reviewed. The range and type of publications under consideration, both refereed journals and more up to date 'grey' industry based literature, would have made this a challenging task. Our database of sources is thus a comprehensive list, incorporating academic and non-academic sources rather than a bespoke collection of the most academically rigorous papers.

1.3.2. Sources Reviewed

The review considered both academic and non-academic sources. To identify academic sources, we utilised the online indices Scopus and Web of Science. These were selected following a literature mapping exercise published by the UK Collaborative Centre for Housing Evidence which identified that, together, the two databases cover the largest number of relevant academic outputs (Serin, 2018). For non-academic sources we used a combination of Google searches and institutional website search functions. Policy reports and other non-academic sources (grey literature) are not searchable through the aforementioned academic indices.

In addition to using indices and search engines, we also identified specific academic journals that would be appropriate to mine for relevant articles. These journals were selected from a list compiled by the Centre in the aforementioned literature mapping exercise, with additional journals identified by the research team based on their expertise (see Appendix 3 for the full list of journals reviewed).

We also convened two 'sense-check' stakeholder meetings. At these meetings, workshop participants recommended additional journals, papers, and non-academic sources and also reflected on the meaning of design value. Their contributions fed into the research process, particularly at the beginning of the project and in its concluding phase.

1.3.3. Key Steps in the Review Process

We adopted a five-stage review process. First, we reviewed the two academic indices by running queries on the titles, abstracts, and keywords of the articles, and created a core database from the returns after employing first-phase inclusion-exclusion criteria (see Table 1 for further details on this process and Appendix 3 for the criteria). Second, we reviewed the specific academic journals identified by (1) the mapping exercise, (2) members of the project team, and (3) our stakeholders. We used the same keywords and reviewed the returns according to the first-phase inclusion-exclusion criteria. Selected articles were then incorporated into the core database. Third, we reviewed the non-academic (grey) literature capturing relevant reports and policy documents through Google and institutional search engines. Relevant documents were selected from a full text review since it was not possible to use only title, abstract, or keywords due to the nature and organisation of grey literature. Fourth, we reviewed the full-texts of all the academic and non-academic sources according to data extraction categories and second-phase inclusion-exclusion criteria (see Appendix 3 for the criteria). As a result, some documents were excluded from the core database and no data extraction was applied to them (see Table 1 for details). Fifth, based on the data extracted during the review, we produced a synthesis which forms the basis of the evidence review.

We ultimately collected a wide and diverse range of sources for this review, including: academic journal articles; non-academic reports (from Government and NGOs); planning policy and guidance from the four nations of the UK; and, training manuals on design.

Table 1: Search media, returns and final core database

Search Media	Search and review fields	Number of returns reviewed	Notes
Academic Indices	title, abstract, keywords	1801	Scopus and Web of Science
Journals	title, abstract, keywords and full-text	792	See Appendix 3 for the journal list
Core database	full-text	89+2 follow up	As a result of reviewing abstracts of the results from indices and journals, 89 publications were identified.2 other publications were added as a result of following up references and a very recent new publication. Cut-off date for this phase was June 2018.
Final article database	full-text	39	After reviewing the full-texts of the articles in the core database, 39 publications (journal articles and book chapters) were identified according to inclusion-exclusion criteria. Data extraction was applied on these 39 publications, while the rest of the core database were excluded.
Grey literature	full-text	59	After full text reviews, 59 grey literature publications (e.g. reports, government guidance) were reviewed. See appendices for a full list of grey literature publications.

1.4. Report outline

The findings of this review are presented across seven sections (Section 2 – 8) as follows:

- Section 2 is titled What is design value? and focuses on key terminology and definitions.
- Section 3 is titled Types of design value and considers the multiple ways in which the value of design is categorised.
- Section 4 is titled The challenge of defining design value and reflects on some of the inconsistencies associated with reaching a definition of design value.
- Section 5 is titled Metrics used to assess design value and identifies the various ways that neighbourhood design is categorised.
- Section 6 is titled Measuring design value and considers methods of measurement.
- Section 7 is titled Promoting design value and examines how and why design value is emphasised in policy.
- Section 8 offers a series of conclusions and suggests areas for further research.

2. What is design value?

This Section considers how design value is defined and discussed. It explores a range of views identified during the review on the definition of design value in the context of neighbourhoods, and highlights how the term 'design value' often overlaps with other phases and terms associated with design and the built environment.

The Section also looks at how design is valued both as a process and as a product/output. It considers some of the factors that make a simple definition hard to achieve and, in particular, the subjectivity associated with good (or bad) design and its attributable value. Our aim is to highlight the wide range of interwoven factors that need to be considered when developing a working definition of design value.

2.1. A note on terminology

In the literature the term 'design value' is used interchangeably with concepts like 'design quality' and variations thereof. For example, Carmona and De Magalhães (2009) identify overlaps between terms like "[l]iveability, quality of place, quality of life, environmental exclusion/equity, urban environmental quality, physical capital, well-being, and even sustainability" (p. 522).

The commonly used terms identified by Carmona and De Magalhães (2009) are employed alongside broader concepts like 'urban design principles' and the popular buzzword 'placemaking'. In recent years, new concepts linked to design value have also begun to emerge. These include: 'healthy placemaking' (Design Council, 2018), 'sustainable urbanism' (Dittmar et al., 2007), 'social value' (Samuel, 2018), its partner 'Social Return on Investment' (Watson et al., 2014), and 'place value' (Carmona, 2018). Some authors seem to emphasise the social dimension of design while others favour environmental sustainability.

Identifying 'place value' as a potential 'catch-all' term for the various concepts associated with the qualities and values of place, Carmona (2018) argues that it "reflects the idea that a complex but inter-related basket of benefits accompanies any intervention in the built environment and ultimately flows to those with a stake in the place: local residents, investors and developers, everyday users, business owners, public authorities, and so forth" (p. 3).

The interchanging use of allied terms and concepts associated with place and design contributes to mystifying the concept of 'design value'. Accordingly, Samuel (2018) argues for more specificity about the kind of value (or values) being generated. These value types are teased out in Section 3 of the report.

2.2. Why design is valued

The framing of 'design value' presupposes that design is valuable. A quote from the Design Commission for Wales (DCfW), the national design advocate in Wales, expresses this sentiment in the following simple terms: "Good design makes everything better" (DCfW, 2018, no page number). In this respect, design is valued because well-designed places or neighbourhoods are thought to be uplifting and, conversely, poorly designed places are considered to be dispiriting (Eagle, 2006). A 2006 report by the Commission for Architecture and the Built Environment (CABE) called *The Cost of Bad Design* further notes that a lack of appreciation for the value of design at the outset of a project can create risks which might not reveal themselves for a number of years, or even decades.

The word 'value' tends to be broadly understood as the measurable worth or quality of something. In a report titled *The Value of Urban Design*, produced by CABE in 2001, value is defined by the amount at which it can be exchanged. But, definitions of design value can also extend beyond monetary calculations (Bowie and Atkins 2010). Thomson et al. (2013) define value in a normative sense as "the principles by which we live" (p. 340) and describe these values as "the core beliefs, morals and ideals of individuals….reflected in their attitudes and behaviours in society" (p. 340).

In the context of designing neighbourhoods, a term for which there are no easy definitions, 'design value' might be said to combine all the values derived from a place, whether they are financial (exchange value) or more socially and culturally grounded (use or aesthetic value). Design value can also refer to the success (or not) of delivering the desired outcomes of the designer or rule setter. For example, the English *National Planning Policy Framework* (NPPF) focuses on delivering 'sustainable development'. In this context, good design is framed around achieving greener and more resilient places (MHCLG, 2018). There are significant areas of agreement among professionals about what constitutes good (or bad) design based on professional judgement, as is regularly evidenced through the process of Design Review. The non-financial values associated with a place or neighbourhood can range from the holistic to the specific, from the subjective to the objective and from the tangible to the intangible (e.g. Bowie and Atkins 2010).

The literature also considers how various stakeholders benefit from well-designed places in different ways and over different periods of time. According to Carmona et al. (2002a) "better urban design leads to significant long- and short-term benefits to investors, developers and designers and to largely long-term benefits for occupiers, public authorities and the community" (p. 166). These long and short terms benefits vary for each stakeholder. For the purposes of illustration, investors identify short-term benefits such as higher rental values and increased asset values, and longer term benefits like maintenance and better resale value. For developers, short-term benefits include quicker permissions and increased public support, while longer term benefits might be about generating a good reputation. For occupiers, there are long-term benefits such as "fewer disruptive moves, greater accessibility to other uses/ facilities, reduced security expenditure, increased occupier prestige, reduced running cost (energy usage)" (Carmona et al., 2002a, p. 167). Drawing on a Royal Institution of Chartered Surveyors (RICS) and Department for Education (DoE) funded research project published in 1996, Carmona et al. (2002a) argue that design quality emerges as a result of the attitudes of different stakeholders to the "perceived balance between the associated costs, benefits and risks" (p. 147) of a design proposal.

It is important to note that most sources in the literature also define 'design value' in a collective sense incorporating more than one value. This typically includes both exchange and use values. For example, in *Creating Places*, the Scottish Government's statement on design and architecture, a range of different values are tied to design value, including "physical value", "functional value", "viability", "social value", and "environmental value" (Scottish Government, 2013a, p. 9). Notably, numerous academic and policy sources also focus on the 'triple bottom line' of economic, social and environmental benefits stemming from design (Carmona et al., 2002b; DCfW, 2018; DCLG, 2017). We explore this particular distinction further in Section 3.

The emphasis on multiple values is often made in response to a perceived bias towards one or more types of value, particularly visual or aesthetic values (CABE, 2002; DCLG, 2017) or value for money (NAO, 2005). Chiaradia et al. (2017) criticise the approach of reducing the value of design to economic value noting how this ignores "physical, spatial and configurational characteristics that are the essence of urban design" (p. 68). The same authors criticise valuation methods which take private property value into account, but ignore public or other use values. As developing techniques such as Social Return on Investment, used by HACT – the Housing Associations' Charitable Trust (Fujiwara, 2014) - and others, have grown more sophisticated it seems likely that more intangible aspects of value, including aesthetic value, will be monetised. A full discussion of value types is presented in Section 3.

2.3. Value in the design process

Many of the sources we reviewed define the value(s) associated with design either entirely, or partly, in relation to the design process. In the academic literature, certain stages in the design process are considered important for achieving better design outcomes, such as employing peer design review, using design competitions for major projects and generating high quality guidance for new development (White, 2015; Punter, 2007; Carmona, 2016). Willcocks (2017) further emphasises that "the value of design contributions lies increasingly within processes which help facilitate and advance discourses between competing desirable agendas" (pp. 831-832). Notably, the non-academic literature highlights the importance of collaborative decision-making in the design process, foregrounding:

- A strategic approach which balances various site, policy, and stakeholder considerations (HCA, 2010; Welsh Government, 2017).
- Adherence to robust project management (OGC, 2007).
- Creativity and imagination (Welsh Government, 2011; Scottish Government, 2013a; DCAL (2006).
- Bringing together different professionals and stakeholders to work together (CABE (2002; 2006b).
- Opportunities to identify and address local needs (Design Council, 2017).

A number of the non-academic sources we reviewed either explicitly or implicitly attributed value to both the process and products/outcomes of design. One especially thoroughgoing example is the Scottish Government's ***Creating Places*** policy statement which states that: "Good design is not merely how a building looks, it is an innovative and creative process that delivers value. Design provides value by delivering good buildings and places that enhance the quality of our lives." (Scottish Government, 2013a, p. 8). Samuel (2018) reports that the design process can deliver value to client bodies through cost savings, brand enhancement and organisational learning, and to communities of users by promoting engagement, empowerment, identity, learning, skills development, community cohesion and even crime reduction.

2.4. Value(s) found in design products/outcomes

The values associated with finished design products or outcomes are widely discussed in the academic and non-academic literature and often focus on the user experience(s) of a new place or neighbourhood. Carmona (2018) notes that it "might simply be that a high quality place is one which returns the greatest value to its users with regard to meeting and sustaining them in healthy, socially rich and economically productive lifestyles that touch lightly on the environment" (p. 4).

The wider literature, as noted with respect to government policy in Section 1.1, identifies various specific 'design qualities' as adding value to new places and neighbourhoods. Many such values may be subjective and hard to measure but are nevertheless important, including: liveability, community, places that enable healthy and active lifestyles, biodiversity, resilience, safety, and integration with the surrounding environment (Architecture & Design Scotland, 2013; Design Council, 2017; Farrell et al., 2014).

Numerous sources in the literature are also keen to emphasise that design value should not be narrowly determined by aesthetics; however, the beauty and attractiveness of places is often cited as an important component of design value (MHCLG, 2018; Wheeler et al., 2014; DCAL, 2006). The impact of 'beauty' on communities achieved important recognition in the CABE report *People and Place: Public Attitudes to Beauty* (2010c). Research noted that the way in which a place looks can impact upon feelings of self-worth (Clark and Kearns, 2012).

The value of design is also commonly linked to the creation of places in which residents have improved economic opportunities. Key sources in the grey literature note that well-designed places can improve the reputation of an area, stimulate economic growth, attract people and businesses, provide access to employment and public transport, or improve the confidence of investors (CABE, 2006b; Architecture & Design Scotland, 2013). Well-designed places are also referred to as being efficient in terms of resource use and are thus identified as having the potential to be more environmentally sustainable (CABE 2003a; HM Government, 2011; DCLG, 2014).

Dawson and Higgins (2009) further highlight the recent trend of linking good design to social equity. This approach is premised on the idea that design affects everyone in society and that a well-designed place has the potential to improve peoples' everyday quality of life. We found support for the idea that social equity is core to design value in many grey literature sources (DCAL, 2006; RTPI, 2016; Scottish Government, 2010) and, more specifically, identified

sources that linked the accessibility and inclusivity of new neighbourhoods to design value, especially in relation to disability and access for all (Design Council, 2017; HoL NPBE, 2016). As one report argues, "[g]ood design is inclusive design, and inclusive design should be an integral part of the design process" (Welsh Government, 2017, p.49).

2.5. Section Summary

Design value is a broad concept which overlaps significantly with similar terms like 'design quality', closely related ideas like 'placemaking', and more specific terms like 'sustainable urbanism'. There is broad consensus that good design adds value to new homes and neighbourhoods, but less agreement on what elements of design are most valued and why.

The value of design is also understood in a number of different ways, from the intrinsic value of improving development quality, to the more explicit values expressed by users demonstrated by exchange value. Discussions of design value often focus on tangible impacts and economic outputs, but new forms of evaluation such as Social Return on Investment offer ways of valuing the more intangible impacts of design and placemaking.

Design Value can be delivered through the process of planning and design decision-making, for example, by architects and planners working with communities, as well as through the use value(s) of outcomes (e.g. children playing in a new park or a street layout that reduces car use). Design value can also be measured in the long or short term ,and can focus on the value to individuals or communities.

3. Types of design value

Section 3 looks specifically at types of design value. As we began to discuss in Section 2, many academic and non-academic sources identify particular values associated with design products and outputs, such as the economic benefits associated with good design and the health and wellbeing determinants resulting from living in a well-designed neighbourhood. The section first outlines different attempts to create typologies for determining design value, before focusing on the most widely employed typology found in the academic and non-academic literatures – the 'triple bottom line' of social, environmental and economic value. The section ends with a short discussion of other commonly cited types of design value.

3.1. Typologies of design value

The following typologies identified in the literature categorise the 'value' of design in the built environment in various ways:

- Nase et al. (2015) focus on real estate value, distinguishing between exchange value (the value in the market in return for other commodities) and use value (the worth that the commodity creates for users).

- Macmillan (2006) proposes a typology with the following categories: exchange value, use value, image value, social value, environmental value, and cultural value. Macmillan's typology is primarily concerned with the scale of the building, but also considers the building in its setting through the identification of social, environmental and cultural value (Macmillan, 2006, p. 266).

- Rowley (1998) proposes 'considerations' for defining urban design which also resonate with types of design value. These are as follows: "functional and social use considerations; natural environment and sustainability considerations; visual considerations; and considerations relating to the quality of the urban experience" (p. 154).

- Thomson et al. (2013) identify a series of five clusters related to design value in construction: "the through-life cost consequences of construction project outcomes" (durability and cost); "the market-facing monetary aspects of value" (market price, money, client); "the building attributes considered evidence of value delivery" (design quality, sustainable, aesthetics, functionality); "the judgement of construction project outcomes held by an individual" (benefit, worth); and, "the management of the construction project" (management, time) (p. 224). The authors argue that while some of these considerations are objective, other are subjective. They therefore propose a "value continuum" which incorporates all five clusters.

- Cho et al. (2015) propose an urban space value framework which considers the performance of urban space in relation to value. The authors identify three main components of urban space: HARDware (the tangible or physical properties of urban space); SOFTware (the uses, and social and perceptual values of urban space), and ORGware (the operational and management aspects of urban space). The authors note that the "three components inevitably overlap and directly or indirectly influence one another" (Cho et al., 2015, p. 152).

- Carmona et al. (2002b) conceptualise design value through a sustainability lens and thus identifies economic value, social value and environmental value as three cross-cutting value types that are linked to common urban design objectives (character, continuity and enclosure, quality of public realm, ease of movement, legibility, adaptability, diversity).

- Samuel et al. (2014) examined the value of 'architecture in homes and neighbourhoods' through a literature review that focused on the delivery of 'community cohesion', 'health, wellbeing and older age' and 'identity belonging and heritage'. They posit a categorisation of 'architecture' based on social, cultural and commercial value.

3.2. Triple bottom line of social, environmental and economic value

The review found that the 'triple bottom line' of social, environmental and economic value, as identified by Carmona et al. (2002b) is one of the most common ways of grouping value types in non-academic sources and policy documents in particular. Many of the sources we reviewed explicitly considered the social, environmental and economic values of design (DCfW, 2018; MHCLG, 2018; Scottish Government, 2013a; HCA, 2010). For example, the English *National Planning Policy Framework* (NPPF) is focused on achieving 'sustainable development', defined in relation to delivering social, environmental and economic value (MHCLG, 2018). These common value types are discussed in turn below.

3.2.1. Social value

Social Value has come to the fore since the creation of the Social Value Act 2012 which requires projects procured with public money to take social value into account and recent changes to HM Treasury's *The Green Book* (2018) which suggests that social and environmental value, as well as economic value, now need to be considered in government cost benefit analyses. Whilst an amendment to the act excluded contracts for goods and contracts for work, it puts emphasis on 'public services' (UK Gov, 2011). Social Value is gaining impetus largely via local authorities. It is also gaining prominence through the Well-being of Future Generations Act (Wales) 2015 (Welsh Gov, 2016b). The recent Construction Leadership Council report *Procuring for Value,* acknowledges the importance of accounting for social value (Bentley, 2018). In the context of the construction industry - and tools such as the TOMS Framework used by the Social Value Portal - social value tends to be defined in terms of jobs and apprenticeships. Greater acknowledgment is needed of the way in which neighbourhood design impacts the local community and influences wider social issues. In this context, design can deliver social value through places that enable "people and communities to achieve their full potential", and "physical forms and layouts that do not hinder, discourage or distract from this" (Dittmar et al., 2007). In their value framework which conceptualises sustainable value, Carmona et al. (2002b) define social value (or social benefit as they term it) as "development that responds to broader public objectives and concerns and which as far as possible benefits from the support of the local community in which it sits" (p. 67). For Alzahrani et al. (2017) social value is "an intangible benefit that can be captured from places that shape community attitude and might often cater to necessary activities but is essential to everyday functions" (p. 752).

Social value is used to capture a range of different values associated with factors like health and wellbeing, community activities, active and public transport, public amenities, tackling deprivation and crime, and equity (Scottish Government, 2013a; Design Council, 2017). It is also often linked to local enterprise, where it therefore overlaps with economic value (see Section 3.2.3 for details) (Dittmar et al., 2007; Design Council, 2018).

Social value is identified as a priority in many of the sources reviewed for this report. There are a few possible reasons for this. One reason is that design is particularly well suited to delivering social value. To illustrate this, Carmona et al. (2002b) outline the different perspectives that stakeholders' have about delivering social value via design. For example, while developers believe their developments provide social value via regeneration impacts and job creation, designers believe their schemes add social value via "site regeneration, the benefits of which they felt would trickle through to local populations, enhancing social wellbeing and civic pride" (p. 157). A second reason is that there is a widely held perception that, when design value is considered, certain types of value have tended to be over emphasised for example economic and aesthetic value (CABE, 2002; DCLG, 2017) or value for money (NAO, 2005).

A focus on social value is a call to consider the wider values that design can deliver. In a 2014 survey of Scottish design practitioners, most respondents felt social value was among the most important aspects of design value. However only 10% of the same respondents felt the built environment industry thought the social value of design was important (Wheeler et al., 2014, pp. 33-34). There is also evidence that users of housing are often more interested in design that is associated with social sustainability (e.g. connectivity, safety) than buildings. There are relatively few examples where a social value framework has been used to evaluate the wellbeing impacts of housing and neighbourhood design, for example by fostering active lifestyles, connecting people and activating positive

emotions. This is a gap currently being addressed by the Royal Institute of British Architects (RIBA), working with the New Economics Foundation and MHCLG who are developing a Social Value Toolkit for architects (Samuel, 2018).

3.2.2. Environmental value

Environmental value is generally defined in relation to the impacts on the local and/ or non-local environment and is invariably tied to wider concerns about sustainable development, i.e. "building an environment which meets the needs of the present without compromising the ability of future generations to meet their own needs" (MHCLG, 2018; DCAL, 2006). Carmona et al. (2002b) define environmental value as "development that delivers more energy efficient, robust, ecologically supportive and less polluting patterns of urban form" (p. 67). It became clear, through consultation, that carbon is a widely accepted currency of environmental value.

Environmental value is used to capture a wide range of issues, including resource efficiency, carbon reduction, air quality, landscape, habitats, water and waste management, reducing car dependence, generally improving natural/ environmental resources, and interaction with the wider ecosystem (Welsh Government, 2017; Bichard and Higham, 2018; Farrell et al., 2014). There is also often a 'lifestyle' element to environmental value and a wide-ranging literature on how urban form (in particular denser urban form) can encourage residents and visitors to live sustainable lifestyles (Dittmar et al., 2007). Environmentally friendly neighbourhoods, if designed well, also have the potential to generate more seamless connections between humans and the natural world which, in turn, can have a positive impact on people's health and wellbeing. This highlights an obvious overlap with social value and people's enjoyment of their surrounding environment (Scottish Government, 2014). As with social value, environmental value is often discussed in relation to its contribution to economic value. For example, how improving the condition of environmental assets makes a place more attractive to work and invest in, generating jobs and wider economic benefits (Scottish Government, 2014, p. 21).

3.2.3. Economic value

Economic value is generally defined in relation to the contribution of design to local and non-local forms of beneficial economic activity. It is linked to terms like 'financial value', 'growth', 'productivity' – all of which are treated as intrinsically valuable. Economic value is also seen as valuable for unlocking investment or finance for infrastructure and other benefits, such as social housing and public space (Scottish Government, 2014). Economic value can be tied to a wide range of outcomes including job creation, local economic development, benefits to businesses and the ability to attract finance (Bichard and Higham, 2018; CABE, 2006b; Jenkins et al., 2008; Hack and Sagalyn, 2011). It is often given primacy, for example because developments are not viable if they are not economically sustainable (Dittmar et al., 2007).

Economic value is also linked to the financial benefits of pursuing development. For example, the long-term savings or increased revenues that can arise from good design (HCA, 2014; DCLG, 2016). Carmona et al. (2002b) argue that "broadly the evidence suggested that better urban design adds economic value" (p. 76) and various stakeholders such as investors, developers and occupiers tend to agree with this conclusion. Carmona et al. (2002a) further points out that stakeholders acknowledge that the benefits of good design "significantly outweigh the costs, particularly at the prestige end of the market" (p.165). However, in a later paper, Carmona (2018) also warns that some of the perceived benefits of well-designed places, such as higher property values, can have a negative impact on local areas where affordability is a challenge. This is one of the problems that can be associated with 'gentrification'.

Economic value is also used to capture anything which can support local economic resilience or economic growth, which in practice blurs into social and environmental value. As the Design Council (2017, p. 1) explain, "Making sure we have the good quality homes that people need, and that they can afford, with the necessary physical and social infrastructure that transforms quality of place enabling areas to thrive, is fundamental to economic growth" (Design Council, 2017, p. 1). This reflects a tendency to define all kinds of value in relation to their contribution to economic value.

3.3. Other commonly identified types of value

While it may be possible to group a wide range of values under the banner of the triple bottom line of the social, economic and environmental (or combinations thereof), we have found that other clusters emerge repeatedly in the sources reviewed. These need to considered alongside social, economic and environmental value, and are as follows:

- **Heritage value:** This refers to the value inherent in the architectural, cultural, historical, and natural heritage of the area in which development is taking place (DCAL, 2006; Scottish Government, 2014). The Scottish Government also link heritage value to the delivery of other kinds of value like community and economic value (2013a).

- **Health value:** This is particularly related to work on healthy placemaking (Design Council, 2018). As with other types of value, it is presented as a particular type of value to draw attention to its importance, and to avoid any risk that it will be overlooked (Design Council, 2017; HoL NPBE, 2016).

- **Cultural value:** This can be closely linked to 'cultural capital'. In the context of homes and neighbourhoods it can refer to the added cachet, brand value or 'iconicity' that can be brought to a project through the authorship of, or association with, a famous architect or artist (Samuel, 2018). It also links back to heritage value, the value of particular cultures and their settings – for example the Scottish tenements – not least for tourism.

- **Functional value:** This type of value is necessarily relational rather than objective. It relates to the success of the development in achieving its defined function or functions (Scottish Government, 2013a; NAO, 2005; Bichard and Higham, 2018).

3.4. Section Summary

It is easier to be clear about the value of design by subdividing it into value types. This section set out a range of existing systems for categorising subsets of design value, before focusing on the triple bottom line of Social Value, Environmental Value and Economic Value. Although there is considerable overlap between these types they provide a useful framework for discussions of design value.

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4. The Challenge of Defining Design Value

In this section we reflect on some of the specific difficulties associated with defining design value and categorising value types. Chiaradia et al.'s (2017) work highlights this challenge and its complexity by noting that the value of urban design is often intertwined with wider social-economic values, beliefs and preferences which shape and have been shaped by urban places. To these authors, value is a way of representing meaning; values shape design and therefore the value of design is a product of the design process. This section therefore explores the challenge of definition in more depth, recognising that value is experienced from a variety of different perspectives and at a range of spatial scales.

The foreword to the report *The Value of Good Design* points out that "when we invest in the built environment, we must consider the impact of design throughout the lifetime of the buildings, on the places in which they are located and on all stakeholders involved" (Lipton 2002, no page number). Several sources in the literature reflect further on why it can be difficult to draw out a singular definition of design value. For example:

- Khan et al. (2014) argue that there is no consensus on the meaning of spatial quality in the literature and therefore various different ways of understanding valued places: "A universal understanding of the concept 'spatial quality' does not exist, except as shorthand for either the intention to invest some 'extra' (talent, care, aesthetics, money, etc.), or to stress a 'normative' attitude and endeavour" (Khan et al., 2014, p.393). This wider challenge makes assigning a value to design in the built environment all the more challenging.

- Carmona et al. (2002a) note the differences in perception of a 'good' urban environment and design value by different stakeholders as the following quotation explains: "An office worker or shopper may have a very different perception of what makes a good urban environment, from an estate manager charged with its upkeep, whilst a developer may perceive the added value in a development very differently from a local resident. This reflects the ease with which the built environment allows different stakeholders to meet their particular objectives. In this regard a broad range of stakeholders are involved in making, using and managing urban developments." (Carmona et al., 2002, p. 142).

- From workshops conducted with expert designers, Macmillan (2006, p. 265) contends that research on design value is often "anecdotal, academic, unsorted, and neither robust nor replicable" making it difficult to provide a quantifiable determination of design value.

- A major 2014 study of design value and the built environment in Scotland found scepticism about the very concept of objective design value, and also identified stakeholders involved in the design and development process who did not value design. One key finding was that the built environment is valued "in a variety of ways that are not consistent, transparent or comparable and from a range of different standpoints", further stating that "[a] fundamental issue that immediately arose in a number of the discussions is 'whose value' or 'value to whom'" (Wheeler et al., 2014, p. 21).

4.1. Design value and subjectivity

Definitions of design value and desired outcomes can differ substantially based on the professional background of the author(s). This can be due to differences in education and familiarity, but can also relate to professional power struggles around delivery and responsibility for design as well as the role that a particular actor or actors might be playing in the design process (Wheeler et al., 2014). Differences can also be found across scholarly sub-fields where perceptions about value are focused towards different elements of the design process or on different products/ outcomes (i.e. a building versus a neighbourhood or district).

There has long been a challenge of difference in perception in practice between "planners, local politicians,

developers, the public, architects and urban designers" (Wheeler et al., 2014, p. 15). For example, a 2008 Scottish Government report on housing design revealed that developers perceived that professional architects have different ideals about design to consumers, and that delivering on those different ideals is often inefficient and complex (Jenkins et al., 2008). Similar findings emerged in a 2014 review by the Homes and Communities Agency (now Homes England) which also concluded that good design should avoid "expensive architectural features with limited benefit to the user" (HCA, 2014, p.4).

What these findings demonstrate is that design value is at least in part subjective, and moreover, that this subjectivity is not always obvious to stakeholders. Carmona et al. (2002a) point out that the "perceived balance between the associated costs, benefits and risks" is different for different stakeholders. In this respect, the value of better design is "to some extent relative", and "a function of interacting hierarchies of considerations applied by developers, investors and occupiers, each with their own rationale" (Carmona et al., 2002, p.149).

These findings have clear implications for the way evidence on design value should be communicated to decision-makers, in the sense that there may not be no one simple approach that works for everyone. A robust mix of qualitative and quantitative data is needed. In this context, the value of the design process, discussed in Section 2.3, becomes particularly important as a way to mediate between competing views on good place design, whether they come from professionals, policy-makers, or communities. Macmillan (2006) exemplifies the need for this approach in a succinct description of the competing, but potentially complimentary, values associated with creating places:

> Investors and developers see higher returns, designers see repeat business, commercial occupiers benefit from staff recruitment and loyalty, and everyday users benefit from an improved urban environment and enhanced range of amenities. For central and local government understanding these kinds of correlations between better design and social and economic outcomes is a clear priority in order to ensure the maximum leveraging effect of public investment and greatest gains to the local population – providing, of course, that they do not displace the very people who were originally intended to benefit from the regeneration. (Macmillan, 2006, pp. 262-263).

4.2. Design value and the user experience

The experiences of people living in new homes and neighbourhoods must be central to any consideration of design value. If it is not possible, nor should it be desirable, to impose universal top-down conceptions of design value. It is crucial to find ways to match design to the aspirations of housing users. As the previous section alludes, the range of stakeholders engaged in the design process can sometimes mean that the role of the user is easily overlooked. Although a number of the sources reviewed for this report did consider the needs and views of neighbourhood residents directly, many did not.

In spite of this, one common way to define design value is in relation to user experiences. Social value is identified as a key type of design value (see Section 3.2.2), and the attractiveness of places to people and the equitability of place are seen as central to definitions of value (see Section 2.4). Understanding user experience might be achieved through identifying what it is that users demand from new housing (APPG BE, 2016; Popular Housing Forum, 1998), or by emphasising the role of communities and housing users in design processes (MHCLG, 2018; Design Council, 2017). Notably, the role that users can play in defining design value was particularly prominently acknowledged in the UK Government sources we reviewed, for example:

- The English NPPF states that: "Design policies should be developed with local communities so they reflect local aspirations" (MHCLG, 2018).
- English Planning Practice Guidance on design notes that: "Local communities play a vital part in good design.

Those who live and work in an area often best understand the way in which places operate and its strengths and weaknesses" (DCLG, 2014).

- A range of the other Government publications we reviewed also make direct reference to user experience (DCAL, 2006; DCLG, 2017; APPG BE, 2016; DCLG, 2016).

4.3. Design value and the challenge of scope and scale

This review set out to focus on sources which considered design value at the neighbourhood scale. It revealed that design value is in fact discussed at a wide range of different scales. Indeed, Wheeler et al. (2014) argue that design encompasses everything from "the city to the spoon", including system designs like transport, strategic spatial planning, and the "paraphernalia that inhabits our built environment" (p. 21). This ensures there is an understandable lack of clarity around the impact of design at different scales, and also means that a simple definition of *neighbourhood* design value is difficult to obtain because it has the potential to mean a lot of different things. As Carmona et al. (2002b, p. 64) state, "how to define the exact scope and nature of good design" is one of the key challenges associated with measuring urban design.

The findings of our review illustrate these challenges well. We have encountered design value being discussed at various scales and from varying perspectives, although often with little clarity about the precise scale under consideration. Reports ranged from design value being linked to virtually all outcomes associated with development on the one hand (Bichard and Higham, 2018) to a more restricted focus on how design influences individual homes on the other (HoC Library, 2017). The 'neighbourhood' scale was nevertheless discussed in numerous sources and was considered especially valuable for a number of key reasons, as follows:

- Emphasising the neighbourhood scale ensures that any conceptualisation of design value goes beyond the narrow strictures of a building or site, but also limits the focus to an area which can be influenced by the design of individual sites (CABE, 2003b; DCLG, 2012; MHCLG, 2018; Welsh Government, 2017; Birkbeck and Kruczkowski, 2015; HCA 2011).

- Focusing on the neighbourhood scale allows the interrogation of issues such as urban density, which studies of individual buildings do not (Savills, 2015).

- The neighbourhood level is a sensible scale for considering wider urban design issues (Welsh Government, 2017; Birkbeck and Kruczkowski, 2015; DCLG, 2012), but avoids the complexity of considering design in the context of wider urban systems and regional dynamics. For example, *Fixing our Broken Housing Market e*mphasises how neighbourhood plans are a good level for producing actionable design guidance and codes (DCLG, 2017).

- Evidence suggests that the neighbourhood scale is considered valuable by housing users who ascribe value to the area they live in as well as their individual home (Wheeler et al., 2014). This allows for a focus on the linkages between home and local community infrastructure that are considered socially valuable like security, quality schools, access to open spaces, etc. (DCAL, 2006; Farrell et al., 2014; Wheeler et al., 2014).

One challenge with focusing on the neighbourhood scale, however, is that it does not consider the important issue of how neighbourhoods relate to one another. For example, how one development might contribute to inequality by influencing neighbourhoods around it. Further, the boundaries of a particular neighbourhood is difficult to delineate with any precision (Burns and Kahn, 2005). The review failed to pick up any precise definitions of the term 'neighbourhood'.

4.4. Section Summary

Design Value can relate to the use value of places as well as being delivered through the process of planning and design decision making about a new place, for example by architects and planners working with communities. It can be measured in the long or short term.

Design value can be highly subjective. This means that, in order to enable design value to take its place alongside other forms of evidence, different types of evidence and ways of communicating it may be needed, along with a range robust qualitative and quantitative data. The user experiences of people living in new homes and neighbourhoods must be central to any consideration of design value.

Design value is discussed at a range of scales but there are several good reasons to focus on the neighbourhood scale. However, other scales of evaluation are needed that evaluate the impact of neighbourhoods on wider urban systems and regional dynamics.

5. Metrics used to assess design value

This Section examines specific criteria and metrics which are used for measuring design at the neighbourhood scale. Many of the sources included in the wider review discuss the value of specific design criteria or principles. While each source tends to focus on its own exacting set of metrics, there is also significant overlap. Clearly there is a degree of subjectivity associated with identifying and measuring each of the criteria discussed, but we nevertheless propose that it is helpful to isolate a set of criteria as the basis for reaching a definition of neighbourhood design value. This approach is consistent with a range of sources in the literature.

5.1. Building for Life 12 Design Value Metrics

Building for Life is an evidence-based set of metrics for guiding residential design and a process for assessing developments based on those metrics. It was originally developed by the Commission for Architecture in the Built Environment (CABE) and has been informed by several literature reviews and other evidence gathering (CABE, 2001b; Building for Life, 2005). The Building for Life criteria appear to have gained a strong foothold in UK policy- and practice-focused literature (Carmona et al., 2002b; DCLG, 2017) and are therefore introduced before other commonly cited metrics are discussed (see Section 5.2). The first set of Building for Life criteria were published in 2003; they have been revised several times since.

The latest version of Building for Life – 'Building for Life 12' (Birkbeck and Kruczkowski, 2015) – associates 12 criteria with achieving design value at the neighbourhood scale. These are listed below and are very similar to the aspirations for well-designed places in UK government policy outlined at the beginning of the report (note that for each of the criterion listed we have referenced other sources that identified similar or overlapping concepts):

- Connections: reinforcing existing connections and creating new ones (Birkbeck and Kruczkowski, 2015; Bichard and Higham, 2018).
- Facilities and services: proximity to/and provision of community facilities (Birkbeck and Kruczkowski, 2015; LGA et al. 2015; Dittmar et al., 2007).
- Public transport: access to (also discussed as access to sustainable travel) (Birkbeck and Kruczkowski, 2015; Welsh Government, 2017; Scottish Government, 2014; Dittmar et al., 2007; Bichard and Higham, 2018).
- Meeting local housing requirements (Birkbeck and Kruczkowski, 2015; LGA et al., 2015; Dittmar et al., 2007; GLA, 2010).
- Character: locally inspired and distinctive (Birkbeck and Kruczkowski, 2015; Welsh Government, 2017; DCAL, 2006).
- Working with site and context: land scale, habitat, orientation, etc (Birkbeck and Kruczkowski, 2015; Welsh Government, 2017; NAO, 2005; HCA, 2011).
- Creating well defined streets and places (Birkbeck and Kruczkowski, 2015; DCLG, 2016; LGA et al., 2015; HCA, 2014; Scottish Government 2010; Dittmar et al., 2007).
- Easy to find your way around (Birkbeck and Kruczkowski, 2015; Scottish Government, 2014; Dittmar et al., 2007; Bichard and Higham, 2018).
- Streets for all: functional as social spaces (Birkbeck and Kruczkowski, 2015; HCA, 2014; Welsh Government, 2017).
- Car parking (Birkbeck and Kruczkowski, 2015; HCA, 2014).

- Public and private spaces: the demarcation of (Birkbeck and Kruczkowski, 2015; LGA et al., 2015; DCAL, 2006; Bichard and Higham, 2018).

Given their wide use and strong overlap with policy around the UK, we would suggest that Building for Life is a good starting point both in defining the scope of neighbourhood design value and in beginning to build an evidence base for decision-makers The social enterprise 'Social Life' has used Building for Life as the basis for a tool for measuring social impact and it is widely used in practice. That being said, some of the practitioners who read an early draft of this evidence review noted that the criteria-based framework of Building for Life can mean it is quite vague and not sufficiently robust to enforce strong design standards.

As noted above, our review identified a range of additional measures. These are listed below:

- Accessibility and inclusive design: ensuring development is accessible to everyone (Welsh Government, 2017; Bichard and Higham, 2018).

- Environmental sustainability: efficient use of natural resources and positive environmental impact, as well as additional specific environmental metrics within this e.g. flood risk, noise pollution, ecology strategy, adapting to climate change, and green infrastructure (Welsh Government, 2017; Scottish Government, 2014; Dittmar et al., 2007; Bichard and Higham, 2018; BREEAM, 2017).

- Security and natural surveillance: safe public spaces with design which deters criminal behaviour (Welsh Government, 2017; Scottish Government, 2014; DCAL, 2006).

- Adaptability: allows a range of uses and can be adapted easily to meet future needs (LGA et al., 2015; Scottish Government, 2014; NAO, 2005; HCA 2010).

- Efficient use of space: relatively high net density, units and floorspace (Dittmar et al., 2007; Savills, 2015; Welsh Government, 2017).

- Appropriate housing mix: minimising inequalities and fostering inclusion by ensuring appropriate housing provision and tenure mix (BREEAM, 2017; Welsh Government 2017; MHCLG 2014).

5.2. Hierarchies of value

Some research considers a hierarchy among the qualities associated with design, with some considered fundamental and others secondary (Carmona and De Magalhães, 2009). The qualities listed at the top of the hierarchy are those such as creating a safe, secure, clean and tidy environment. More secondary concerns include creating fulfilling, distinctive, attractive and functional places that are robust, accessible, comfortable, green and unpolluted, vital and viable, inclusive. As a parallel to the approach of Maslow's hierarchy of needs, Carmona and De Magalhães (2009) note that "the more satisfied local communities were with their local environment, the more they tended to focus on, and were critical of, the lower order issues" (p. 531).

We also received feedback at our stakeholder event that it was important to consider potential trade-offs between different metrics and value types. The 'forgiveness factor', a little explored concept in sustainable design, acknowledges that people will put up with poor environmental conditions if their home offers other kinds of paybacks. An example might be the way in which older people feel their home is warmer than it is if it has a cosy décor (Devine-Wright, 2014).

5.3. Section Summary

The criteria introduced in this section provide a strong base for developing a working definition of design value. The Building for Life measures may be taken as a useful starting point, both because they were developed rigorously and draw on a range of key research and policy, and because they have already been broadly adopted. However other metrics should also be considered. Especially those more intrinsically linked to social and environmental sustainability.

6. Measuring design value

As described in the introduction, one of the key objectives of this review is the development of an evidence base to help decision-makers determine design value. This Section initially considers a range of methods that might be employed to measure design value, before turning to a discussion about some of the challenges associated with measurement. This is a crucial step toward developing an evidence base for design value, since it identifies the various sources for such an evidence base, along with some of the main challenges associated with collecting that evidence.

6.1. Methods of measurement

6.1.1. Measuring economic value

Economic approaches to valuation are desirable to decision-makers because they allow for the comparison of alternatives in a way that is directly relatable to budgets and viability (Wheeler et al., 2014). Design value is no exception to this. The principal way of measuring the economic value of design is by estimating the impact that design has on the price of land or housing. For example, *Valuing Sustainable Urbanism* estimates the value of design using data on residential and commercial property values (Dittmar et al., 2007), while Nase et al. (2015) adopting a similar approach, present their perspective as one that "considers built environment products as commodities to be traded" (p. 569). In this context, economic value is defined as the "exchange value or market value as represented by achieved property prices" (p. 569). Yet, an analysis of the relationship between design quality and property value by Bowie and Atkins (2010) demonstrated that it is actually quite hard to correlate particular design attributes to property price (or economic value). The authors found that a range of variables impact the price of new dwellings and that many of these variables are unrelated to design, such as location and dwelling size.

Market value was nevertheless the most prominent type of evidence that Scottish design practitioners reported using in a 2014 survey, with almost a third making assessments "[b]ased on individual house/building value and total place value of neighbourhood" (Wheeler, 2014, p. 35). Other types of evidence for design value may also be expressed in economic terms, for example Social Return on Investment or Natural Capital accounting (Wheeler, 2014). A more holistic view of value can be developed using a multifaceted approach (Pain et al, 2018), but without the inclusion of reliable social variables, something that is difficult to achieve, economic models can be problematic.

6.1.2. Measuring social value

There are several slightly different systems, some run by private consultancies, for measuring the Social Value of housing. A number of sources in our review used, or made reference to, ways of measuring social value, including:

- Social return on investment, e.g. using reports of stakeholders and socio-economic statistical data (Bichard and Higham, 2018, Watson and Whitley, 2016). These are increasingly being used by local authorities but rely on a patchy and sometimes problematic set of financial proxies for monetisation.

- Impact on wellbeing and social sustainability, e.g. whether housing tenure and type respond to local housing need, and how well different tenure types are integrated (BREEAM, 2017).

- Impact on health outcomes, although in their report on *Healthy Placemaking,* the Design Council (2018) report that this Social Value is considered particularly hard to measure by practitioners. This is in a context in which practitioners rarely monitor the performance of their buildings.

- The Treasury Green Book provides guidance on valuing economic, social and environmental consequences (Jenkins et al., 2008).

- The website Global Value Exchange maintained by Social Value UK collects a large number of metrics on social

value (Bichard and Higham, 2018).

- HACT and NEF are, with the Social Value Bank, developing financial proxies for monetising social value but none as yet reflect the value of design as lived experience, for example the way in which buildings can give communities a sense of pride.

A joined up and simple approach to Social Value in the context of housing is needed. Social Value as field needs considerable work. This cannot happen without the development of a culture of systematic, Post Occupancy Evaluation and improved strategy for the monitoring of building impact.

6.1.3. Measuring environmental value

This review did not encounter many tools for measuring the environmental impact of good design. While this could reflect a deficit in this type of measurement, it may also be because we chose to investigate design at a neighbourhood scale. This therefore excluded both a focus on technical building standards and a wider focus on the environmental impacts of the housing system as a whole or at a regional level. The environmental impacts of housing development are strongly linked to both the performance of individual buildings and the location of neighbourhoods and their relationship with things like transport infrastructure. Thus, it is often easier to consider the environmental value of individual homes or the housing system in a region, rather than at a neighbourhood scale.

One tool that was mentioned was BREEAM, an industry tool for assessing sustainability in development projects (Bichard and Higham, 2018; Wheeler et al., 2014; NAO, 2005). BREEAM includes a range of different tools, of which one, BREEAM Communities, operates as at a neighbourhood scale, promoting itself as a way to assess environmental, social and economic impacts of large scale development plans with a focus on sustainability (BREEAM, 2018). The technical manual covers 40 areas, including housing provision. Over half the topics consider building level issues, however it also considers neighbourhood scale environmental issues like flood risk, noise pollution, energy strategy, ecology strategy, adapting to climate change, and green infrastructure. Projects are scored based on these and other criteria, with a 'pass' mark of 30% (BREEAM, 2017). Another tool, Building with Nature, did not come up in our review, but was familiar to the researchers. Building with Nature provides an assessment and accreditation service for the design of green infrastructure in housing and commercial development (Building with Nature, 2018).

6.1.4. Post occupancy evaluation

Several sources we reviewed also mentioned user/resident surveys or consumer research as a way of understanding the value of design from a user perspective (Jenkins et al. 2008; CABE, 2010a; HCA, 2010). Particular examples include surveying residents on satisfaction with new-build housing and surveying the general public on their perception of new housing developments. A key means of user assessment is Post-Occupancy Evaluation (POE), which allows for the assessment of the actual qualities of a development after it is completed. Several sources we reviewed advocated its use in evaluating and promoting the design quality of residential developments (APPG BE, 2016; OGC, 2007; NAO, 2005; Design Council, 2018). 27% of design practitioners surveyed in a Scottish study reported using POE (Wheeler, 2014). Other reports suggest that the number is far less (RIBA, 2017.

The mainstreaming of robust and consistent forms of POE is an important cross sector challenge, one in which policy and clients play a vital role. The RIBA report *Building Knowledge: Pathways to Post Occupancy* (2017) gives an up-to-date account of the development of good practice in post occupancy evaluation (POE) and its sister Building Performance Evaluation. The focus of POE tends to be on environmental conditions and there is considerable scope to develop further forms of POE that valorise more intangible aspects of experience such as design value and social value (Hay et al, 2017).

6.1.5. Official monitoring

Several sources we reviewed discussed the role of the Planning regimes in monitoring design outcomes. In a 2014 survey conducted in Scotland, *Scottish Planning Policy* was listed as the third most popular way of assessing design value by design practitioners in a 2014 survey (43%), with Planning Advice Note 83 cited by 33% (Wheeler, 2014). The same practitioners also reported using "design guidance developed for local plans, masterplans and design reviews, local plan policy and supplementary guidance, local design review panels" (Wheeler, 2014, p. 35). However, there was also a concern identified in the literature that, due to lack of resources, the role of planning and building control regimes could have limited effectiveness (Design Council, 2017; HoL NPBE 2016), or that it would be desirable to have more independent inspections (APPG EiBE, 2016). To some extent the need for monitoring relates to the potential role of post-occupancy research noted in Section 6.1.4.

6.1.6. Post-completion design review

Design review in various forms can be used to measure design value and design review during the planning process is discussed in Section 7.2.4. Post-completion, *Building for Life 12* is often used as a form of design review. The criteria are not attached to particular measurable outcomes. Instead, each criterion (listed in Section 5.1) is attached to a specific set of questions designed to encourage reflection on the quality of the design. Designs are scored according to a traffic light system, with Red (needs to be reconsidered), Amber or Green (Birkbeck and Kruczkowski, 2015). The English National Planning Policy Framework (NPPF) advocates the use of Building for Life and other assessment frameworks (MHCLG, 2018, p. 128).

Each of the Building for Life and other design value criteria discussed in Chapter 5 should be linkable to specific measurable features or outcomes. Some of the sources we reviewed took this approach. These could either be specific and obvious features of the design plans themselves, for example lines of sight or building features, or they could be higher level outcomes which design seeks to affect. For example, the House of Lords Select Committee for the Built Environment suggested that the English NPPF should "set out a common framework of health indicators for local planning authorities to monitor" (HoL NPBE, 2016, p. 30). Collecting a list of these measures and deciding which are the most useful and powerful may be a key step toward developing an evidence base on design value to influence decision-makers.

We also identified some examples of evaluations which moved beyond the site level to evaluate design quality over many sites. In particular, one source discussed CABE's housing audits that were conducted between 2004-2007 and which used Building for Life to assess a range of housing developments in particular regions (CABE, 2010a).

6.1.7. Other industry tools

We identified a number of further industry tools which particular sources mentioned could be used for assessing design value. These included:

- Housing Quality Indicators (HQIs): HQIs were set up by the Housing Corporation (which became the HCA, and then Homes England) in order to help people assess housing delivery against the HCA's core housing standards. The HCA subsequently developed a calculator to provide a score on space and functionality factors (HCA, 2010). It was proposed that all projects claiming HCA funding should be required to use it (HCA, 2011). However, this was never enforced due to different priorities stemming from a change to the UK Government in 2010 and was ultimately dropped as part of the HCA's 2013 standards review (Briginshaw, 2015).

- Lifecycle or whole-life costing: this involves an assessment of the costs of a development over its life, which was mentioned in a number of sources (Construction Procurement Strategy Steering Group, 2011; Scottish Government, 2013b; HCA, 2010).

- The Six Qualities of Successful Places: a tool published by the Scottish Government, which was used by 45% of

design practitioners surveyed in one study (Wheeler, 2014).

- Design Quality Indicators (DQIs) and Key Performance Indicators (KPIs): assessing delivery on specific design-related objectives (OGC, 2007; NAO, 2005).
- AEDET (Achieving Excellence Design Evaluation Toolkit) Review (Wheeler, 2014).
- The WELL Building Standard: a tool for promoting health and wellbeing in development (Bichard and Higham, 2018).

6.1.8. *Ad-hoc* evaluation

Several sources mentioned that design value is very often measured by individual practitioners in an ad-hoc way. In a survey of design practitioners commissioned by the Scottish Government, "55% of respondents cited intuition/ professional judgement as the most frequently used tool to assess the value of design" (Wheeler, 2014, p. 35). Research from the Design Council also had a similar finding, noting that practitioners create and collect their own evidence (Design Council, 2018, p. 34). Unfortunately, such evidence has little traction with policymakers and clients.

6.2. The measurement challenge

The range of different measurement approaches and the noted reliance on ad hoc reporting highlights the challenge of consistent measurement. In a wide-ranging report on design value for the Scottish Government, *Wheeler et al.* (2014) identify the difficulty of measuring design value given there is "no common language, shared understanding or foundation, and many variables had been studied under various guises" (p. 20). They argue that it is particularly challenging to include both financial and non-financial variables, and tangible and non-tangible assets.

Dewulf and van Meel (2004) reinforce this point by noting the difficulty of finding objective or universal standards. While they acknowledge the possibility of measuring some qualities, such as air quality or adequate illumination, they argue that it becomes more difficult to measure socio-psychological qualities such as privacy, beauty or delight. Eley (2004) notes that such subjectivity affects not just the qualities being valued, but also the process of measurement: "who is measuring or judging what and why" (p.255).

Some approaches to valuation or evidence types are more popular than others. For example, decision-makers may be more comfortable with economic valuation due to its quantifiability. Plus, there may also be some overlap between methods. The economic value of a place may well be a part of a post-occupancy evaluation where the future value of an individual's dwelling might be relevant to their assessment of a neighbourhood's value. That being said, sources reported several issues associated with the economic valuation of design. First, it is difficult to separate out the impact of design from other factors, especially when using market prices to measure economic value. Carmona et al. (2002b) point out that, even where economic value can be measured, it is hard to separate the impact of design value from that of "location, use, market and usable floor area" (p.64). Nase et al. (2016, p. 309) furthermore notes that, although design quality is accepted as an important element for an urban development, the types of value created are "of an intangible nature thus leading to wide scepticism about its economic value."

There is a risk that when economic valuation is considered straightforward or particularly suitable for decision-makers, it will supplant more useful measures. Chiaradia et al. (2017) criticize adopting an instrumental approach to valuing urban design which measures value as a single number. While common in the real estate sector, they criticise this approach for being "the reductive dismissal of design considerations that are important, but difficult to couch in terms of numbers" (Chiaradai et al, 2017, p.66). In this respect, evidence of the social value of design is more difficult to find because it is mostly experienced by residents, meaning it is currently of less interest to developers, who are more interested in return on capital. For similar reasons it is also given less emphasis in official guidance (Bichard and Higham, 2018). Engagement with social value might be incentivised if it could be used in negotiations around Section

106, agreements made between local authorities and developers to make a development acceptable, in planning (Samuel, 2018b).

6.3. A call for more evidence

Regardless of the approach to measuring design value, the quantity, quality and accessibility of evidence is crucial. Many of the sources we reviewed highlighted the importance of evidence, for example in engaging key stakeholders and getting politicians to prioritise design (Design Council, 2018). However, despite the range of methods discussed above, our overall impression from this review is that design value is not currently being measured in a consistent or useful way.

In a survey of Scottish design practitioners, 40% felt they had inadequate tools to measure design value, compared to only 24% who felt they did. 62% also expressed a need for better valuation methods (Wheeler, 2014, p. 36). A key need identified by the Design Council (2018, p. 62) was to develop a "centralised repository of evidence" along with support for measuring impact. Furthermore, a recent report from the law firm Trowers, called for "more and better techniques, metrics and ways to understand the societal value of development" (Bichard and Higham, 2018, p. 5). Recent developments in digital technology offer new methods to gather user feedback, for example through mobile phones and other media. A consistent approach is needed to gather and utilise this rich potential vein of data (Samuel, 2018).

6.4. Section Summary

Tools for measuring design and social value are not currently well established in the development industry. Market valuation is a well-established economic methodology, but robust measures of social value are needed to assist with the production of robust economic models. There are some existing or developing methods for measuring social and environmental value but they do not appear to be widely used, and there is little centrally collected data on the social and environmental value of new neighbourhoods. A paucity of Post Occupancy Evaluation across the housing sector means that we have very little information on what works.

There is significant demand for new measurement tools and evidence. The absence of consistent and rigorous measures of design value is has impacted on innovation in the sector.

7. Promoting design value

This section considers the main ways in which the value of design is promoted in policy and practice. It does this by reflecting upon who makes decisions about design value, mapping out the various points at which decisions are made about neighbourhood design from national policy to the level of the site. It ends by identifying the key points at which evidence on design value might be used to influence development, while also highlighting the key groups whose decisions influence design outcomes.

To understand how to influence design at the neighbourhood scale it is important to first understand who makes design decisions. The following groups of actors are some of the key decision makers (it is important to note that this review demonstrates that each of these groups are already actively involved in implementing and collecting evidence on design value):

- National policymakers influence design by setting national standards and policy which guides all development. They also commonly commission and publish evidence relating to design value and support organisations or programmes designed to improve design value. Finally, they set the political context in which design takes place. For example, specifying whether funding programmes should be tied to design outcomes or processes.

- Local government officers also have a major role in making decisions related to residential design value at a neighbourhood scale, through the planning process, design review, local design guides, and applying national standards (DCLG 2016). Local government can also act as a residential developer or can commission development thus providing another way to influence design.

- Local government councillors play a major role in guiding development locally, in particular by making decisions on individual applications. We identified several sources which explicitly aim to influence them through training materials or guidance on incorporating design in decision-making (CABE, 2003a; LGA et al., 2015).

- Social Value and other kinds of value could be promoted by local authorities through the procurement of buildings. Social Value legislation has been left purposefully loose to enable different kinds of social value to be taken into account in public procurement.

- National and local design bodies and consultancies also play a key role in influencing design. This may be through publishing best practice or it may be through providing consultancy or design review services. Some national and local policy explicitly recommends working with these bodies (DCLG, 2012).

- The development industry also has a key role to play. Punter (2010) argues that there was an attempt during the height of the urban renaissance discourse, "to sell the value of good design to all major actors in the development process, but particularly to persuade the development industry that it is in their interests to raise design standards" (p. 360). This approach continues today, but is more uneven.

Finally, while we are primarily focused on the main decision-makers, it is also worth noting that the expectations of the public are also important determinants of design as they set priorities for national and local politicians (Design Council, 2018). This is the central focus of neighbourhood planning in England. Thus, it is also important to try both learn from and influence the general public discourse around design value. Indeed, it is also important not to understand design value as something which stems only from a 'top down' approach. This project makes an assumption that influencing decision-makers is the most effective way to influence design value on a wide scale, however this does not imply that these actors are necessarily 'best' at guiding design.

7.1. Design value in government policy and guidance

The fact that development rights are governed by planning policy means it is sometimes relatively easy to show how government promotes design value through policy. And, since policy is supposed to be informed by evidence, we can in some cases chart a direct line from evidence on design value to promoting design value in practice. The planning system is one of the main ways of influencing the design of residential developments, especially at the neighbourhood scale. Changes to the policy and guidance that makes up this system could have wide ranging impacts on design value. Indeed, several research papers in this review were commissioned or conducted by government at least in part to feed into policy (Morris Hargreaves McIntyre, 2006; GLA, 2010). Other sources identify planning policy as a key mechanism to influence with their evidence (Design Council, 2017).

It is also important to highlight that the policy, guidance and other tools cited below are more influential where they 'have teeth'. This may mean making them compulsory, for example Design and Access Statements are necessary for submitting major applications in Wales (Welsh Government, 2017), and BREEAM Communities assessments are required for all 'super major' developments by Bristol City Council (BREEAM, 2018). Or they can be made a condition of funding, for example Building for Life used to be a compulsory requirement for some public funding building programmes.

7.1.1. National policy

Scottish Planning Policy makes it clear that design permeates all levels of planning:

> "The design-led approach should be applied at all levels - at the national level in the NPF, at the regional level in strategic development plans, at the local level in local development plans and at site and individual building level within master plans that respond to how people use public spaces" (Scottish Government, 2014, para 39).

In England, the NPPF has a chapter on design, emphasising that "The creation of high quality buildings and places is fundamental to what the planning and development process should achieve." (MHCLG, 2018, p. 124). As noted in the previous section, Design and Access Statements are compulsory for some developments in Wales (Welsh Government, 2017).

The following , reproduced from Building for Life 12, shows the clear links between design guidance and official policy in England.

Figure 2 Building for Life 12 and compliance with English National Planning Policy (reproduced from Birkbeck & Kruczkowski, 2015)

By using Building for Life 12 as a tool throughout the design process, you can demonstrate compliance with the National Planning Policy Framework and Planning Practice Guidance

Building For Life 12 Question	Links with the National Planning Policy Framework (2012)	Links with Planning Practice Policy Guidance (2014)*
Integrating into the neighbourhood		
1. Connections	9, 41, 61, 75	006, 008, 012, 015, 022
2. Facilities and services	38, 58, 70, 73	006, 014, 015, 017
3. Public transport	9, 17, 35	012, 014, 022
4. Meeting local housing requirements	9, 47, 50	014, 015, 017
Creating a place		
5. Character	17, 56, 58, 60, 64	006, 007, 015, 020, 023
6. Working with the site and its context	9, 10, 17, 31, 51, 58, 59, 118	002, 007, 012, 020, 023
7. Creating well defined streets and spaces	58	008, 012, 021, 023
8. Easy to find your way around	58	022
Street and home		
9. Streets for all	35, 58, 69	006, 008, 012, 022, 042
10. Car parking	39, 58	010, 040
11. Public and private space	57, 58, 69	006, 007, 009, 010, 015, 016, 018
12. External storage and amenity	58	040

Generally:
NPPF: 63, 56 – 58, 63, 64
PPG*: 001, 004, 005, 029, 031 – 038

(BfL12 is designed to be used to support consultation and community participation. It can also be used to guide masterplans, design codes, frame pre-application discussions and Design Reviews, structure Design and Access Statements, support local decision making and if necessary justify conditions relating to detailed aspects of design, such as materials).

*paragraph references within 'Design' guidance category.

Credit: Kruczkowski, S

7.1.2. Local planning

Local planning policy also plays a key role in influencing design. Indeed, some national planning policy explicitly says that it is more appropriate to determined design policy and guidance at the local level (DCLG, 2017). A review of local planning policy was beyond the scope of this exercise (this limitation is discussed further in the conclusion). At the local level, neighbourhood plans and community-led design codes can also have an important role in shaping design.

7.1.3. Planning guidance

National and local guidance are also key ways to influence design. We reviewed a number of pieces of national guidance as part of this review (DCLG, 2014; Scottish Government, 2013). There are many types of guidance in each country and each represents an opportunity to feed in evidence on design value. For example, in Scotland, guidance may include design frameworks, development briefs, master plans for a specific site, design guides or design statements (Scottish Government, 2014).

A large number of examples of local planning guidance were identified in our original search for grey literature. As intimated above, we decided to exclude them from this review because including them would have demanded too much resource. However, they may be an interesting focus for future research on design value.

7.1.4. Standards

Housing designers have to comply with an extensive range of standards and codes. Minimum standards are used to indicate prescriptive guidelines on minimum requirements for residential design, for example room sizes. Since standards often apply at the building level they are perhaps less relevant in this review; however, they do certainly operate at a neighbourhood scale. For example, with respect to standards on the total amount of units in an area (CABE, 2010b). Technical standards may also come from outside Government, for example from the International Standards Organisation (ISO) (APPG BE).

Carmona and De Magalhães (2009) emphasise the role of standards for assessing urban space quality. Starting from a dictionary definition of standards, they define standards as tools that provide threshold levels, establish fixed and recognised values, require conformity, and provide a basis for judgement. A report from CABE also presented the idea of using minimum standards for site layouts and home design as a key way to improve the design of new housing areas (CABE, 2010a). Carmona and De Magalhães (2009) also highlight the dilemma of using standards, asking the question: "are standards about establishing levels of excellence, or simply the minimum acceptable norms; in other words, are they a safety net or a springboard to excellence?" (p. 520).

Some of the sources we reviewed suggest that standards and hard evidence may be closely linked. The development of standards can be a creative act based on professional judgment (Imrie and Street, 2009). While the subjective element of 'design value' makes it difficult to provide specific evidence, standards may be more likely to be introduced where the evidence is clearer. The evidence base for the Greater London Authority's Housing Design Standards (GLA, 2010), for example, is mostly made up of evidence on technical standards.

7.1.5. Other tools used to inform policy and guidance

Tools produced by non-governmental actors also have a major influence on neighbourhood design, and attempt to base themselves on the best evidence. We have discussed Building for Life in the latter half of this report. We also identified several other sources, for example Urban Design Lessons (HCA, 2014) and ***The Councillors Guide to Urban Design*** (CABE, 2003a). BREEAM highlight the potential influence of these tools on local policy, by presenting their Communities tool as "an internationally recognised set of outcomes that the planning authority can use to define sustainable development at the neighbourhood scale" (BREEAM, 2018). The English National Planning Policy Framework advises that local authorities should identify and use tools like these (MHCLG, 2018, p.129).

7.2. Where to promote design value in practice

As discussed in Section 2.3, at least part of design value can be found in good design practice. Therefore, understanding how design value is promoted in practice is key to understanding where evidence is needed, what kind of evidence is needed, and for whom. The sources we reviewed highlighted several points through the development process at which design value could be promoted. Each of these represent another potential way for evidence on design value to have an impact.

7.2.1. Involving well-qualified professionals and providing training

Many of the sources we reviewed highlighted the importance of having suitably skilled individuals making decisions about design (Jenkins et al., 2008). This means both valuing the expertise of specialists and seeking to improve the general level of skills for practitioners engaging with design (Design Council, 2017; Wheeler et al., 2014).. As discussed in 7.2.5, resource constraints challenge the ability of built environment professionals to deliver quality design (White

2015).

Given that there is also a need for non-experts to be involved, there was also a widespread call for more and better training for those making decisions about design (HCA, 2010; HM Government, 2011; APPG BE, 2016). Several sources emphasise that local authority councillors, in particular, need this training (CABE 2003a; Building for Life, 2005). Without an evidence base on what works and a paucity of post occupancy evaluation decisions about design value, reliance largely rests on professional judgment (Wheeler, 2014, p. 35).

7.2.2. Promoting proper community participation

Early, consistent and realistic consultation with key stakeholders and the local community was seen as a key way of promoting design (MHCLG, 2018, p. 127; Welsh Government, 2017). This applies both when pursuing major developments and when developing development plan documents. This is particularly important since there can be high divergence in perceptions of design value between professionals and the public (Wheeler et al., 2014).

7.2.3. Influencing public procurement

Public authorities, especially local authorities, were seen as having an important influence through their own engagement with residential development. As the LGA (2015, p.53) notes: "Everyone who makes policy, shapes opinion, sets budgets, makes decisions, selects designers, writes briefs or assesses proposals can play a part in raising design standards". As commissioners of housing development, they can choose architects and contractors based on evidence of design quality and can set high standards in briefs (Welsh Government, 2011). They can also use their position as landowners to promote high design quality on housing developments using that land (HCA, 2010).

Several sources highlighted public procurement as a key stage at which to embed design value (Farrell et l., 2014; Scottish Government, 2013b; Wheeler, 2014). The recent CIC report *Procuring for Value* foregrounds the importance of social value for the building industry. Indeed it recommends that "[t]o capture the maximum benefit that projects or programmes can achieve, the definition of Value must be expanded" to include areas such as design quality and social value (Bentley, 2018, p.15). This was also raised during our stakeholder review event, where attendees raised other examples including the Scottish Circular Procurement Strategy (Scottish Government, 2016).

Samuel (2018a) reports that 'traditional' contracts where the architect leads the team and ensures that the design vision is fulfilled are now rarely used. Very often architects and urban designers are now employed solely for the planning stage with the responsibility for the execution of the design resting with the contractor. The client can be at some distance from the process. A result can be a lack of stewardship for the design vision with design quality being significantly eroded during the 'Value Management' phase (Ibid, 2018).

7.2.4. Early design stage

As discussed at various points in this review, design reviews were seen as a key way to embed design value (DCfW, 2018; HoL NPBE, 2016; Farrell et al., 2014). Good practice guides were also seen as a route to influencing design at the early design stage (Architecture & Design Scotland, 2018; Gulliver and Tolson, 2013). Several sources also supported the use of design codes developed through engagement with local communities (DCLG, 2017, Farrell et al., 2014).

7.2.5. Planning application stage

The planning system plays a key role in influencing design, and the application stage is an important time for any development. Many of the sources we reviewed were designed to guide the application decision-making process. At this stage, local planning authorities can influence design through pre-application consultation, rejecting applications with poor design, planning conditions, and other design advice and review arrangements (Birkbeck and Kruczkowski, 2015; MHCLG, 2018; LGA et al., 2015). Several sources also noted that resource challenges were impacting the ability of local planning authorities to embed design value (Design Council, 2017; HoL NPBE, 2016). As the Farrell review puts

it, the discretionary planning system is a great way to embed design value, but "we have also deprived society of the resources to deal with and manage this very labour-consuming approach" (Farrell et al., 2014, p71).

7.2.6. Build stage

Design value can be eroded significantly through value management during the technical design stage. This is the process by which elements of the building design are removed or exchanged for cheaper alternatives in order to hit budget targets. Some forms of building contract (for example Design and Build) mean that there is little continuity of responsibility for achieving the design vision, the result often being a loss of quality (Samuel, 2018a). Design value can also be influenced during the build stage, for example through the use of design risk reviews (Welsh Government, 2011) and effective project management (OGC, 2007).

7.2.7. Monitoring and assessment after completion

Finally, design can be promoted through a better system of monitoring new housing developments after completion, for example through greater use of Post Occupancy Evaluation (MHCLG, 2018; APPG BE, 2016); OGC 2007). This also goes for wider scale monitoring, for example local authorities in Scotland are assessed on design performance through the Planning Performance Framework Assessment (Scottish Government, 2018)

7.3. Section Summary

To influence design it is crucial to understand the different actors and processes involved in the complex process of planning and designing new neighbourhoods.

A range of actors make decisions about design, including national policymakers, local government officers and councillors, national and local design bodies and consultancies, and the development industry. The public can also influence design, either by feeding into the planning process (e.g. through local decisions and design codes), or by setting expectations of elected officials.

Central and local government policy and guidance is a key way in which design value can influence practice. Design value can also be promoted through: the effective deployment of high-quality design professionals, community consultation; procurement; codes, regulations and guidance; design review; the planning application stage; effective project management as well as monitoring and assessment after completion.

8. Conclusions

This review has used academic and grey literature on design value to summarise how the concept is understood, measured and promoted in a neighbourhood context. This is an essential first step towards developing an accessible evidence base on design value which can ultimately help promote well-designed neighbourhoods.

The search methodology has captured a wide range of perspectives on neighbourhood design value, with neighbourhood defined provisionally as a conglomeration of over 10 homes. It is not, however, a comprehensive account of the design value discourse and has significant gaps, notably in technical design and the procurement of value within construction teams.

8.1. A working definition of design value?

Until the impact of design value is better understood, it is necessary to develop a working definition of design value that can be used by the profession and policy makers for the purpose of benchmarking, maintaining standards and institutional learning. Although not an immediate focus of our review, we would argue that it is also important that design value be included in cost benefit analysis, economic modelling and the digital programmes that will increasingly take over the design of the built environment. Definitions are necessary at this point in time to 'externalise' the importance of design value in the context of a policy landscape that places considerable value on 'well-designed places' and 'good design'. Bowker and Leigh Star note that orderings are always culturally and temporally specific and therefore need to be constantly under review (1999, p. 32).

Based on the review above we suggest that the following points provide a working definition of design value at a neighbourhood scale:

- A neighbourhood focus goes beyond the narrow strictures of a building or site, but also limits the focus to an area which can be influenced by the design of individual sites.
- Design value can be found in both processes and outcomes.
- Design value has social, economic and environmental dimensions (which also encompass further sub-dimensions such as culture, use, etc.). The three dimensions must all be taken into account, with care not to be biased towards those which can be measured most easily.
- Design value is at least in part subjective, and accordingly we should draw on a variety of types of evidence, and the views of a range of stakeholders including crucially the users of housing.

8.2. Developing an accessible evidence base on design value

The lack of measurement tools for design value and analysis of design value metrics makes it challenging to develop a comprehensive evidence base on design value. We nevertheless argue that the following steps would provide a useful start:

- A review of existing evidence on how design influences each of the metrics described in Chapter 5, and any other key metrics which emerge from that review.
- The development of a robust valuation method(s), possibly with economic valuation including social return on investment, and a way of assessing how well developments contribute to national and local social objectives.

Reflecting on the evidence collected in this review, we contend that leadership is needed to ensure that better evidence is collected on design value. This might include promoting:

- The wider use of pre- and post-development design review and recorded outcomes from design review processes.
- The standardisation and collection of currently ad-hoc records of design value by practitioners. Possibly by increased and improved use of digital technology.
- The much wider use of post-occupancy evaluation (POE) to greatly increase understanding of user experience. We would argue that POE is central to the development of an accessible evidence base on design value. To widen the use of POE we argue that it could be incentivised through government procurement processes as, to date, the private sector has conspicuously failed to deliver POE.
- A scholarly focus on conducting wider audits of multiple housing neighbourhoods in contexts where design is both a guiding principle (i.e. perceived best practice) and on more standardised new housing development.

Robust systems and methodologies are needed to allow for the collection of such data and its translation into guidance and learning. It will also be important to understand who the evidence is aimed at and how best to reach them

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12. APPENDIX 3 – Search strategy

12.1. Grey Literature Websites:

- Ministry of Housing, Communities & Local Government (DCLG)
- https://www.gov.uk/government/organisations/ministry-of-housing-communities-and-local-government
- Design Council https://www.designcouncil.org.uk/
- Commission for Architecture and the Built Environment (CABE) https://data.gov.uk/publisher/commission-for-architecture-and-the-built-environment
- Royal Town Planning Institute (RTPI) http://www.rtpi.org.uk
- Royal Institute of British Architects (RIBA) https://www.architecture.com
- Royal Institution of Chartered Surveyors (RICS) https://www.rics.org/uk/
- Chartered Institute of Housing (CIH) http://www.cih.org
- National House Builders Confederation (NHBC) http://www.nhbc.co.uk
- Joseph Rowntree Foundation https://www.jrf.org.uk/
- Architecture & Design Scotland https://www.ads.org.uk/
- The UK Government, Scottish Government and Welsh Government publications (www.gov.uk/government) (www.gov.scot) (www.gov.wales)
- UK Parliament publications (e.g. select committees, APPGs) (www.publications.parliament.uk)

12.2. Reviewed Journals

- Urban Studies
- Int. Journal of Urban and Regional Research
- Environment and Planning A
- Environment and Planning B
- Environment and Planning D
- Journal of Urbanism
- Urban Design International
- Journal of Urban Design

- Cities
- CITY
- Building Research and Information
- Housing Studies
- Housing Theory and Society
- Housing and the Built Environment
- Town Planning Review
- Planning Theory and Practice
- Home Cultures

12.3. Search Protocol

Keywords:

design quality / design value / value of design / value of urban design / value added by urban design / value added by design / social value / economic value / cultural value / environmental value/ social value of design / economic value of design / cultural value of design / environmental value of design / social value of urban design / economic value of urban design / cultural value of urban design / environmental value of urban design / development quality

Queries:

(keywords) AND (neighbourhood OR building)

(keywords) AND (housing OR house OR home OR residential OR dwelling)

(keywords) AND (urban space OR built environment OR urban design)

(keywords) AND (wellbeing OR health OR poverty OR inequality OR employment OR inclusion OR exclusion OR cohesion OR segregation OR deprivation)

(keywords) AND ("real estate" OR construction OR "real-estate" OR regeneration OR redevelopment)

12.4. Inclusion-Exclusion Criteria

Inclusion-Exclusion Criteria		
First phase inclusion/exclusion criteria (To be applied on the initial database which is compiled by title/abstract/keyword queries on the search mediums (indexes, journals, etc))	Focused, but	The aim of this phase is narrowing down to the related sources and creating a
Publication date range: Since 1998		
Language: English		
Country / geographical focus: UK		
Thematic fit/relevance : Sources directly engaging with design value In this phase, to include any source engaging with design value without excluding any scale, intervention or detail.		
Second phase inclusion/exclusion criteria To be applied on the full-texts of the sources in the main database)	Systematic and informed	The aim of this phase is to review existing evidence according to the agreed inclusion-exclusion terms.
Publication date range: Same as in the first round		
Country / geographical focus: Same as in the first round		
Thematic fit/relevance: Include: 1. Sources directly engaging with design value in terms of social, economic and cultural value 2. Sources engaging with design value in neighbourhood and buildings (houses, homes, flats, dwellings, residential units) 3. Sources engaging with interactions of users with urban space (incl neighbourhood and buildings) Exclude: 1. Sources focusing on technical aspects such as solely materials, structural aspects of buildings, technology, energy, etc.		

Inclusion-Exclusion Criteria		
Participants characteristics: Not Applicable (no exclusion based on participant characteristics)		
Research setting: Not Applicable (no exclusion based on participant characteristics)		
Methods: Not Applicable (no exclusion based on participant characteristics)		
Some validity thresholds and/or relevance for exclusions and/or weighting, e.g.: Articles published by robust journals • Assessment based on the methodology of the sources from grey literature - Do not exclude directly on this matter, however, rate the grey literature, then evaluate them accordingly.		