

# The social impact of housing providers

Daniel Fujiwara



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## About HACT

Founded in 1960, but relaunched in 2012 with funding and support from a range of leading housing providers, HACT is a charity, social enterprise and industry-focused think/do tank established by the housing association sector. We seek to influence and innovate in ways which help all housing providers deliver more effectively within their communities.

HACT believes that the provision of housing is about more than just bricks and mortar – that housing providers are at their most successful when they focus on the social value they create, engage with and invest in their communities and actively seek to identify and meet the needs of those who live in them.

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## About the author

**Daniel Fujiwara** is an economist at the London School of Economics and Political Science. His research focuses on policy evaluation methods and techniques for valuing non-market goods. He has recently published guidelines on valuation for the UK Government, including an update to the HM Treasury Green Book manual. Daniel has researched and estimated the value of a wide range of non-market goods and services, including employment, health, volunteering and reduction in crime.

Daniel was previously head of cost-benefit analysis at the Department for Work and Pensions and senior economist in the Government Economic Service. He is currently scientific advisor to the SROI Network and works with a number of OECD governments on policy evaluation.

## Acknowledgements

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**The SROI Network**  
Accounting for value

# Preface

As the housing providers move from an era of top down regulation and directed investment towards greater autonomy and diversity of approach, defining social purpose and measuring and evidencing the extent to which they are achieving impact are becoming increasingly important.

Effective measurement of the impact of housing provider investment is critical to assessing the extent to which need is being met, and ensuring value for money. It also provides a firm base from which to meet remaining regulatory requirements, in particular HCA regulatory standards in relation to value for money and local area cooperation; engage with partners at a local level; and – from January 2013 – meet new and emerging demands arising from implementation of the Public Services (Social Value) Act 2012.

Most importantly, it provides a basis from which housing providers, as ethos driven, not-for-profit bodies seeking both to provide homes and deliver positive social impact, can assess the extent to which they are succeeding in meeting their own organisational missions.

However, whilst social impact is of growing importance to housing providers, there remains a lack of effective tools and robust methodologies capable of capturing the full social value generated by the housing association sector. HACT/TSRC research<sup>1</sup> carried out in Spring 2012 showed considerable fragmentation of approaches, with no common standards, methodologies or tools being adopted, or clearly meeting the full range of housing provider needs.

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<sup>1</sup> Community investment for social housing organisations: measuring the impact, Vanessa Wilkes and Professor David Mullins, March 2012.

Particular challenges have included a historic focus on post hoc evaluatory, justificatory and audit-based methodologies, reflecting historic regulatory demands, rather than the current business needs; and a concentration on process and outcome recording rather than the generation of metrics with genuine evidential value.

Notably, in almost all work carried out to date, social value has tended to be treated as an issue for community investment teams, rather than whole organisations. This separation of community investment from housing/asset focused expenditure for the purpose of social impact reporting significantly limits its value, effectively ignoring the social value created by 90-95% of most housing providers' activities in expenditure terms. At a time of increased competition for resources, current approaches to social impact measurement in the housing sector fail to provide Boards and senior teams with the information they need to balance competing demands for investment across their businesses.

In summer 2012, with support from Plus Dane Group and Legal & General, HACT sought to establish robust methodologies and metrics for more effectively evidencing the social impact of housing providers. This research has been carried out by Daniel Fujiwara, a leading academic in the field of wellbeing valuation, who has been a principal advisor to DWP, HM Treasury, BIS and Cabinet Office in the development of their social impact valuation methodology.

Using valuation methodologies fully consistent with HM Treasury's Green Book, it demonstrates how wellbeing-

based methodologies can address problems inherent in earlier approaches to understanding and reporting on the social value of housing providers' activities, and drive significant insights into the ways in which every part of their businesses – new build, asset management and maintenance and community investment – can drive social value creation. This then provides a starting point from which the social, financial and economic returns on each of these elements can be balanced and assessed. The research does not – at this stage - provide a comprehensive set of social impact metrics for the social housing sector; this will be the subject of further research during 2013, alongside work to build tools for analysing, modeling and reporting the social value created by individual providers.

As a not-for-profit think-tank/do-tank, funded and supported by the housing association sector, HACT is excited to have had the opportunity to commission this research, and hugely grateful to Legal & General and Plus Dane Group for enabling it take place.

HACT is currently seeking funders for further, more detailed phases of the research initiated by this report. These are detailed at Part E of this paper. We would be delighted to engage with those with an interest in participating in and supporting this work.

**Matt Leach**  
Chief Executive Officer  
HACT

# Foreword

The recent financial crisis has left many established investment paradigms in tatters, and yet provided fruitful ground for those who wish to seize this opportunity to reprioritise the purpose and values of the financial industry. The single-handed and relentless pursuit of short-term financial gain has been discredited and widely disparaged, but in turn governments have struggled to reassert social priorities on the world of finance. The response, perhaps symbolised by the *Occupy* movement, has reflected a desire expressed by many of our clients: that those stewarding the pensions and investments of others look more deeply than financial returns to assess how they are best able to deploy that capital to benefit society, in the fulfilment of their fiduciary duty. For an institution to have a Corporate Social Responsibility department tacked on is no longer enough - this requires social impact to be evaluated by every investment professional, in every investment decision.

This growing movement needs tools to inform its decision making. Whilst it should be self-evident that investing into a partnership with a Housing Association to fund housing is highly socially beneficial, in a world that needs objective measures to assess investment

opportunities, a new tool set is required for those who view capital as more than simply a means to generate a financial return. And that is why Legal & General is proud to both support and be associated with this initiative.

We trust that this is the start of a journey that will provide greater clarity on how capital can be more effectively used to *both* generate the returns our investors need and maximise its return to society. This journey has already been a fascinating one, with some surprising answers emerging. We have new-found partners alongside us, in HACT and PlusDane, and it seems only right that we work with leaders in this field, such as Daniel Fujiwara, in our desire to be on the cutting edge of this development work. I look forward to applying the lessons learned to our portfolios, investments, and partnerships in the future.

**Pete Gladwell**

Head of Public Sector Partnerships  
L&G Property

# Introduction

Housing conditions, quality and tenure have far-reaching impacts on us and the quality of our lives. A wide-ranging body of research has shown evidence that housing factors can impact on a range of outcomes including health, wellbeing, worklessness and other adverse life outcomes. Furthermore, housing associations are increasingly getting involved in the delivery of a huge range of other services which support and add value to the neighbourhoods where they work. This work is for the whole community, not just their own residents (National Housing Federation, 2012). This includes helping people into work, learning and skills programmes and health and wellbeing projects.

Ultimately, it is important to know the impacts that housing associations have on society (whether through improved housing or non-housing activities) and in this sense we focus on the impacts of housing on people's wellbeing or welfare (but we stick with the term wellbeing here). Wellbeing can be seen as the ultimate intrinsic good – it is ultimately what matters to us and in this framework anything is only important or valuable to us because it impacts on our wellbeing. Thus, when we think about social impact, what we ultimately want to know is how something impacts on the wellbeing of individuals that make up society. This is the standard approach to social impact measurement as set out in welfare economic theory and as employed by the OECD governments and aligns well with the stated objectives of housing associations (National Housing Federation, 2008, p.1).

The social impact and the effectiveness of different policies and interventions are often measured using tools such as cost-

benefit analysis (CBA) and social return on investment (SROI). These methods assess the worthiness of an intervention based on the generated benefits compared to the costs of implementation. These benefits and costs are measured in terms of their implications for societal wellbeing<sup>2</sup> and if the benefits outweigh the costs then this signals that the policy should be undertaken. For SROI and CBA, therefore, the overall benefits from perspective of societal wellbeing need to be monetised or valued so that they can be compared to the costs in the same 'currency'; monetisation allows us to assess whether an intervention can make society better-off in terms of wellbeing. It is important to make clear that the theory and practice of valuation as set out in welfare economics does not in anyway attempt to 'degrade' or 'commercialise' non-financial outcomes. Instead it simply attempts to measure the wellbeing impact of an outcome on a monetary scale so that it can be compared with the costs which are usually already in financial terms. Indeed the scale need not be a monetary one at all – it would be possible to convert financial costs in to wellbeing metrics and compare them to non-financial benefits in wellbeing terms. Here though we follow convention and use a monetary scale so that figures derived in this report can be used directly in CBA and SROI analyses. Please see Part A for further discussion.

Other non-monetisation assessment tools do exist; they do not require monetisation of the outcomes of an intervention but their applicability is more restricted. The main technique is cost-effectiveness analysis (CEA), which looks at the attainment of a single outcome measure

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<sup>2</sup> In welfare economics welfare is synonymous with the term 'utility'.



in relation to the costs of the policy. The outcome measure in CEA should of course align with some notion of societal wellbeing or welfare and in this sense the technique has direct links back to CBA and SROI. For example, the outcome measure might be health measured by the number of doctor visits and all policies would be compared against this output measure. The difference between SROI and CBA and non-monetised techniques such as CEA is that CEA can only be performed when there is a clear single outcome measure and when there are more than one policies to compare. CEA cannot tell us whether a single stand-alone policy is worthy of doing because there is no way to compare monetary costs against a non-monetary outcome like doctor visits. In a nutshell, CEA allows for relative assessment of policies and interventions, whereas SROI and CBA allows for both relative and absolute assessments of policies and interventions, the latter referring to the fact that CBA and SROI can tell us whether a single stand-alone project is worthy of doing since the benefits and costs are demonstrated in the same metric.

This paper looks at some of the ways we can measure the social impact of housing association (HA) activities within this framework. In this paper we monetise the value of a number of factors related to housing quality and housing tenure and we also look at the social value generated by non-housing projects. In this sense, results from this research can be used in both CBA and SROI. We review the previous literature on housing and look at a wide range of outcomes related to housing factors using the British Household Panel Survey (BHPS), a large nationally representative UK dataset.

It is important to note that comparing these values on their own to the costs of programme interventions gives us insight in to one form of assessment – namely an assessment of the programme’s

worthiness in terms of its impacts on societal welfare or wellbeing. As stated above this concept lies at the heart of CBA and other modern techniques such as SROI.

There may, however, be non-welfare related outcomes or processes that are important to housing associations such as providing a minimum standard of housing quality (whether this impacts on tenants’ wellbeing or not)<sup>3</sup>.

Consequentialist policy assessment techniques like CBA and SROI (that look at the outcomes of an intervention usually in terms of social welfare) cannot be applied to the assessment of rights-based (deontological) policy evaluation methods (see Nussbaum, 2000) and so some precaution should be applied when using the outputs from this study to inform policy decisions. We will discuss this in more detail in the final section of the report.

The paper is divided into four main parts. Part A looks at the value of different aspects of housing quality and housing tenure. To do so, we need to get an understanding of the impact that housing has on wellbeing and so we use wellbeing measures in the BHPS to this end. We derive values for different indicators of housing quality, such as the value associated with the lack of neighbour noise or with a lack of problems related to damp and condensation. And we also derive the values associated with HA homes relative to local authority (LA) and private rental homes in order to assess the role and impacts that housing associations may have in society.

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<sup>3</sup> Note that there are also a number approaches to impact evaluation – some of them used within the housing sector - which seek to gather and aggregate qualitative evidence of individualized life journeys and experiences.

In Part B we focus on non-housing interventions<sup>4</sup>. We assess the value attached to non-housing outcomes that are increasingly the focus of HA activity. We will derive some initial values related to non-housing activities including employment, education and health interventions. This will provide a guide as to the social value generated by non-housing activities.

Part C provides a framework and examples of how the results and values derived in Parts A and B can be used to inform policy decisions for housing associations.

Part D provides concluding remarks to the report and Part E makes suggestions for future research and work in the area of the social value of housing.

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<sup>4</sup> We will use the term 'intervention' to mean any type of project, programme, policy or change made by an HA.

# Part A: The Value of Housing

## A1. The Theory of Valuation

The welfare economic theory on valuation that underpins CBA and SROI analysis is that developed by John Hicks and others (Hicks & Allen, 1934). This states that the value of a good or service is subjective and should reflect the utility that people derive from it, where utility refers to the notion of underlying welfare or wellbeing. In other words, a monetary value should reflect the change in an individual's utility or wellbeing due to experiencing or consuming of the good. Technically value is measured as compensating or equivalent surplus, which we will not cover here, but suffice to say that these terms essentially relate to notions of willingness to pay (WTP) or accept (WTA).

Value can be measured using a number of techniques that rely on different definitions of wellbeing. The standard philosophical division of theories of wellbeing derives three distinct categories:

- i. **Desire satisfaction accounts** measure wellbeing in terms of the extent to which people's preferences are satisfied.
- ii. **Mental state and subjective wellbeing accounts** measure wellbeing using people's self-reports such as their self-reported levels of happiness or life satisfaction.
- iii. **Objective list accounts** use predefined notions of wellbeing such as literacy rates, freedom, mortality rates etc to measure a wellbeing. In this sense, this third category is distinct from the other two in that the first two accounts allow the individual to define wellbeing for themselves –

i.e. the first two accounts are subjective.

Valuation techniques rely on desire satisfaction and mental state accounts of wellbeing. There are three valuation techniques:

- i. **Stated preference methods.** These are surveys which ask people to directly state their WTP or WTA for a good. Here in the context of housing we might ask people their WTP for a reduction in rot and damp problems for example.
- ii. **Revealed preference methods.** This method looks at market data to derive values. For housing we may see that for a given type of house, those without problems related to, say, rot and local environment will sell for high prices and hence we could attribute this price difference to the rot and local environment problems if we can control for all other differences between houses.
- iii. **Wellbeing valuation method.** In terms of housing, this method looks directly at how people's self-reports of their levels of wellbeing are affected by housing conditions and attaches a monetary value to this impact.

In this paper we shall rely on the wellbeing valuation (WV) method to value housing factors. This method is relatively new and has been gaining popularity in the academic literature and is now recognised by the UK HM Treasury Green Book guidance on policy evaluation (Fujiwara & Campbell, 2011). Therefore, we shall focus on an assessment of how housing impacts on people's wellbeing

and then we will monetise these impacts. Interestingly, the dataset that we will use also contains some data on people's preferences for housing so we shall look at this data too to validate our results.

## A2. Wellbeing and Housing

### A2.1. Literature review

The approach for the literature review was to use the Google Scholar and EBSCO Host databases using a number of different combinations of keywords, such as '*housing & wellbeing*'; '*housing & well-being*'; '*social housing & life satisfaction*'; etc

Ferrer-i-Carbonell and Gowdy (2005) explore the relationship between an individual's environmental attitudes and their wellbeing using the BHPS dataset. Using ordered probit models, the authors find that those living in a household with pollution, grime or other objective environmental problems with their housing have reduced life satisfaction.

Nakazato et al (2011) examine life satisfaction and housing satisfaction before and after moving to a better quality house using the German Socio-Economic Panel dataset. They find that moving to a better home is not related to life satisfaction citing two reasons. The first is the suggestion that housing is not an important aspect of well-being (which echoes the findings of Biswas-Diener and Diener (2006)). The second is that any well-being gains from moving to improved housing are matched by the additional costs, suggesting that moving house may be irrational from the perspective of trying to improve life satisfaction.

The link between home ownership versus those in rented accommodation and wellbeing has also been a subject of research in the literature. Tennant et al (2007) explore the link using the Warwick-Edinburgh Mental Wellbeing Scale

(WEMWBS). Sampling 354 undergraduate and postgraduate students they find that homeowners in the sample had higher scores. Since there were no controls, it could be a variety of reasons that explains these findings, rather than necessarily a causal link.

Brereton et al (2008) explore the link between an individual's subjective wellbeing and the geography and environment within their proximity. Using the Urban Institute Ireland National Survey on Quality of Life survey of 1500 men and women over 18 in Ireland as well as Geographical Information Systems - a tool that allows the visual representation of spatial data - they find using regression analysis that living in public housing has a negative relationship with life satisfaction after controlling for income and a range of socio-economic and environmental factors.

In several reviews of the factors associated with subjective well-being it is suggested that living in an area perceived as deprived is detrimental to life satisfaction (Dolan et al (2008), Abraham et al (2010)). Related to this, Lelkes (2006) finds that those reporting living in an unsafe area have lower average life satisfaction scores using the European Social Survey after controlling for a range of personal and socio-economic factors. In this same study Lelkes later uses data from a nationally representative sample of Hungarian households. Defining housing problems as having dampness, noise, pollution or other problems she finds that there is a negative relationship between those living in houses with either 'some problems' or 'severe problems' and life satisfaction in data from in both 1992 and 1998.

## **A2.2. Analysis**

We start by assessing the impacts of different housing factors and conditions on wellbeing. We use three different measures of wellbeing. First, we look at how housing factors affect people's preferences for housing (desire satisfaction account). We then look at two different subjective wellbeing accounts: life satisfaction and happiness and look at their associations with housing. The life satisfaction measure will then be used to derive monetary values for housing quality in line with welfare economic theory.

Data comes from the British Household Panel Survey (BHPS), which is a nationally representative sample of over 10,000 adult individuals conducted between September and December of each year from 1991. Respondents are interviewed in successive waves, and all adult members of a household are interviewed.

The life satisfaction question was added to the BHPS in 1997. Individuals are asked '*How dissatisfied or satisfied are you with your life overall?*' and then asked to rate their level of satisfaction on a scale of 1 (not satisfied at all) to 7 (completely satisfied). For happiness we use the General Health Questionnaire (GHQ) happiness score which is on a scale of 1 to 4. Wellbeing measures such as these have been validated in the field and are regularly used in academic publications (see Fujiwara and Campbell (2011) for details).

We look at all housing factors that are available in the BHPS data (12 in total):

- Lack of space
- Garden
- Neighbour noise
- Street noise
- Poor lighting
- Bad heating
- Condensation
- Leaks
- Damp

- Rot
- Vandalism
- Local environment (pollution)

These housing factors align well with the United Nation's definition of adequate housing<sup>5</sup> and housing quality variables used in the literature to date (eg, Barnes et al. (2010)). We also look at housing tenure type. Descriptive statistics for the housing variables can be presented in Table 1.

It is worth noting that only three of these variables – vandalism, street noise and local environment – relate to wider concepts of the quality of the local built environment and/or public realm or local relationships, which may – nevertheless contribute to life satisfaction and experience.

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<sup>5</sup> The Second United Nations Conference on Human Settlements (HABITAT II). Istanbul, 3-14 June 1996.

**Table 1. Descriptive statistics of housing variables**

Variable	Description
<i>log (income)</i>	Log of equivalised household income
<i>married</i>	1 = married; 0 = not married
<i>religious</i>	1 = reports religion; 0 = no religion
<i>high education</i>	1 = Qualification of GCSEs and above; 0 = Less than GCSE qualifications
<i>good health</i>	1 = if individual reports health to be 4 or 5 on 1-5 scale
<i>male</i>	1 = male; 0 = female
<i>employed</i>	1 = employed; 0 = not working
<i>frequency of meet friends</i>	1 = if meets friends at least once or twice per month; 0 = if meets friends less than once per month
<i>London</i>	1 = lives in London; 0 = otherwise
<i>children</i>	Number of children
<i>satisfied with local area</i>	1 = if 'satisfied' or 'very satisfied' with local area as place to live; 0 = if otherwise
<i>drinking</i>	How often drinks alcohol on scale of 1-5 (1 = 'never'; 5 = 'everyday')
<i>smoker</i>	1 = smokes; 0 = does not smoke
<i>non-white</i>	1 = non-white ethnic group; 0 = white
<i>volunteer</i>	1= if volunteers; 0 = otherwise
<i>retired</i>	1 = retired; 0 = otherwise
<i>student</i>	1 = FT student; 0 = otherwise
<i>age</i>	age of individual
<i>high education</i>	1 = if individual has degree or higher; 0 =otherwise
<i>married</i>	1 = married; 0 =otherwise
<i>divorced</i>	1 = divorced; 0 =otherwise
<i>widowed</i>	1 = widowed; 0 =otherwise
<i>separated</i>	1 = separated; 0 =otherwise
<i>winter interview</i>	1 = if interview conducted in winter; 0 = otherwise
<i>carer</i>	1 = if individual has caring duties; 0 = otherwise
<i>non-res carer</i>	1 = if individual has caring duties at home; 0 = otherwise
<i>no of children</i>	Number of dependent children
<i>home owner</i>	1 = if owns home; 0 = otherwise
<i>garden</i>	1 = has garden; 0 = otherwise
<i>lack space</i>	1 = if reports lack of space; 0 = otherwise
<i>neighbour noise</i>	1 = if reports neighbour noise problem; 0 = otherwise
<i>street noise</i>	1 = if reports neighbour street problem; 0 = otherwise
<i>poor lighting</i>	1 = if reports poor lighting; 0 = otherwise
<i>bad heating</i>	1 = if reports heating problem; 0 = otherwise
<i>condensation</i>	1 = if reports condensation; 0 = otherwise
<i>leaks</i>	1 = if home has leaks; 0 = otherwise
<i>damp</i>	1 = if home has damp; 0 = otherwise
<i>rot</i>	1 = if home has rot; 0 = otherwise
<i>vandalism</i>	1 = if reports vandalism problems; 0 = otherwise
<i>pollution</i>	1 = if reports local area pollution problems; 0 = otherwise
<i>housing costs</i>	Annual housing costs
<i>housing problems</i>	Sum of 6 main housing quality problems
<i>home owner</i>	1 = if owns home; 0 = otherwise
<i>shel accom</i>	1 = if in sheltered accommodation; 0 =otherwise
<i>shared ownshp</i>	1 = if shared ownership; 0 = otherwise
<i>LA</i>	1 = if lives in local authority home; 0 = otherwise
<i>HA</i>	1 = if lives in housing association home; 0 = otherwise
<i>housing satisfaction</i>	housing satisfaction on scale of 1 - 7
	<b>For Instrumental variable model</b>
<i>low education</i>	Converse of 'high education'
<i>unemployed</i>	Converse of 'employed'
<i>poor health</i>	Converse of 'good health'
<i>lottery win</i>	Annual lottery prize win amount

### A2.2.1. Preferences and housing

In the BHPS people are asked whether they are thinking about or would like to move home. We assess how the 12 housing indicators determine whether people want to move, we also include income in the model. Table 2 shows that all factors except problems with leaks are significant determinants of whether people want to move (counter-intuitively having leaks makes people less likely to want to move). In other words, these factors determine people's preferences for housing.

**Table 2. Housing preferences**

Dependent variable: Want to move house

Explanatory variable	Coefficient
log (income)	0.034* (0.019)
garden	-0.235*** (0.048)
lack space	0.737*** (0.027)
neighbour noise	0.653*** (0.034)
street noise	0.362*** (0.030)
poor lighting	0.107** (0.043)
bad heating	0.139*** (0.051)
condensation	0.191*** (0.035)
leaks	-0.139** (0.056)
damp	0.140*** (0.043)
rot	0.144*** (0.044)
vandalism	0.434*** (0.029)
pollution	0.206*** (0.043)
housing costs	-0.001*** (0.000)
N	66153

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Standard errors in parentheses. Fixed effects Logit model. Sample is restricted to those aged 18 and over.

The top five determinants of people wanting to move home are:

1. Lack of space
2. Neighbour noise
3. Local vandalism
4. Street noise
5. Having a garden

This is of interest as we will be able to correlate these findings with those from the wellbeing analysis and this will allow us to assess the validity of the wellbeing analysis. If impacts on wellbeing correlate well with the determinants of house moves, then this would suggest that in one sense our wellbeing analysis and models are picking up something significant as the findings relate back to actual behavior and choices.

### A2.2.2. Life satisfaction, happiness and housing

In Tables 3 and 4, we present a number of different life satisfaction and happiness models. As always, with non-experimental data (ie, when assignment or treatment has not been randomized) there are difficulties with deriving accurate causal estimates. We explored natural experiments, instrumental variables or other techniques such as regression discontinuity that allow us to get robust estimates with a full causal interpretation, but none were present/available in the BHPS dataset. We therefore, control for a standard set of determinants of wellbeing and also exploit the panel nature of the data using fixed effects in order to also control for time-invariant unobservables. In terms of explanatory variables we use guidelines set out in recent UK Government guidance (Fujiwara & Campbell, 2011) and include the following variables:

- Income
- Demographic factors
- Marital status
- Educational status
- Employment status



- Health status
- Housing and environmental conditions
- Number of children and other dependents (including caring duties)
- Geographic region
- Year

There may still, however, be some (time-varying) variables that we cannot control for and hence we must acknowledge that our estimates may be biased to some extent due to endogeneity of the housing variables. However, these are arguably the best methods available to us with the BHPS data, as is evidenced from the literature review they will generally provide more robust estimates than those found in the literature to date and they are statistical methods that are regularly used in high-profile academic journal publications. We shall discuss the robustness of the results in some more detail later on.

Table 3 presents three life satisfaction model variants. All models are run using ordinary least squares (OLS) with fixed effects. Ferrer-i-Carbonell and Frijters (2004) show that it makes little difference in wellbeing models whether one assumes cardinality or ordinality in the wellbeing variable and hence for ease of interpretation we use OLS. In general in all three models the size and direction of the coefficients on the explanatory variables are as we would expect and are in line with the wellbeing literature. Model 1 is the full model that includes all 12 housing variables and housing tenures variables. In ranked order the following variables impact negatively on life satisfaction:

1. Neighbour noise
- =. Damp
3. Poor lighting
4. No garden
5. Condensation
6. Rot
7. Local vandalism

All other housing variables are insignificant. In general there is no extra impact of housing tenure type over and above the impacts through housing quality, except for people in London. People in HA homes in London have higher life satisfaction than people in any other type of tenure in all three models even after controlling for housing quality. This suggests that over and above housing quality there is a wellbeing impact of being in an HA home for Londoners. This may be due to a number of reasons. It may be because of the large difference between private sector and social sector rents, leaving extra cash in the pocket for HA tenants in London compared to other areas. It may be due to a sense of stability offered by HA homes in London where private sector prices move quickly and tend to move upwards.



**Table 3. Housing and life satisfaction**

Dependent variable: Life satisfaction (1-7)

Explanatory variable	Model 1	Model 2	Model 3
	Coefficient	Coefficient	Coefficient
log (income)	0.024*** (0.006)	0.019*** (0.006)	0.024*** (0.006)
employed	0.080*** (0.012)	0.078*** (0.012)	0.080*** (0.012)
retired	0.193*** (0.018)	0.186*** (0.018)	0.193*** (0.018)
student	0.063*** (0.018)	0.062*** (0.017)	0.063*** (0.018)
age	-0.006 (0.011)	-0.003 (0.011)	-0.006 (0.011)
age2	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
high education	-0.086*** (0.030)	-0.078*** (0.029)	-0.086*** (0.030)
good health	0.319*** (0.008)	0.295*** (0.008)	0.319*** (0.008)
married	-0.008 (0.017)	-0.005 (0.017)	-0.008 (0.017)
divorced	-0.229*** (0.027)	-0.205*** (0.026)	-0.230*** (0.027)
widowed	-0.374*** (0.033)	-0.357*** (0.032)	-0.375*** (0.033)
separated	-0.420*** (0.031)	-0.394*** (0.030)	-0.420*** (0.031)
winter interview	-0.012 (0.008)	-0.016** (0.008)	-0.013 (0.008)
carer	-0.111*** (0.017)	-0.099*** (0.017)	-0.111*** (0.017)
non-res carer	0.021* (0.011)	0.015 (0.011)	0.021* (0.011)
no of children	-0.006 (0.007)	-0.004 (0.007)	-0.009 (0.008)
garden	0.032** (0.016)	-0.003 (0.015)	0.031** (0.016)
housing problems			-0.027*** (0.008)
housing problems*children			0.003 (0.002)
housing problems*age			0.000 (0.000)
lack space	-0.013 (0.009)	0.065*** (0.009)	
neighbour noise	-0.046*** (0.011)	0.004 (0.011)	
street noise	-0.008 (0.010)	0.012 (0.010)	
poor lighting	-0.045*** (0.014)	-0.024* (0.014)	
bad heating	0.008 (0.017)	0.041** (0.016)	
condensation	-0.028** (0.011)	-0.008 (0.011)	
leaks	-0.010	-0.003	

	(0.018)	(0.017)	
damp	-0.046***	-0.002	
	(0.014)	(0.013)	
rot	-0.026*	0.015	
	(0.014)	(0.014)	
vandalism	-0.019**	0.004	
	(0.009)	(0.009)	
pollution	-0.020	-0.009	
	(0.014)	(0.013)	
home owner	-0.016	-0.081***	-0.016
	(0.017)	(0.016)	(0.017)
shel accom	0.017	-0.031	0.019
	(0.068)	(0.066)	(0.068)
shared ownshp	-0.016	-0.092*	-0.015
	(0.053)	(0.051)	(0.052)
LA	0.001	0.010	-0.001
	(0.023)	(0.023)	(0.023)
HA	-0.038	-0.063**	-0.040
	(0.028)	(0.028)	(0.028)
HA*London	0.144*	0.147*	0.148*
	(0.087)	(0.085)	(0.087)
housing satisfaction		0.194***	
		(0.003)	
constant	5.259***	4.232***	5.267***
	(0.367)	(0.358)	(0.367)
Year fixed effects	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes
N	124900	124337	124900

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Standard errors in parentheses. Fixed effects OLS models. Reference groups: (i) for employment variables ref = employed; (ii) for marital status ref = non-married co-habiting. Sample is restricted to those aged 18 and over.

Model 2 adds in the satisfaction with housing variable (measured on a scale of 1-7) to show that all housing quality variables impact on life satisfaction through housing satisfaction except for poor lighting which seems to have an effect on life satisfaction over and above its impact through housing satisfaction.

Finally in Model 3 we use a single scale metric for overall housing quality (housing problems) which is simply the aggregation of all housing quality variables. This is on a scale of 0-11, where 11 is the worst case. Hence, if a home has rot, condensation and space problems then this variable would take the value of 3 for overall housing quality. Although some variables were insignificant on their own I include all of them in this overall housing quality measure as there may be interactive effects between the housing variables

that are not picked up in the Model 1. This shows that on average one extra housing problem reduces life satisfaction by 0.027 index points. This suggests that compared to a person living in a house with no problems, a person living in a house with all 11 housing problems would have 0.297 lower life satisfaction - a reduction of about 6%. This is a very significant impact indeed given that the evidence suggests that only about 20% of the variation in wellbeing is due to external factors with the remaining 80% due to personality and genetic factors. This suggests that improvements in housing quality could lead to large and significant improvements in our wellbeing. We also tested whether the impacts of housing conditions on life satisfaction differ by certain demographic groups – here by age and whether people

have children in the household– but there were no extra effects by different groups.

Table 4 runs the same three models from Table 3 using happiness instead of life satisfaction as the wellbeing measure. Happiness data taps into different aspects of wellbeing to life satisfaction. Happiness data looks more at the affective (hedonic) components of our lives and is proposed

not to contain an evaluative component like in life satisfaction. In theory, life satisfaction should tell us something about how people feel (their affective emotions) as well as something about how they evaluate and reflect on their lives compared to others and compared to their own standards.

**Table 4. Housing and happiness**

Dependent variable: GHQ Happiness score (1-4)

Explanatory variable	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient
log (income)	0.006 (0.004)	0.005 (0.004)	0.006 (0.004)
employed	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)
retired	0.053*** (0.010)	0.052*** (0.010)	0.053*** (0.010)
student	-0.011 (0.010)	-0.011 (0.010)	-0.011 (0.010)
age	-0.010 (0.006)	-0.008 (0.006)	-0.010 (0.006)
age2	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
high education	-0.011 (0.017)	-0.009 (0.017)	-0.011 (0.017)
good health	0.141*** (0.005)	0.137*** (0.005)	0.141*** (0.005)
married	-0.037*** (0.010)	-0.037*** (0.010)	-0.037*** (0.010)
divorced	-0.033** (0.015)	-0.029* (0.015)	-0.033** (0.015)
widowed	-0.166*** (0.019)	-0.163*** (0.019)	-0.166*** (0.019)
separated	-0.140*** (0.018)	-0.136*** (0.018)	-0.140*** (0.018)
winter interview	-0.012** (0.005)	-0.013*** (0.005)	-0.012** (0.005)
carer	-0.036*** (0.010)	-0.035*** (0.010)	-0.036*** (0.010)
non-res carer	0.008 (0.006)	0.007 (0.006)	0.008 (0.006)
no of children	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)
garden	-0.001 (0.009)	-0.008 (0.009)	-0.001 (0.009)
housing problems			-0.007*** (0.001)
lack space	0.002 (0.005)	0.016*** (0.005)	
neighbour noise	-0.023*** (0.006)	-0.015** (0.006)	

street noise	-0.006 (0.006)	-0.003 (0.006)	
poor lighting	-0.002 (0.008)	0.003 (0.008)	
bad heating	0.006 (0.010)	0.010 (0.010)	
condensation	-0.012* (0.006)	-0.008 (0.007)	
leaks	0.002 (0.010)	0.003 (0.010)	
damp	-0.013* (0.008)	-0.007 (0.008)	
rot	-0.000 (0.008)	0.008 (0.008)	
vandalism	-0.006 (0.005)	-0.001 (0.005)	
pollution	-0.010 (0.008)	-0.009 (0.008)	
home owner	-0.023** (0.010)	-0.035*** (0.010)	-0.023** (0.010)
shel accom	0.018 (0.039)	0.007 (0.039)	0.019 (0.039)
shared ownshp	-0.017 (0.030)	-0.031 (0.030)	-0.017 (0.030)
LA	0.003 (0.013)	0.006 (0.013)	0.002 (0.013)
HA	0.012 (0.016)	0.010 (0.016)	0.011 (0.016)
HA*London	-0.013 (0.050)	-0.014 (0.050)	-0.014 (0.050)
housing satisfaction		0.034*** (0.002)	
constant	3.200*** (0.211)	2.969*** (0.211)	3.203*** (0.211)
Year fixed effects	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes
N	125520	124796	125520

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Standard errors in parentheses. Fixed effects OLS models. Reference groups: (i) for employment variables ref = employed; (ii) for marital status ref = non-married co-habiting. Sample is restricted to those aged 18 and over. Interactive terms between housing problems and children/age dropped due to insignificance in previous models.

We find fewer housing variables impact on happiness compared to life satisfaction. They are (in order):

1. Neighbour noise
2. Damp
3. Condensation

The aggregated housing problem variable is statistically significant showing a negative effect on happiness as would be predicted.

### **A2.3 Discussion**

There are a number of clear and interesting conclusions to make from these findings. First, housing factors that enter our experiences – those that impact on life satisfaction and happiness – do not necessarily correlate well with the reasons we seem to have for moving home. ‘Lack of space’, ‘street noise’ and ‘garden’ are factors that are highly correlated with our decision to move home but do not feature in our experiences. In this situation, looking at people’s preferences versus their self-reported wellbeing would derive different policy conclusions – people seem to tell us that space, street noise and gardens matter but they do not show up in their actual life experiences. Which data you choose to rely on will depend on which measure of someone’s wellbeing you prefer – in other words, it depends on whether one believes preferences or mental state accounts reveal ‘true’ wellbeing and this is a philosophical question rather than one we can answer using data here. There is a large literature in psychology and decision science on how people’s preferences and experiences can diverge and in these type of circumstances it may be due to what are known as ‘focusing effects’, where when people at the point of a decision or choice may focus on salient aspects of the good at the time which do not in reality impact on their experienced wellbeing. Detailed discussion of this literature is out of the scope of the present paper, but suffice to say that these results clearly show that only asking people what they would like to have improved in their homes might not be enough: further important information can be gleaned from looking at how they experience their lives.

This is not to argue that residents should not be consulted on their preferences, rather that an analysis of what drives actual reported satisfaction and happiness amongst residents may provide important

insight and contribution to resident consultation.

Second, looking at all three measures of wellbeing (preferences, life satisfaction and happiness) shows that the clearly dominating factor is neighbour noise. Of all the housing problems, neighbour noise has the largest negative effect on both life satisfaction and happiness and is the second most important determinant of people’s desire to move house. On this occasion, there is a clear link between people’s preferences and experiences so on whichever measure of wellbeing we take solving or improving problems related to neighbour noise is likely to have significant impact on people’s wellbeing and lives. In addition, damp and condensation are clearly highly important to how people experience their lives as they both impact on life satisfaction and happiness. These findings suggest that where housing problems exist, resources should be directed towards improving neighbour noise, damp and condensation problems as the first priority.

Delving back into the psychological literature it is interesting to note that there is support for our finding that neighbour noise is the most important housing problem. This literature has shown that people tend to adapt to most things in life, no matter how severe, such as paraplegia and divorce. Hence, after some time their levels of wellbeing return to some normality. But a large body of research (eg, Diener, Suh, Lucas, & Smith, 1999; Frederick & Loewenstein, 1999; Loewenstein & Ubel, 2008) shows that there are a number of things that people do not generally adapt to and these include unpredictable negative events and annoying or aggravating noise. Noise from neighbours may or may not be unpredictable but in any case, this research would explain why neighbour noise seems to be such a big detriment to wellbeing. Problems like damp, rot and vandalism, although detrimental, are

more predictable and hence people are likely to adapt to these problems and in some sense not let them intrude on their lives to such an extent.

It is interesting to note that far more variables impact on life satisfaction compared to happiness, which suggests that some housing problems become salient when we take a step back and think about/evaluate our lives.

Finally, it is worth noting that this study considers the generality of housing circumstance; it does not address issues at the extreme. So, for example, it does not take account of circumstances where individuals or families are subject to extreme overcrowding or appalling housing circumstance (e.g., living in a shed). This is not because such circumstances are not important, and addressing them a critical part of the work of many housing providers, but rather because the dataset that underpins this study inevitably focuses in particular on the “mainstream” of housing provision (in return for a large national sample size).

### **A3. Housing Valuations using the Wellbeing Valuation Approach**

The previous analysis shows the kind of housing variables that impact on people’s wellbeing and lives. It is interesting to take this further to look at the absolute magnitude of the negative impacts and to do so in this section we look at the monetary values associated with these housing problems. To this end, the results from the life satisfaction models in Table 3 can be used to derive estimates of the value associated with these housing factors. To do so we use the WV approach to valuation

#### **A3.1. The Wellbeing Valuation approach**

In essence, the WV approach derives monetary values for different goods and services, like health, housing and social relationships, by estimating the amount of money required to keep individuals just as happy or satisfied with life in the absence of the good<sup>6</sup> - i.e., to keep their wellbeing constant. This is the fundamental idea that underlies welfare economic theories of value such as compensating and equivalent surplus discussed above. In terms of the present study, we estimate the amount of extra income people would need in order to compensate them (exactly) for a given housing problem(s) and we use life satisfaction as our measure of wellbeing since it is the one that has most commonly be used in the WV literature to date and has been validated on a number of robustness tests (see Fujiwara and Campbell for details).

In technical terms we estimate the compensating surplus for different housing problems. These are estimates of value that are theoretically consistent with the requirements of welfare economics and cost-benefit analysis. These values resemble a WTA amount – i.e., what people would be willing to accept in monetary compensation to put up or live with the housing problem(s). However, the values should not be directly translated as a WTA figure as we have not asked people their WTA, instead we have looked at the hypothetical level of compensation required to keep people just as satisfied with their lives. If we were to ask people their WTA for these problems in a stated preference survey we might encounter different values for a whole host of reasons, some of which we discuss next.

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<sup>6</sup> From here on I shall use the term ‘good’ to refer to any product service or experience that we are trying to value.

A more detailed discussion of the WV approach and the technical methodology used in this study is at the Annex.

### **A3.1.1. Advantages of the Wellbeing Valuation approach**

There are a number of advantages to using the WV approach compared to preference-based valuation methods. First, there are well-known biases related to stated preference surveys. These include protest values, non-response bias, strategic bias and interviewer or information bias, which can affect the valuations that are derived. In the WV approach, since we take data from large national datasets these biases do not apply because it is near impossible for respondents or interviewers to influence valuation results derived from wellbeing data.

Second, we are not reliant on a proxy market to reveal a value as in the revealed preference method. Indeed the WV approach can work in cases where proxy markets do not exist or where they are not in equilibrium. We shall discuss this issue in more detail in the results section of this paper.

Third, the WV approach is based on real or actual experiences, whereas stated preference studies usually ask people for their WTP for a hypothetical good or policy change, of which they may have little or no prior experience. In the WV model, we look at how policy changes actually impact on people and their experiences of their lives and ascertain values based on these experiences which may be more accurate than a hypothetical preference.

### **A3.2. The value of housing quality**

As derived in the Annex we are interested in the marginal rates of substitution (MRS) between the housing variables and income:

$$MRS_{H,y} = -LS'_H / LS'_y \quad (1)$$

where  $LS$  is the life satisfaction function;  $H$  is a housing problem variable; and  $y$  is income. The MRS just shows the equivalent amount of money required to attain the same effect on wellbeing. We use the results from the models in columns 1 and 3 from Table 3 to derive  $LS'_H$  in (1). It is standard to use the income coefficient from the same model for  $LS'_y$  in (1). However, there are a large number of problems relating to the income variable in life satisfaction models, including measurement error, endogeneity, reverse causality and parametric restrictions (see Fujiwara and Campbell (2011) for a review) and hence a separate model is used to specifically derive  $LS'_y$  that solves for these problems to get an unbiased estimate of the effect of income on life satisfaction.

The model for income uses data on lottery wins as an instrumental variable in two stage least squares (2SLS) to provide exogenous changes in income. This means that we are able to run a model with fewer parametric restrictions that derives a causal estimate for income. A key benefit is that we control for only a handful of pre-treatment covariates meaning that the indirect effects of income (eg, through health) on wellbeing are accounted for in the model. It was not possible to include housing variables in the 2SLS model as the sample size was too small to derive significant results and hence estimates of  $LS'_y$  and  $LS'_H$  are derived from two separate models.

The instrumental variable approach employed here follows methodologies used by Lindahl (2002) and Apouey and

Clark (2009). In brief in the BHPS we only have data on the size of annual lottery wins. Since we do not know the frequency of playing lotteries in the BHPS it means that lottery wins are unlikely to be purely exogenous and so we need to control for socioeconomic variables that are correlated with lottery playing frequency and which may also impact on household income. In 2SLS we control for employment status, education and health to ensure exogeneity in the first stage so that we can derive casual estimates for income. For a detailed explanation of the 2SLS approach with lottery wins see Lindahl (2002), whose analysis is replicated here using the BHPS. The results of the 2SLS income model are presented in Table 5.

**Table 5. Two Stage Least Squares income model**

**First stage**

Dependent variable: Log (household income)

Explanatory variable	Coefficient
low education	0.318*** (-0.013)
unemployed	-0.404*** (-0.043)
poor health	-0.205*** (-0.022)
lottery win	0.1*** (-0.014)
constant	10.22*** (-0.011)
N	10311

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Standard errors in parentheses. Fixed effects OLS models.

**Second stage**

Dependent variable: Life satisfaction (1-7)

Explanatory variable	Coefficient
log (income)	1.102*** (0.294)
low education	0.463*** (0.097)
unemployed	-0.126 (0.148)
poor health	-0.858*** (0.076)
constant	-5.967** (3.008)
N	10311

Notes: \*\*\* 0.01 significance level, \*\* 0.05 significance level, \* 0.10 significance level. Standard errors in parentheses. Fixed effects OLS models.

As suggested in Apouey and Clark (2009) there are a large number of lottery players in the UK and hence the results from Table 5 are reasonably generalizable. Although the estimate of the causal effect of income is technically the local average response function (LARF) for a non-identifiable complier subgroup we will treat the causal estimate as the effect of income for the average person in the BHPS sample so that we can match it to our estimates of  $LS'_H$  from Table 3 in order to derive values.

The income model uses the logarithm of household income in order to account for diminishing marginal utility of income. The MRS calculation in (1) therefore becomes more involved. The compensation value (compensating surplus) required for a given housing problem is therefore derived as follows:

$$CS = e^{\left[ \frac{-LS'_H}{LS'_y} + \ln(M^0) \right]} - M^0 \quad (2)$$

where  $M^0$  is initial average income for the sample, which is about £25,000 and  $LS'_y$  is 1.10 from Table 5. Equation (2) gives the amount of extra income required to exactly compensate people



for a given housing problem so that their wellbeing stays constant. This is only estimable for those housing factors that have a statistically significant effect on life satisfaction. Table 6 presents the compensating values for all significant housing quality variables from Model 1 of Table 3. The final row shows the compensation required for a house that suffers from all seven housing problems.

**Table 6. The value of housing quality indicators**

Housing problem	Compensation Value
Neighbour noise	£1,068
Damp	£1,068
Poor lighting	£1,044
No garden	£783
Condensation	£645
Rot	£598
Vandalism	£436
<b>All 7 problems combined</b>	<b>£5,642</b>

**A3.2.1. Interpretation of wellbeing values for housing**

The values presented in Table 6 require some careful interpretation. First, they are the amounts of money that would be needed to compensate someone for living with these housing problems, where compensation simply means the amount of money required to return life satisfaction to the levels it would be without experiencing these problems. Since the data is taken annually it is usually assumed that these represent per annum values.

Second, it is important to note that these values may not be what people would state they would be willing to accept (in a stated preference survey). In other words, this analysis does not tell us, for example, that people would be willing to pay £1,068 more in rent per year for a house

without neighbor noise problems. This is because stated preference methods to valuation tap into a preference account of wellbeing and we have seen that what determines people’s preferences may not be relevant for their experiences (the example of lack of space above) and generally it is preferences that people rely on when making a purchasing decision. This does not discredit the results derived from WV – they are simply values derived from a different theoretical measure of wellbeing. As discussed already, the plus is that these values are based on people’s actual experiences and hence could be better representations of the value that people attach to a good.

Third, it is important to check how market mechanisms may impact on these results. It may be that the housing market compensates people for these housing conditions – for example worse quality houses may have lower selling or rental prices – and this would impact on how we interpret the results in Table 6. If housing markets do compensate people in this way and house/rental prices are not controlled for, then the values derived in Table 6 would represent the equivalent compensation required over and above any compensation already received through the market mechanism. In this scenario, the values would only represent part of the overall value of these housing quality indicators. To check this, we run an OLS model, regressing property rental prices (as self-reported in the BHPS) on the 12 housing variables plus some others, such as number of rooms, in line with standard practice in the hedonic market literature (e.g. Ottensmann et al. 2008)<sup>7</sup>. We found that none of the housing quality variables were significant determinants of rental prices and that many had counter-intuitive directions of effects. This suggests that these factors do

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<http://ageconsearch.umn.edu/bitstream/132338/2/08-1-2.pdf>

not impact on housing market values and hence in general people do not receive compensation for these factors in the market - it is mainly attributes, such as size of the dwelling, having a garden etc. that were found to impact on housing prices. This means that the values derived in Table 6 can be interpreted as the *full* overall values associated with these housing problems and can be applied as they are to CBA or SROI analyses.

Finally, the values derived in this paper represent average values. In other words, they are representative for the average person with these housing problems.

Overall, we believe that these figures provide important insight in their current form. Where, for example, housing providers have a choice of investment priorities which have between them a neutral impact on asset values and investment/maintenance costs, it may now be possible to envisage situations in which a housing provider might be able to look to optimise the social value 'payoff' of his investment in his asset – for example by prioritising lighting and noise insulation - as part of a planned maintenance or major repairs programme.

### **A3.3. The value of building good quality homes**

Model 3 from Table 3 can be used to derive the expected value associated with HAs building good-quality homes. First, we re-run Model 3 (not presented here) using a housing problems variable derived from an aggregation of the 6 problems that impact on life satisfaction separately (i.e., neighbour noise; poor lighting; damp; condensation; rot; local vandalism. Here we do not include lack of garden as it is not usually a housing problem variable used in the literature). The coefficient on 'housing problems' is estimated to be 0.028 using this model and hence does not change very much

from the model in Table 3. This means that on average a randomly chosen housing problem from the list of 6 problems will result in a 0.028 reduction in life satisfaction.

There are a number of permutations we can assess and we look at good quality HA homes compared to other types of home of varying quality. Quality is defined by the level of satisfaction with one's home, which is reported in the BHPS. In the BHPS people are asked to rate on a scale of 1 to 7 their level of satisfaction with their home. All 12 housing quality variables are significant determinants of people's self-reports of housing satisfaction (model not shown here). Table 7 shows the average number of housing quality problems reported for HA, LA and private rental homes of differing quality. 'Good' quality homes are defined as those for which people report being completely satisfied with (7 out of 7 on the scale). 'Poor' quality homes are those that people report being totally unsatisfied with (1 of 7 on the scale). Since there is no extra effect of housing tenure on wellbeing over and above housing quality (expect for people in London which we shall ignore here), we can derive relative values for different types of housing tenure based on how many housing quality problems people report and this is shown in the last column of Table 7.

An approach using an overall housing quality problem variable was favoured as it considerably simplifies the calculations involved when looking at the values of different homes by different quality. The trade-off is that we attach a constant impact (on life satisfaction) to all housing problems, but we know that some are more detrimental than others (eg, neighbour noise). The values derived in Table 7 should therefore be seen as approximations.

**Table 7. Value of housing by housing quality types**

Type of home	# problems (max 6)	Difference # problems (ref: good quality HA)	Impact on life satisfaction	Compensation Value (compared to good quality HA)
'Average' local authority	1.05	0.51	-0.014	£320
'Poor quality' local authority	2.05	1.51	-0.042	£973
'Average' private rental	1.04	0.5	-0.014	£320
'Poor quality' private rental	2.06	1.52	-0.043	£997
'Average' housing association	0.99	0.45	-0.013	£297
'Good quality' housing association	0.54	N/A	N/A	N/A

Notes: Impact on life satisfaction is estimated as [difference in number of problems\*-0.028], where -0.028 is the impact of a single housing problem on life satisfaction. 'Average' quality refers to the mean number of problems found in a given housing tenure (ie, 'Average' local authority refers to the mean number of housing quality problems present across all local authority homes).

### A3.3.1. Interpretation of wellbeing values for housing tenure

The values reported in Table 7 require careful interpretation – they are relative values of good quality HA accommodation compared to other types of houses. They show the equivalent compensation required for someone to be as satisfied with their life as they would be had they been living in good quality HA accommodation. For example, poor quality private homes have 2.06 more housing problems than good quality HA homes. To compensate people in poor quality private rental homes such that they would be just as well-off as they would be had they been living in good quality HA we would need to give each individual (on average) an extra £997 per year.

These are **relative values** and hence do not give the **full or absolute value** of living in an HA home; we show that good quality HA homes are better than poor quality LA and private rental homes and this is valuable to people. This is sufficient information to understand the value of HA homes to individuals and society. This is because we can use the other housing types in Table 7 as **counterfactuals** to derive a value that people place on being in good quality HA homes compared to their alternative (next-best) options. In

other words, the value of a home to someone is a function of that person's counterfactual tenancy arrangement (ie, what kind of home they would be in had they not been in an HA home now). We only require this differential value as people would be housed somewhere in place of the HA home as the next best option.

The value of a housing development can, therefore in principle, be ascertained by carrying out an assessment of the local housing market to identify from where residents will be – on average – drawn, and their current housing circumstances, and this data used to provide a measure of the first order social value of the housing created (of course this ignores any positive or negative value created by the occupation of any home they may have left by a subsequent new tenant). In the case of social housing tenants, starting a new tenancy, this information can be validated by the use of information arising from surveys carried out at the start of the tenancy of the type required by the CORE system. It is intended that further work will take place during 2013 on how this might be practically applied in the context of housing associations, investors in the housing sector, and others with an interest in the development process.

We provide some examples in Box 1 below and in section C.3.2 of this report.

#### **Box1. Example value of good quality Housing Association home**

- In this example we assume that a housing organisation builds or provides an additional 1,000 good quality homes, which accommodate people who would otherwise have been in poor quality private sector accommodation.
- This intervention would have a value of **£973 per person per year** and assume that on average two people live in these new homes.
- These 1,000 homes would have a **total value of £1.95m per year** to these 2,000 people
- These houses would continue to have this value in subsequent years provided that they were kept in good condition.
- The **overall value to society** of this intervention could be understood by comparing the costs of building and maintaining the houses to the value that people place on the housing for the life of the houses.

Different valuations could be run for different permutations of housing using the results in Table 7. This could be for different counterfactual options or for different numbers of people and years. For example, we could assess the value of improving current housing stock by looking at what would happen if we improved 1,000 HA homes such that they increased from average quality homes (with 0.99 problems) to good quality homes (with 0.54 problems). There would be a value of £297 per person per year. The total value for the 2,000 people who live in these homes would be about £600,000 per year.

## **A4. Caveats and Conclusion**

The values presented in Tables 6 and 7 can be used directly in CBAs and SROI analyses to inform value for money decisions with regard to housing interventions but one should acknowledge the following caveats and issues.

First, It should be noted that these are values derived from the available data. There are likely to be other aspects of a home that are important for wellbeing and hence are valuable to people and if there are differences in these factors between HA and non-HA homes there would potentially be extra value in HA homes not picked up here. However, we believe that we have accounted for and analysed a set of well-defined housing factors that are regularly used to define adequate housing and hence provide meaningful values for use in decision-making.

Second, the values derived here are average level values for people in the sample. They can be broken down by different demographic and socio-economic groups, but this was out of the scope of this paper. Given the distinctive characteristics of social housing tenants, particularly in relation to income groups, employment, age and disability/vulnerability, it is possible that some of the values presented in this paper, which are drawn from the full BHPS sample may not be fully representative of the nature of that group. Part E below outlines research we are planning to take forward during 2013 to address this issue.

Third, as with all statistical analyses of observational data, causality can be an issue. The general approach for the wellbeing and housing models taken here has been to rely on a selection on observables assumption. Furthermore, we have used the panel structure of the BHPS

data to control for unobservable time-invariant factors. However, we cannot rule out the possibility that some of the results may still be susceptible to selection bias. Having said that, the methodology used here employs statistical methods that are regularly employed and published in the academic wellbeing literature and in fact our use of fixed effects modelling will provide better causal estimates than a lot of other studies that rely on cross-sectional data. Further, the approach to valuation (using two separate models) will provide more accurate value estimates than previous WV studies.

# Part B: The Value of Non-Housing Interventions

## B1. Introduction

The National Housing Federation's 2012 audit discovered that HAs are responsible for more than 9,000 neighbourhood service projects, many with a plethora of different activities, and hundreds of neighbourhood facilities like community centres, sports facilities and others which contribute to the economic, environmental and social stability of our neighbourhoods. HAs invested more than half a billion pounds in these activities (in 2010-11). There are seven distinct areas of activity:

- Jobs and training
- Learning and skills
- Health services<sup>8</sup>
- Promoting independence
- Safer, stronger communities
- Creating better places to live
- Community spaces

Using the same Wellbeing Valuation approach from Part A it is possible to attach values to outcomes under these seven intervention areas.

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<sup>8</sup> Note, the National Housing Federation uses the term 'Health and Wellbeing Services' here. However, we have changed this to 'Health Services' given the structure of this report in order to avoid confusion. We have recognised here that all interventions are ultimately valuable because they impact on wellbeing and hence within this framework all seven non-housing interventions are in fact wellbeing services to one extent or another.

## B2. Methodology and data

The figures used in this section will come from a range of studies. The value of any impact (as was the case with housing quality variables) can be measured as:

$$CS = e^{\left[\frac{-LS'_Q}{LS'_y} + \ln(M^0)\right]} - M^0 \quad (3)$$

which is the same as equation (2) but where we now look at the impact of a non-housing variables ( $Q$ ) on life satisfaction. Some of the non-housing variables can be taken from the original model in Table 4, whereas others will be obtained from different studies. In other words,  $LS'_y$  will come from the income model in Table 5 (a value of 1.10) and this will be used in conjunction with  $LS'_Q$  estimates that come from the overall model in Table 3 or from other studies in the wellbeing literature that have used the BHPS and the same life satisfaction outcome variable.

It should be noted that when using data from other studies, although they will come from the same BHPS dataset, they may not be results for the exact same individuals in the sample that we have used to derive  $LS'_y$  in the income model due to attrition and different modeling frameworks. We have taken this approach as it was out of the scope of this paper to run numerous wellbeing models with different definitions of the non-housing variables of interest (it should be noted that a number of variables do not appear in every year (or the same years) of the survey and so we would need to run a large number of models)<sup>9</sup>. The approach

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<sup>9</sup> Note that it was not the case that these non-housing variables were added to the overall model

will, therefore, be to review the wellbeing literature for outcomes under each of the seven non-housing areas and use results from this literature as proxies for  $LS'_Q$  in equation (3). Where possible we will use results from Table 3. The criterion for papers in the literature review was that they use the BHPS and as a minimum the studies use ordinary least squares (OLS) statistical techniques to control for standard confounding factors in life satisfaction models. Studies that used more robust techniques such as randomized trials or natural experiments are also included where available.

Overall, it should be noted that this is a second-best option but it will provide *guide* estimates of the value of non-housing outcomes. Since, they will come from the same BHPS dataset, we believe that they will be of use to inform the discussion in this area and interesting or potentially important findings here should form the basis of future research dedicated to running these models for the same samples and time periods from the BHPS.

It should be noted that the analysis here will only be informative about the value created by non-housing interventions rather than definitive. What we mean by this is that these value estimates can only be applied to HA's non-housing interventions based on a number of assumptions. For example, below we will derive an indicative value for employment, which will show the value individuals attach to being employed. This will be a useful gauge of the value created by HA's employment and enterprise services only if we can make some assumptions about how many additional people an association helped get in to employment. A more definitive

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in Table 4 anyway since many of them were not deemed as possible confounders to the housing quality-wellbeing relationship and those that were are controlled for with a single explanatory variable.

assumption-less assessment of the value created by non-housing interventions (which in this case would state, for example, that Housing Association X actually created £x of social value through its employment and enterprise services) is not possible here because from the BHPS data we cannot assess the causal effect of the employment and enterprise services on employment rates. In other words, Part B of this paper will derive a range of indicative values associated with non-housing outcomes and these values can only be related back to actual HA interventions if we make some assumptions or do some further analysis on the impacts of non-housing interventions on these outcomes.

### B3. The social value of non-housing interventions

We undertook literature searches using standard search engines such as Google Scholar, but generally did not find many studies for each intervention area that uses the BHPS dataset. There is a lot of research on a wide range of impacts on life satisfaction but much of this comes from other datasets from other countries, which means that they cannot be used appropriately here since we are interested in the UK context and we need to relate impact estimates back to our income model in Table 5 in order to derive values.

#### The value associated with Jobs and training services

Referring to the NHF's audit (2012), employment and enterprise services are based around employment outcomes and job training. Oswald & Powdthavee (2008) find that **unemployment leads to a 0.33 reduction in life satisfaction. Using the WV approach in equation (3) this works out to a cost of about £8,700 per year.** Note that this is in addition to the loss of wage income and hence should be seen



as the non-financial costs of unemployment (i.e., they relate to the emotional costs of unemployment).

### **The value associated with Learning and skills services**

There are a number of areas that education and skills services work in. The key areas where WV can be used are for adult education and voluntary work placements. Dolan and Fujiwara (2012) undertake a large stated preference (contingent valuation) study and WV study for adult learning using the BHPS. They find that taking a part-time course that improves job prospects (either by helping people to get a job, or by increasing skills for work) has a positive impact on life satisfaction. **On average undertaking one part-time course has a value of £754 to the individual**, which is in line with market prices for work-related adult learning courses.

In addition to the WV values, there are some interesting results from the stated preference survey in this paper. Dolan and Fujiwara (2012) surveyed 1,000 adult learners asking them their willingness to pay (WTP) for a range of outcomes related to adult education. Specifically for education and skills services, there were some questions on parenting and confidence. The survey asked WTP for adult learning that:

- **Helped people to feel more confident in being with family and other people (£690).**
- **Helped people become a more confident parent (£609).**
- **Helped people to be able to help their children with school (£435).**

The respective WTP figures for each outcome are in brackets. This is the WTP for a course that delivers the respective outcome for the learner. These values are derived differently to WV values since they use people's preferences rather than wellbeing measures, but as discussed they

derive values estimates that are in line with welfare economic theory.

These figures suggest that HA initiatives that assist people into employment focused job training will have significant value to individuals. Furthermore, any training that helps improve confidence with other people and as a parent also has value and this is important given that there are a number of areas related to parenting support in the education and skills services.

Learning and skills services have also traditionally focused on getting people into voluntary work placements (see NHF's audit, 2008). It is possible to derive a value of volunteering using studies by Meier and Stutzer (2004) and Frijters et al (2004). These studies come from the German equivalent of the BHPS which means results are less applicable, but the trade-off is that these studies were able to derive robust estimates of the causal effect of volunteering and income due to a natural experiment in the German data – in effect we saw exogenous changes in people's volunteering status around the time of German reunification. Using the coefficient on volunteering from Meier and Stutzer's (2004) and the coefficient on income from Frijters et al (2004) we estimate the cost of not being able to volunteer to be 22,120 Deutsche Marks per year in 1990. We convert this into pounds sterling<sup>10</sup> and uprate by prices<sup>11</sup> to give an idea of what this figure implies in today's money terms. **This gives a cost associated with not being able to volunteer (on a frequent basis) of about £11,800 per year per person.**

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<sup>10</sup> Using [http://coinmill.com/DEM\\_calculator.html#DEM=14600](http://coinmill.com/DEM_calculator.html#DEM=14600)

<sup>11</sup> Using <http://www.guardian.co.uk/news/datablog/2009/mar/09/inflation-economics>



### The value associated with health services

In this domain we can look at the value of improvements in health, participation in sport and family related interventions. There are a large number of health-related variables in the BHPS. Powdthavee and van den Berg (2010) run extensive life

satisfaction models with health using the BHPS. From their model it is possible to derive values related to physical and mental health problems using our income model in Table 5. These values can be seen as the amount of money required to compensate for the health problem:

**Table 8. Health values**

Health problem	WV cost (per year)
Problems connected with: arms, legs, hand, feet, back	£1,306
Chest/breathing problems, asthma, bronchitis	£2,230
Heart/blood pressure or blood circulation problems	£1,546
Stomach/liver/kidneys or digestive problems	£6,039
Depression, anxiety	£43,453
Alcohol or drug related problems	£24,257
Migraine or frequent headaches	£3,626
Health limits daily activities	£10,220
Health limits amount or type of work	£2,354
'Good' self-reported health	£6,310 <sup>12</sup>

<sup>12</sup> Note this value is derived from our model in Table 3.

These value estimates are significantly different (lower) than the values derived in the original paper since we have used a more robust modeling framework for income.

HA health-related interventions will impact on people's mental and physical health and Table 8 provides a guide to the type of value these interventions could generate if they impact positively on these health problems.

Matrix (2010) look at the impact of participation in sport on life satisfaction using the BHPS. They find that compared to doing no sport at all, participation in organized sporting activities at least once per month leads to a 0.019 increase in life satisfaction and participation at least once per week leads to a 0.025 increase in life satisfaction. Using our estimate for the impact of income from Table 5 we can derive the value of participating in sport using equation (3).

- **Participating in sport at least once per month has a value of £428 to the individual per year.**
- **Participating in sport at least once per month has a value of £562 to the individual per year.**

These values are significantly lower than the values derived in the report (Matrix, 2010) as we are using a different model to estimate the impact of income, which we feel is more robust. Health services that promote participation into sport will create social value.

In terms of values related to HA's family intervention initiatives, we see from Table 3 that **separation has a large negative impact on wellbeing. Using the WV approach this is an equivalent value or cost of about £3,400 per year.** There are also **negative impacts on wellbeing for people that provide residential care for family members (have caring duties at home).** Using WV this is an equivalent

**cost of about £830 per year.** Family intervention initiatives that help to keep couples together or that assist with caring duties will have significant positive impacts on people.

#### **The value associated with Promoting independence services**

These services by and large focus on improving financial literacy and circumstances. Dolan et al. (2011) find that in the BHPS being burdened with debt (when the individual states that repayment of debt and associated interest is a 'heavy burden' or 'somewhat of a burden') leads to a 0.1 reduction in life satisfaction. Using the WV approach this is equivalent to a cost of about £2,300 per annum for the individual. Therefore, **services that help people to lift themselves out of heavy debt will have a value of about £2,300 per person per year.**

#### **The value associated with Safer, stronger communities services**

Dolan et al (2011) also look at the impacts of living in a safe area using the BHPS. This is an area where the individual does not perceive vandalism and crime to be a problem. **They find that from living in a safe area life satisfaction increases by 0.029, which has a value of about £650 per annum per person.** HA initiatives that help to improve local area safety will have a value to society.

It should be noted that the values derived here for debt burden and safe area are different to those derived by Dolan et al (2011) due to the more robust methodology used for the income model in this paper.

#### **The value associated with Creating better places to live services**

There is very little related to local environment or area improvement in the BHPS. The initiatives in these services are clearly related to regeneration and in order to provide some information on this

service we use Dolan and Metcalfe's (2008) study of the impacts of urban regeneration in Wales. Here regeneration consisted of four main elements: renewal of fascias, repairing gutters and roofs of houses; renewing property front boundary walls and paths/paved areas; road resurfacing; and provision of new improved feature street lighting. **They find that regeneration of the local area leads to a 0.33 increase in life satisfaction.** It should be noted that this not from the BHPS sample and that the life satisfaction question was measured on a scale of 1 – 10 in this paper (0.33 is the equivalent increase based on a 1 – 7 life satisfaction scale). **This is a value of about £6,500 per year per person.**

#### **The value associated with Community spaces services**

These activities may increase the frequency with which people meet others and socialise through clubs and activities. Binder and Freytag (2012) find that meeting with people (friends and relatives) has a large positive impact on life satisfaction. Using their findings in the wellbeing valuation methodology we find that **the value associated with being able to socialize and meet on most days is about £3,000 per person per year.**

#### **B4. Summary and discussion**

As with the values derived in Part A, the issue of causality will be an important one for non-housing outcomes too. Most non-housing values are derived from OLS regression analyses that rely on the selection on observables assumption and hence can be susceptible to selection bias as described in section A4. However, these are statistical assumptions that are in line with those used in most academic

papers on wellbeing and wellbeing valuation.

We should also note that we have matched results from different samples and studies that use the BHPS and have derived average values for people in the sample. As discussed in section B2, these results should then be seen as indicative and they should form the basis of future research in this area. To make use of the results in this section, housing associations need to understand how their interventions impact on the non-housing outcomes valued here.

Table 9 presents all the non-housing related values derived from the relevant literature to date. There are some clear messages for community interventions. Interventions that target employment, volunteering, health (mental health and alcohol/drug abuse interventions) and urban regeneration create the largest impacts on individuals. In other words, they create the most social value, which indicates that HA resources should be targeted in these areas.

**Table 9. Non-housing values**

Activity area	Value
<b>Jobs and training services</b>	
Move from unemployment to employment	£8,700
<b>Learning and skills services</b>	
Participation in one adult learning course	£754
Learning that helped people to feel more confident with family and others	£690
Learning that helped people become a more confident parent	£609
Learning that helped people to be able to help their children with school	£435
Volunteering regularly	£11,800
<b>Health services</b>	
Health problem:	
Relief from problems connected with: arms, legs, hand, feet, back	£1,306
Relief from chest/breathing problems, asthma, bronchitis	£2,230
Relief from heart/blood pressure or blood circulation problems	£1,546
Relief from stomach/liver/kidneys or digestive problems	£6,039
Relief from depression, anxiety	£43,453
Relief from alcohol or drug related problems	£24,257
Relief from migraine or frequent headaches	£3,626
Relief from health problems that limit daily activities	£10,220
Relief from health problems that limit amount or type of work	£2,354
<b>Sport</b>	
Participating in sport at least once per month	£428
Participating in sport at least once per month	£562
<b>Family Interventions</b>	
Avoiding separation	£3,400
Not having to provide residential carer	£830
<b>Promoting independence services</b>	
Relief from being burdened with financial debt	£2,300
<b>Safer, stronger communities services</b>	
Living in a safe area	£650
<b>Creating better places to live services</b>	
Regeneration of the local area	£6,500
<b>Community spaces services</b>	
Socialising on most days of the week	£3,000

Note: These are values per person per year.

# Part C: Decision-making frameworks based on wellbeing values

## C.1. Introduction

Parts A and B have estimated the values associated with different housing factors and non-housing interventions. Most of the values come from the wellbeing valuation method and hence are consistent with each other (some of the adult learning values come from a stated preference valuation method). In Part C we focus on how these values can be used to inform decision-making in HAs. Here we will take the assumption that tenant, community and social welfare or wellbeing is one important factor in HA investment and interventions, which will allow us to use the values derived in Parts A and B in a CBA or SROI-type assessment framework.

We present the over-arching decision framework for HAs and provide examples of how to use the results when making decisions between investments in asset management and community interventions and show the type of social value created by the creation of new homes. These calculations will be based on realistic hypothetical examples and so we think they will provide a framework for using the social value estimates presented in this paper.

As presented in Tables 6, 7 and 9 we have derived values for housing quality and non-housing interventions from the perspective of the individual tenants and stakeholders. As we move to making investment and intervention decisions we will essentially be aggregating the impacts across individuals who would be affected using the average value estimates from these tables. Hence, for example, if we say that an investment led to the eradication of neighbour noise problems

for 500 tenants then the social value of this can be estimated to be  $500 * \text{£}1,068 = \text{£}534,000$  per year. Key assumptions that we make here (which are explicitly made in CBA) are that (a) social wellbeing can be represented as a function of individual-level wellbeing in a social welfare function (SWF) of the sort presented in equation (4); (b) that social welfare is the sum of individual welfare where each individual's welfare is weighted equally, such that  $\partial SWF / \partial w_i = 1, \forall i$ ; and (c) that wellbeing is interpersonally comparable.

$$SWF = w_1 + w_2 + w_3 + \dots + w_N \quad (4)$$

(where  $w$  is individual wellbeing and subscripts  $1 \dots N$  denote each person in society). The SWF allows the diverse range of policy outcomes to feed through to social wellbeing. All three assumptions are not without their criticisms and detractors. For instance, an increase in individual  $i$ 's welfare may not be comparable to an increase in  $j$ 's welfare and we may want to weight impacts to some individuals' welfare (eg, individuals from disadvantaged backgrounds) higher than others. Nevertheless, we follow these standard assumptions that underpin the CBA framework for public policy interventions and that are set out in the HM Treasury Green Book.

## C.2. The housing association decision framework – optimizing value creation

Figure 1 presents a simplified overview of the investment decisions faced by a typical HA. There are primarily three channels through which an HA may spend money and resources (ignoring for the purpose of simplicity the provision of support and care services):

1. The creation of new build homes (under a range of ownership definitions).
2. Asset management of/investment in current properties/homes.
3. Community investment programmes.

As independent not-for-profit organisations, committed to delivering both high quality housing and social value, most housing providers will seek to deliver multiple returns from their investment.

Whilst it would be possible to manage a business in order to simply boost asset values and maximise surplus, housing associations will seek to generate social value and positive economic impact from their activities. Their work may also generate positive returns to the government exchequer – for example, a warm home and community investment programmes aimed at keeping older residents mobile may reduce the burden on health services.

Decisions in relation to the running of the business or the building of homes may

impact on local and national economies, in relation to employment or housing markets.

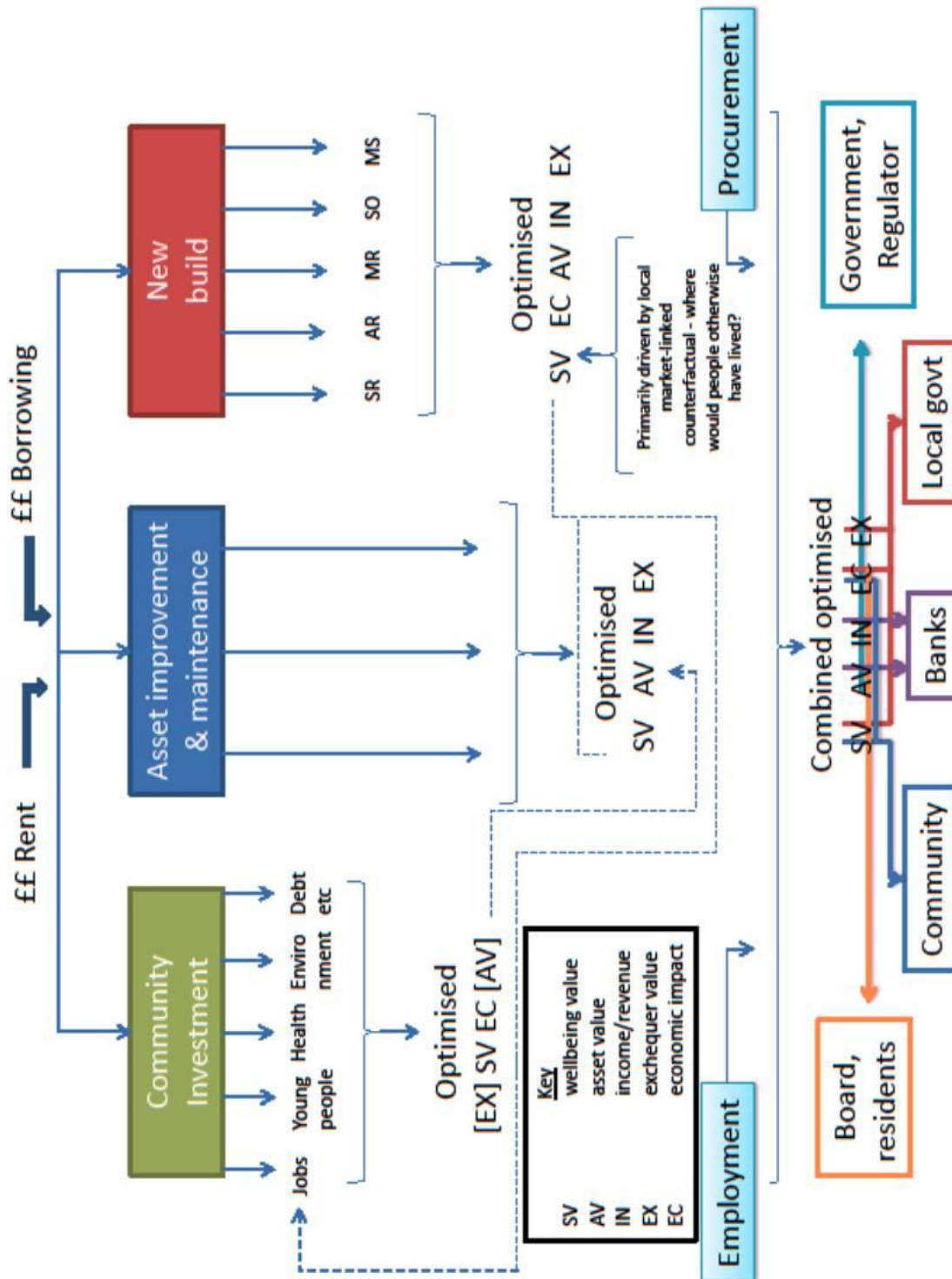
Finally, tenants and stakeholders' wellbeing may be impacted on by the activities of the HA, whether they be housing or non-housing related activities. We will call these social values (SV) here and they will primarily be measured using wellbeing data.

Dependent on the nature of their mission, the capacity and focus of their organisation, and the communities they work within, different housing providers and their Boards may seek to generate a different blend of such returns in addition to maintaining a robust core business. Most housing providers' activities will – in themselves – deliver a range of economic, social and financial returns. The challenge will be finding better ways in which these can be modeled and understood to enable impact to be evidenced and decisions properly informed by available information.

This paper has focused on understanding the impacts that HAs have on their different stakeholders and ultimately how their stakeholders value what HAs do. We have measured this social impact primarily using the wellbeing valuation approach. Hence, we have tried to understand the wider social value of HAs' activities by looking at subjective wellbeing.

In section E, we suggest how some of these insights may be taken forward and built on.

Figure 1. Investment decision framework for housing associations





## C.3. The social value associated with housing sector activities

In the following sections we show some examples of how these values can be used in a decision-making. In section C.3.1. we show the type of values generated by different combinations of investments into community programmes and asset management and show a simple framework for comparing these benefits against the costs of running the interventions. In section C.3.2. we look at the example of an organisation that provides a number of high-quality new build homes and in the process generates additional jobs (in construction) to implement this. We will gauge the level of social value created by this kind of new build intervention.

### **C.3.1. Values associated with investments in community programmes and asset management**

We know from the analysis in Parts A and B that certain housing quality indicators and a range of community investment outcomes are valuable to people and society as a whole. Neighbour noise, damp and poor lighting were clearly the biggest housing factor determinants of life satisfaction and in terms of community investment, health and employment are the most important factors to people. We can conclude from this that interventions in these areas will create most social value. In this section we develop an example of how the values from Parts A and B can be used together to assist in investment decisions. We are developing on the kind of example depicted in Box 1 to also include the value created by community investment programmes.

Let's assume the *Alpha Housing Association* (AHA) has £2m to spend on community investment and/or asset management. AHA maintains 1,000 homes with 1,800 tenants (1.8 people per

home on average). With this money Alpha could do one of the following:

#### **Option 1: A home improvements programme (cost of £2m)**

As part of this programme AHA would (a) work with local police to eradicate local area vandalism problems for 200 homes (which has a value of £436 per person per year); (b) Install or improve (where already installed) central heating systems in all homes (which according to life satisfaction account of wellbeing has zero value); (c) Solve damp and condensation problems for 100 homes (which has a value of  $£1,068 + £645 = £1,713$  per person per year); (d) Insulate homes from noise pollution minimizing street and neighbour noise problems for 100 homes (which has a value of £1,068 per person per year). Here for the purposes of this hypothetical representation, we are ignoring the impact of option A on the value of the housing asset.

#### **Option 2: A programme of investment in community programmes (cost of £1m)**

As part of this programme AHA would (a) Help get 50 people back into work (which has a value of £8,700 + a wage income increase which I shall assume to be £10,000 per person per year); (b) Help get 150 adults on to a range of adult learning courses (which has a value of £754 per person per year); (c) Improved local area safety for 300 homes (which has a value of £650 per person per year).

#### **Option 3: A programme focusing on health and sports interventions (cost of £900,000)**

As part of this programme AHA would (a) Provide free counseling and interventions for people with drug and alcohol abuse problems (5 people benefit) and mental health problems (anxiety and depression) (8 people benefit) (which has a value of  $5 * £24,257 + 8 * £43,453 = £468,909$  overall per year); (b) Help get 500 young people to participate in sport at least once per week (which has a value of £562 per



person per year); (c) Provide free physiotherapy and acupuncture treatments for 300 tenants to get rid of mobility problems (arms, legs, back etc.) (which has a value of £1,306 per person per year).

We can use this data to help inform decisions. On average there are 1.8 people per home and so any impact on a home has an impact on 1.8 people. Taking this into account, we derive the following values associated with AHA's three different programme options:

**Option 1 has a value of £657,540 per year**

$[(a)+(b)+(c)+(d) =$   
 $£156,960+£0+£308,340+£192,240]$

**Option 2 has a value of £1.4m per year**

$[(a)+(b)+(c) =$  £935,000+ £113,100+  
 $£351,000]$

**Option 3 has a value of £1.14m per year**

$[(a)+(b)+(c) =$  £468,909+£281,000  
 $+£391,800]$

Option 2 has the clearest benefits to society, mainly coming from the employment outcomes, but the important element of decision-making will be to compare these benefits to the costs involved in each project option. The benefit to cost ratios (which in this context would be the social return on investment) are as follows:

Option 1 has a benefit-cost ratio of 0.33

Option 2 has a benefit-cost ratio of 1.14

Option 3 has a benefit-cost ratio of 1.55

Benefit to cost ratios are one way of using these figures (we could use net benefit to cost ratios too for example). These results show that benefits exceed costs in Options 2 and 3 but not in Option 1. For every pound spent in Option 2 there is a return of £1.14 and for every pound spent on Option 3 there is a return of £1.55. Option 3 is therefore superior and should be prioritized by AHA. Option 2 is also

worth doing (although not as worthwhile as Option 3) and so with the £2m of funding AHA should use £1.9m to investment in Options 2 and 3 and keep/save the remaining £100,000. As a combined set of programmes Options 2 and 3 would generate a benefit-cost ratio of 1.34. In other words for every pound spent on Options 2 and 3 there is a return of £1.34 overall. Under this analysis Option 1 should not be pursued even if it were the only option on the table since there are negative net benefits associated with the programme.

### **C.3.2. Values associated with new builds**

This section is a development from the example presented in Box 1 and the rationale for the approach taken here is set out in section A.3.3. Let's assume more concretely that a housing sector organisation is to investment £150m in the creation of 2,000 new high-quality homes which will house 6,000 people. This has two distinct benefits:

1. New homes for the 6,000 tenants that are of a superior quality to their previous residences.
2. The creation of construction-related jobs.

We assume that this creates 100 additional full-time jobs for 2 years. These are jobs that would not have been created in the absence of this investment and is a lower sum than the total number of jobs involved in building the 2,000 homes overall as a fair proportion of people would have found work anyway. Also we assume that the 6,000 tenants would have come from poor quality local authority and private rental accommodation. Some of these tenants will be children and we make the assumption here that the values attached to housing quality factors are the same for children too, which is a strong assumption.

According to Table 7 a move from poor quality local authority and private rental housing to a good quality housing association home results in between £973-£997 of benefits for each tenant per year. We take the midpoint of this given that people will come from a mix of the homes which is £985.

**The creation of 2,000 new homes for 6,000 tenants therefore results in a social value of £5.9m per year (6,000\*£985).**

There are also 100 additional jobs as a result of the building of the homes. Table 9 shows that the value of employment can be assumed to be about £8,700 per year in addition to the wage income. Let us assume here that the 100 additional workers saw an increase in annual income of £10,000 – this is calculated as their new wage income minus any unemployment benefits they received previously but now lose. **Therefore, employment has a value of £18,700 per year to each individual. This is a total value of £3.7m for the two years.**

If we make a further assumption that there will be 6,000 tenants in the 2,000 homes for 40 years, but that there are maintenance costs of about £25m over the 40 years to keep the houses in good condition then total costs and benefits will be as follows:

**Costs: £150m+£25m=£175m**

**Benefits: (£5.9m\*40)+£3.7m=£239.7m**

Therefore, the construction of these 2,000 new builds under the assumptions stated here creates about £64.7m of social benefit over 40 years. If we were to discount this using the social time preference discount rate of 3.5% (HM Treasury Green Book) this results in a **present net benefit of about £17m from building 2,000 good quality homes**<sup>13</sup>.

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<sup>13</sup> Note, there is no agreed upon framework for discounting future wellbeing impacts and so we use

We can run a number of different break-even analyses here. Say for instance that there is some uncertainty regarding the cost of building 2,000 new homes. In our example we had assumed that it costs £75,000 to build each new home (£150m/2,000). For the value associated with building 2,000 homes that would accommodate people who would otherwise have been in poor quality housing we calculate that there would still be a net social benefit up to the point where new homes cost £118,000 each to build. If new homes could cost more than this to build with a fair amount of certainty it would tell us that in terms of social value created these homes should not be built or built more cost-effectively.

### **C. 3.3. Discussion**

In Part C we have used the values derived from the wellbeing models in Parts A and B to show how they may assist in housing association intervention decisions. According to the wellbeing valuation approach there are clearly areas and interventions that are significantly valued by people and we saw how this could affect the worthiness of different intervention options. If a housing association were also building new homes as well as undertaking asset management and community investment programmes, then all of the values could be added and used together in a similar approach to those set out in sections C.3.1 and C.3.2.

An important caveat, as discussed above, is that these values and this approach only illuminate one aspect of the decision to intervene, although a very important one at that. That aspect is the consideration of how these interventions impact on individual and social level welfare or wellbeing. Figure 1 shows that housing associations will also need to consider their asset value and income generation. As we look more widely at

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the standard discount rate purely as an example here.

society in general we will also need to consider any impacts on exchequer finances as these are important benefits for the economy and taxpayer. In the examples above we see that for example, Option 2's labour market intervention and the health related interventions in Option 3 will have implications for benefit payments and NHS expenditures. These are benefits to society not picked up by benefits to the individual stakeholders. The impacts on people's welfare will be an element of any housing association intervention, but it may not be the most important one to a particular housing association, who may weight income generation and asset value just as highly or higher.

## Part D: Concluding Remarks

In this paper we have assessed the value people attach to different housing conditions and outcomes related to community investment programmes run by housing associations. We have done this through the Wellbeing Valuation approach, which estimates the value of things to individuals by assessing the impacts they have on people's wellbeing. We must recognize the fundamental normative (or philosophical) arguments and assumptions we have made when thinking about social value and wellbeing. We have based our estimates of impact and value on life satisfaction responses. We could well have conceptualised wellbeing as preference satisfaction and used methods such as stated and revealed preference techniques instead, which are traditional in welfare economics. Or, we could have measured wellbeing more objectively, such as by whether people's living standards meet certain criteria. Furthermore, for some issues housing associations may have strong rights-centred (deontological) views. In other words, that something matters - say good quality homes or adult learning - regardless of their impacts on wellbeing. In this case the argument for heating could be made even if heating fails to show up as a determinant of life satisfaction or housing related preferences and would be provided regardless of any benefit to cost ratio. In a nutshell how we measure wellbeing consequently matters for how we measure social value and make social decisions.

Deciding what outcomes matter (i.e., social value, asset value, income or exchequer value) and then conceptualising how to measure the benefit of these outcomes (for example, are we concerned with the satisfaction of

people's preferences, rights or life satisfaction, or a combination of all?) are major challenges for housing associations, as they are for any public policy institution. But understanding and tackling these challenges will improve decision-making and investments in the long run, especially as housing associations face increasingly difficult resource allocation decisions in a tightening financial environment, and seek to maximise and optimise the social and financial returns on all aspects of their work.

Whatever approach is decided upon, the analysis presented here is important for a number of reasons. First, we have shown that there is a clear ranking in terms of the importance of different housing quality variables for people's life satisfaction (and that incidentally this ranking is different to what we would see if we looked solely at people's preferences) and this information can be used to show the value attached to different quality homes. We also saw a wide variety of values related to community investment programmes that are run by housing associations. People's wellbeing is likely to be an important part of any investment decision (in some cases even the most important one) and using a specific measure of wellbeing (life satisfaction) we have demonstrated how investment decisions can be quantified and prioritised so that housing associations can maximise the social welfare outcomes related to their programmes and interventions. These analyses and results can form an important aspect of housing associations' decision-making and should impact in a constructive way on final decisions regarding new homes, asset management and community investment.

Second, there is a growing literature demonstrating that wellbeing is in itself an important **input** that leads to other more tangible or easier to measure outcomes. The literature suggests that people with higher wellbeing are more productive and creative at work, they are more altruistic in that they are far more likely to give up their time to help others (both at work and in private life) and are healthier in that they are less likely to catch a range of different viruses and even if they do they heal much quicker. These studies have mainly been conducted at the micro (individual) level, but through randomization of treatment (i.e. wellbeing is randomly “allocated” through a number of small triggers/interventions) it suggests that there is a causal link from wellbeing to these outcomes. These findings have important implications for health expenditures, absenteeism at work, productivity and economic growth and charitable giving – which are clearly important for any society.

## Part E: Next Steps and Future Research

The analysis and results presented here give an indication of the types of areas we can work in when thinking about social impact and housing. We have predominantly relied on wellbeing data in the analysis and have used a large national dataset to explore the links between housing and wellbeing and we have also looked at the research to date to assess some of the possible impacts of community investment programmes.

During 2013, HACT will be working in partnership with Daniel Fujiwara and OCSI to make use of the methodologies identified in this report, alongside the successful Community Insight mapping platform to provide more effective mapping, modeling and reporting of housing providers' social impacts. However, we believe that the present research provides additional and important impetus for housing associations to consider the insight that can be generated through focusing on social impact across their organisations, drawing on robust evidence from large datasets. There are, of course, a number of caveats to the present work and analysis and going forward we would like to develop on this work in a number of different ways.

- i. **More detailed modeling of the metrics set out in the current report.** Subject to funding, we intend to carry out further analysis of wellbeing based metrics, based on data generated by surveys of social housing residents' attitudes, preferences and circumstances. Preference related data is not abundant in datasets like the BHPS and this work would help provide a better understanding of people's

preferences regarding housing and community investments at the level of large sample sizes. This work would, in particular, improve understanding of impacts in relation to social housing residents (who only make up 15-20% of the BHPS), and issues around geographic differentiation. Our aim would be to bring together a significant number of housing providers who would be willing to include a number of standardised questions in their STAR (or similar) residents surveys, which would provide a large body of data on preferences and data sufficient to enable the generalised life satisfaction scores in the initial report to be adjusted to take account of any specific social, economic or attitudinal issues specific to social housing tenants.

- ii. **Significant additional modeling work to better understand the social value of the sorts of community investment activities carried out by housing providers (in particular those highlighted by the Neighbourhood Audit).** This would also include modeling the exchequer savings generated by housing provider activities. It was out of the scope of the present study to run full analysis on non-housing areas and instead we undertook a meta-analysis of results that were already available from previous research. This analysis can be further developed through analysis of community investment programmes in existing datasets and through analysis of the primary data collected in the resident surveys described in (i). We also propose the development of straightforward ways in which the methodology and metrics

generated can be used by housing providers to more effectively model and evidence the social value that they create by their wider community investment activities, which will be beneficial for decision-making.

- iii. **Development of a robust model capable of integrating the social value metrics being generated by current and ongoing research with asset valuation models used by housing providers.** We believe there would be value in developing approaches that would enable housing providers to explore the social value returns generated by different resource distribution decisions made within their business, in particular in relation to asset management and maintenance and new build, building on and complementing the outputs from (i) and (ii) above.
  
- iv. **The development of practical tools to enable housing providers to make use of the insights in this and follow-up research, to support decision making and impact reporting within their organisations.** We are grateful to those organisations who have already expressed interest in and are collaborating with HACT to develop these tools, building on HACT's successful Community Insight platform: [www.communityinsight.org](http://www.communityinsight.org).

HACT would welcome engagement with housing providers and others interested in participating in and/or supporting some or all of this activity over the next 12-18 months.



# Annex

## The Wellbeing Valuation approach

A central assumption of the wellbeing valuation approach is that measures of wellbeing (here life satisfaction) are good proxies of an individual's underlying utility. In this sense, the utility function and its level sets (the indifference curves) can be directly observed and it is possible to estimate the marginal rates of substitution (MRS) between income and the non-market good to provide an estimate of value. For example, if a 20% reduction in local crime rates increases the life satisfaction of an individual by 1 index point and an increase in household income of £5,000 p.a. also increases their life satisfaction by 1 index point, then we would conclude that the value of the 20% reduction in crime to them is £5,000 per year.

Formally, the compensating surplus is estimated as follows in the wellbeing valuation approach:

$$v(p^0, Q^0, M^0) = v(p^1, Q^1, M^1 + CS) \quad (A.1)$$

where  $v(\cdot)$  is the indirect utility function;  $M$  = income;  $Q$  = the good being valued;  $p$  = prices. The  $0$  superscript signifies the state before  $Q$  is consumed (or without the good) and the  $1$  superscript signifies the state after consumption (or with the good). In our analysis in this paper  $Q$  refers to housing quality (or later on in Part B an outcome associated with community investment programmes. Here  $Q$  is a non-market 'bad' in that it impacts negatively on utility ( $\partial v / \partial Q < 0$ ).

In practice in wellbeing valuation we work with an 'observable' measure of welfare (ie, self-reported wellbeing rather than preferences) and it is possible to estimate the MRS between  $M$  and  $Q$  to measure CS using the *direct utility function*  $u(\cdot)$ :

$$u(Q, M, X) \quad (A.2)$$

where  $X$  is a vector of other determinants of welfare ( $u$ ). Empirically what we measure is:

$$LS(Q, M, X) \quad (A.3)$$

where  $LS$  = life satisfaction. Equation (A.3) is usually estimated by applying regression analysis to panel or cross-sectional survey data to measure the impact of non-market goods on life satisfaction. For example, the following life satisfaction function is estimated (assuming cross-sectional data here):

$$LS_i = \alpha + \beta_1 M_i + \beta_2 Q_i + \beta_3 X_i + \varepsilon_i \quad (A.4)$$

The coefficients on income and  $Q$  can be used from the same model to derive MRS, but as stated in Part A we prefer to use an estimate of the impact of income on life satisfaction from a separate (lottery winners) instrumental variable model.

Now we can substitute (A.4) into (A.1):

$$LS_i(\alpha + \beta_1 M_i^0 + \beta_2 Q_i^0 + \beta_3 X_i^0 + \varepsilon_i) = (\alpha + \beta_1(M_i^1 + CS) + \beta_2 Q_i^1 + \beta_3 X_i^1 + \varepsilon_i)$$

(A.5)

And solve for CS:

$$CS = e^{\left[\frac{-\beta_2}{\beta_1} + \ln(M^0)\right]} - M^0 \quad (\text{A.6})$$

(A.6) derives estimates of welfare change that are consistent with welfare economic theory. (A.6) is equivalent to equation (2) in Part A (which was used to derive values). For purposes of exposition it is derived from a single equation (equation (A.4)) here but in the actual analysis  $\beta_1$  and  $\beta_2$  come from two separate models. The term  $e^{[\ ]}$  accounts for the logarithmic form of the income variable in the income model.

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