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Developing an Approach to Sustainable Return on Investment in the UK, Brazil and the USA

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Report for Royal Institution of Chartered Surveyors

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Contents

Glossary

Activity – The intervention that is delivered to try and bring about change.

Altruistic value – An example of non-use value. Altruism reflects a desire to secure an enhancement of the wellbeing of others.

Attribution – An assessment of how much of the outcome was caused by the contribution of other organisations or people.

Basis of value – A statement of the fundamental measurement assumptions of a valuation.

Benefits transfer – The practice of estimating economic values for an intervention by taking evidence on the value of change from a similar intervention in another place or situation.

Bequest value – An example of non-use value. It is the value individuals attach to the fact that the resource will be available for use by future generations.

BREEAM – An environmental assessment method and rating system for buildings.

Cost-benefit analysis (CBA) – A form of economic analysis in which the costs and benefits of a specific intervention are quantified and compared.

Deadweight – A measure of the amount of outcome that would have happened even if the intervention had not taken place.

Displacement – An assessment of how much of the outcome has displaced other outcomes.

Drop-off – The financial deterioration of an outcome over time.

Ecosystem services – The benefits that people gain from nature. Examples include fresh water, timber, climate regulation, recreation, and aesthetic values.

Ecosystem services analysis (ESA) – A framework for the valuation of the natural environment.

Environmental impact/value – The environmental change experienced by individuals, communities and society through interventions that affect natural systems.

Financial value – The financial surplus generated by an organisation, project or programme in the course of its activities.

Global Reporting Initiative (GRI) – An initiative that promotes the use of sustainability reporting as a way for organizations to become more sustainable and contribute to sustainable development.

HM Treasury Green Book – The UK Government's core guide to policy evaluation used by all central UK Government departments, local authorities and other public sector bodies.

Impact – The difference that an intervention makes for stakeholders (taking into account what would have happened anyway, the contribution of others and the length of time the outcomes last).

Impact map – A table that captures how an intervention makes a difference for different stakeholders.

Inputs – The contributions made by each stakeholder that are necessary for the intervention to happen.

Intangible asset – A non-monetary asset that is manifested by its economic properties. It does not have physical substance but grants rights and economic benefits to its owner.

Intervention – Something you deliver to try and bring about change.

Intrinsic value – The value that is placed on the result of an intervention change without any regard for the consequences.

Life Cycle Assessment (LCA) – A technique to assess the environmental aspects and potential impacts associated with a product, process, or service.

Living building challenge – A stringent building certification program, advocacy tool and philosophy that defines advanced measures of sustainability in the built environment.

Market approach – A valuation approach which provides an indication of value by comparing the subject asset with identical or similar assets for which price information is available.

Market value – The estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.

Materiality – Information is material if its omission has the potential to affect stakeholders' opinion about the intervention.

Monetise – To assign a financial value to something.

Net present value – The value, as of a specified date, of future cash inflows less all cash outflows (including the cost of investment) calculated using an appropriate discount rate.

Non-use value – The value that is derived from the knowledge that a resource is maintained. This comprises bequest value, altruistic value and existence value.

Outcomes – The changes resulting from an activity. The main types of change from the perspective of stakeholders are unintended (unexpected) and intended (expected), positive and negative change.

Outputs – A way of describing the activity in relation to each stakeholder's inputs in quantitative terms.

Participants – The individuals who take part in activities or interventions.

Present value – The value, as of a specified date, of a future payment or series of future payments discounted to the specified date (or to time period zero) at an appropriate discount rate.

Proxy or proxy value – An approximation of value where an exact measure is impossible to obtain such as willingness to pay or willingness to accept.

Scope – The activities, timescale, boundaries and type of an SROI analysis.

Social return on investment (SROI) – A framework based on seven principles used to understand and measure social change stemming from an intervention.

Social impact/value – The social difference made to individuals, communities and society through interventions.

Social value analysis (SVA) – The process of determining, through a range of data collection methods, the likely social impact of an intervention, culminating in the valuation of the changes that have been identified.

Stakeholders – People, organisations or entities that experience change, whether positive or negative, as a result of the activity/intervention that is being analysed.

Sustainable return on investment (SuROI) – A framework used to combine multiple methods and approaches designed to understand and measure social and environmental change stemming from built environment projects.

Sustainable impact/value – The social and environmental difference made to individuals, communities and society through interventions.

Tangible assets – Assets with a physical manifestation. Examples include land and buildings, plant and machinery, fixtures and fittings, tools and equipment, and assets in the course of construction and development.

The Economics of Ecosystems and Biodiversity (TEEB) – A global initiative focused on drawing attention to the economic benefits of biodiversity by highlighting the growing cost of biodiversity loss and ecosystem degradation.

Total Economic Value (TEV) – The total gain in wellbeing from a policy. It comprises use and non-use values.

Use value – The value that is derived from using or having the potential to use a resource. This is the net sum of direct use values, indirect use values and option values.

Valuation – Either the process of establishing the value of an asset or liability, or the amount representing an opinion or estimate of value.

Welfare economics – The branch of economic thought that deals with economic welfare or wellbeing, including various propositions relating competitive general equilibrium to the efficiency and desirability of an allocation (after Deardorff's Glossary of International Economics).

Wellbeing valuation – An approach to estimating the value of social impact from interventions through the use of surveys that record people's subjective wellbeing.

Wellbeing – A broad measure of how well someone's life is going.

Willingness to pay – A traditional approach to valuing outcomes where individuals are asked to state what they would be willing to pay for a non-market good. A similar approach is also used in willingness to accept a negative outcome.

Executive Summary

Introduction

There have been many predictive tools that define the economic impacts and benefits of developments. These have been devised primarily to establish the relative cost of different aspects of a development such as materials, construction methods, labour, occupation etc. The potential for impacts on the environment has (for large developments in Europe) been described by environmental impact assessments (EIA). The findings in EIA reports tend to be expressed in terms of exceedance of, or compliance with, environmental regulations or guidelines as opposed to a monetary value. There is also a significant body of work devoted to describing and codifying the influence of development on the social fabric. However, the field has not reached a level of development where it has been able to produce either an equivalent set of exceedance levels (as in the environmental sphere) or an agreed method that can be used to monetise social impacts.

There may now be a need for additional approaches that can supplement conventional financial valuation techniques and provide holistic values for those making sustainable design or investment or permitting decisions in the built environment. Climate change, the scarcity of important resources, the need to house key workers, the escalating cost of support for the excluded and vulnerable, the effective involvement of interested parties, and the volatile or uncertain performance of the economy are just a few of the variables that developers and neighbourhood renewal bodies must balance when making decisions about where, how and when to build and intervene.

A process that can help to balance and quantify factors that are often hard to measure and compare will be invaluable for those who want to show how a development intervention will offer the best sustainable solution for the community and the investor. The development of a sustainable return on investment approach has the potential to not only quantify competing factors, but could, through the process by which value is established, involve a wider cast of stakeholders in the development at an early stage. It could also help to convince funders to invest or re-invest in projects that may not appear to be economic, based solely on conventional valuation methods.

Conventional valuation methods relate to the valuation of existing landed property in relation to commercial rental or disposal, or for the purposes of asset evaluation. The Sustainable Return on Investment (or SuROI) framework described in this report does not attempt to challenge this aspect of practice. Rather, the approach seeks to supplement current practice so that all aspects of built environment, especially social and environmental impacts can be valued and compared. The report will explain the approach, and show how it can apply in a number of illustrative case studies. The proposition is that SuROI has the potential to aid sustainable decisions for private, public and third sector developers, and for those that seek to regulate or enhance these proposals.

Findings

The report shows that it is possible to combine two different approaches that place a value on social and environmental impact and apply them in built environmental contexts to reveal the sustainable return on investment. The key findings of the report are:

- The illustrative return on investment calculations (expressed as ratios) for the three case studies revealed the following results :
  - For every £1 invested in antisocial behaviour workshops for young people in Salford, England the project yielded £11.51 in return;
  - For every £1 invested in health and wellbeing developments in Pittsburgh, USA the project yielded £1.88 in return;
  - For every £1 invested in open space areas in public housing estates in Porto Alegre, Brazil the project yielded £0.72 in return; and
  - For every £1 invested in housing with open space and social support services in Porto Alegre, Brazil the project yielded £26.46 in return
- The emerging discipline of Social Return on Investment (SROI) provides a useful framework in which to embed a number of approaches that can value social and environmental change.
- The spread sheet design of the Impact Map in the SROI Guide (Nicholls et al., 2012) is capable of incorporating other approaches, such as Ecosystems Services Analysis (ESA).
- Stakeholder data collected in the field can be used to evaluate social and environmental change caused by completed projects, and to predict future changes from planned projects.
- The socio-economic and environmental data required to carry out a sustainable return on investment calculation was often required to be obtained from a variety of central and local government sources, developer sources, and primary sources collected from stakeholders in the locality of the project. In some countries, where this data is unavailable, practitioners can be consulted to construct reasonable assumptions.
- Organisations that wish to understand the value of social and environmental change should seek out partnerships with practitioners working in this field until such time as capacity in this field increases.

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1.0 Introduction

1.1 Aim and Objectives

The aim of the research was to develop an approach that would help to value social and environmental change in the built environment. The objectives were designed to use existing valuation approaches (primarily Social Return on Investment and Ecosystem Services Analysis) that have originated from disciplines outside the realms of the built environment, and apply them to projects and programmes in an integrated manner in a variety of global settings. The Sustainable Return on Investment (or SuROI) framework can be used either as a planning (predictive or forecasting) measure, or to understand the implications of change on completion of a project (evaluative).

At present many of the projects used to illustrate the SuROI approach are concerned with the responsible expenditure of public or third sector funding to improve sustainable outcomes for the entire community. However, this is changing and private sector developers are taking interest for a variety of other reasons including enhanced corporate responsibility and evidenced justification for planning applications for a range of different projects. The approach would also benefit those advising developers and contractors on the inclusion of social and environmental value in pre-qualifying statements and designs, and those in the UK who are tasked with interpreting the requirements of the Public Services (Social Value) Act (2012), often referred to as the Social Value Act or SVA. This could include preparation of questions and assistance interpreting the answers to the SVA, or research and preparation of the applicant's SVA report.

The research is directed towards built environment professionals in all sectors where evidence of social and environmental value is either demanded by a regulator or funder, or is likely to contribute to competitive advantage. It aims to collaborate with other disciplines in order to add value by developing new/future knowledge for society and practitioners.

Specifically the research objectives were to:

- Refine and adapt SROI and Ecosystem Services Analysis approaches and design a single format for an integrated forecast or evaluation framework
- Identify case studies in Brazil, the USA and the UK to trial elements of the approach
- Carry out or utilise primary surveys to establish social change in the case study areas where required
- Prepare illustrative descriptions and calculations to show how social and environmental change can be valued in these areas
- Capture any transferable learning and integrate this into a commentary for built environment professionals
- Disseminate the approach for consultation in the UK, the USA and Brazil.

1.2 Work to Date on the Analysis of Social and Environmental Factors

Cost benefit analysis (CBA) is still the predominant tool used to assess the relative merits of a project. An extension of the more conventional financial CBA that considers the effect of the project on environmental and societal factors is gaining traction and is called social cost benefit analysis or SCBA. In the Supplementary [HM Treasury] Green Book Guidance 'Accounting for Environmental Impacts', Dunn (2012) states that the UK government recommends the use of SCBA as a way of expressing the value of a proposal to UK society for policy appraisal purposes. The Guidance goes on to say that this approach can also be applied to projects.

The drawback to the use of CBA or SCBA is that these approaches tend to focus on economic costs and benefits. Vardakoulias (2013) explains that this is understandable because 'projects are often driven by the economic imperative to generate jobs and growth, [while] social and environmental costs and benefits are often treated as secondary considerations. This is despite the fact they are of central concern to individuals and communities'. The advantage of monetising social and environmental impacts is that all of the influences of the project can be weighed using the same metric. A further difficulty with CBA-type calculations is that they can overlook indirect impacts of an intervention that are not tangible or have no market value. Examples of this are enhancements to wellbeing or stronger interconnections between community members.

Approaches such as Social Return on Investment and Ecosystem Services are particularly useful when calculating wellbeing – the term used to describe how an individual feels about their life. Wellbeing can be monetised for both the instrumental and the intrinsic value of the project. Instrumental wellbeing might result in an individual getting a better job that can also boost the local economy. It may also mean that feeling healthier leads to savings to the health service or lower insurance claims. Instrumental value is based on the monetisation of the consequence of feeling better or worse. Intrinsic wellbeing values are often derived from a willingness to pay (to feel greater self-esteem for example), or from survey or panel-based data where people relate levels of income to degrees of improvement about the way they feel about their lives. The intrinsic value of interventions has been a challenge for those seeking to extend conventional valuation into the realms of Total Economic Value. Wenger and Pascaul (2011) point out that 'the hindrance for CBA is that intrinsic values exhibit monetary incommensurability, i.e., individuals are unable and often refuse to measure them along the scale of money. As a consequence, like the psycho-cultural dimension of wellbeing, any intrinsic form of value that may be attached to nature remains excluded from CBA' (p.10).

This report will describe methods that place a value on social and environmental impacts resulting from built environment projects. The approach uses methods that do not conform to the principle ways of estimating value as set out in the RICS Valuation – Professional Standards (RICS, 2014) known as the 'Red Book' and the International Valuation Standards. Broadly, these rely on market, income or asset-based methods and these are not questioned or criticised in this report. The approach outlined and illustrated in this report is proposed as additional and complementary to the established market-based method regularly utilised by built environment valuation practitioners.

There has been a considerable amount of work done on the scoping and appraisal of social and environmental factors. One of the most recent attempts to summarise the entire range of sustainability appraisal methods was carried out as part of the EPSRC-funded scoping study, 'Metrics, Models and Toolkits for Whole Life Sustainable Urban Development' (known as SUE-MOT), which concluded in 2011. The United Nations Environment Programme (UNEP) report on 'Sustainable Metrics' concluded that if an organisation wished to achieve full sustainability-informed decision-making it would need to 'work with other professionals, including environmental economists to develop methodologies and techniques that support full sustainability evaluations, (Lorenz and Lützkendorf, 2014). Sustainable performance standards such as BREEAM and the Living Building Challenge encourage developers to design sustainable parameters into their buildings, and then measure and monitor the outcomes. Outside the built environment community, corporate reporting against 'triple bottom line' metrics, and more formal reporting standards such as the Global Reporting Initiative or GRI, have also improved the understanding of how to collect, handle, analyse and report on multiple environmental and social factors.

The SUE-MOT study identified in excess of 600 potential tools developed by both academe and industry, of which only 103 would have been realistically usable. Refinement of this list by Brandon and Lombardi (2011) concluded only 61 frameworks successfully appraised sustainability (p.25). Due to the unstructured nature of these tools they remain impractical to implement. However, the work to develop a wider interpretation of sustainable value is now evolving in response to concerns about deteriorating environmental conditions and increasing demands for social justice. For example, some studies of social impact now encompass 'new 'soft' themes, such as happiness, wellbeing and social capital, [which] are becoming central to the social sustainability debate, together with more traditional 'hard' concepts of basic needs, equity, employment etc.' (Colantonio, 2009).

Woodcraft (2012) has reviewed recent work in this field, which included research by Colantonio, 2007; Dillard et al., 2009; Colantonio and Dixon, 2010; Vallance et al., 2011; Dempsey et al., 2011; Woodcraft, 2011; Weingaertner and Moberg, 2011; Murphy, 2012; and Magee et al., 2012. Woodcraft points out that there are a growing number of long-term longitudinal surveys on the factors that contribute to social sustainability in populations. In the UK these include the British Household Panel Survey, the Crime Survey of England and Wales, the Taking Part Survey and the Citizenship Survey.

While all of this work will assist built environment professionals to appreciate the importance and significance of social factors, the focus has been on understanding the impacts that these might have on the success or otherwise of proposals, or (at the ex-post stage of projects) on whether the project met expectations of social and environmental performance. The work to monetise the detrimental or the added sustainable value of development schemes has not featured to date in any depth in the literature and it is this aspect that is the focus of this report. The work on valuing natural systems has a more established literature, although it is less commonly applied in urban contexts. This is covered in detail in Section 2.4.

The Glossary at the front of the report will assist in defining what the terms used in the research mean, although it should be acknowledged that there is no consensus on the definition of some of these terms. Where this is the case, a discussion setting out the range of opinion is offered in the text.

1.3 Structure of the Report

Section 2 describes and defines the purpose of a SuROI analysis and explains the origins and mechanics of the two main methods employed during the research project: Social Return on Investment (SROI) and Ecosystem Services Analysis (ESA). Section 3 describes each of three case studies used to illustrate the approach. The three case studies were:

- The Programa Integrado Entrada da Cidade or PIEC public housing programme in Porto Alegre, Brazil
- The Second Avenue regeneration programme in Hazelwood, Pittsburgh, USA
- The Change Your Choices programme in Little Hulton, Salford, England.

The case studies were chosen to test the approach in a multi-national context. Together the case studies contained a wide range of interventions that had or could influence people's lives through social or environmental change. Each case study in itself did not contain a complete set of sustainable change factors, however one (the PIEC programme) was chosen for its combined social and environmental interventions to illustrate how these factors can be integrated to reveal a single return on investment figure.

Section 4 contains issue-specific illustrations of the SROI approach in different case study areas while Section 5 contains an illustration of how to carry out an ecosystem services evaluation using Porto Alegre as the context. Section 6 shows how a range of social and environmental factors can be combined in the same return on investment analysis, again using PIEC in Porto Alegre as the context. Section 7 contains the findings of the research and some suggestions for future work.

2.0 Background to Sustainable Return on Investment

'Things that can be bought and sold take on a greater significance and many important things get left out' **(Nicholls et al., 2012)**

2.1 Drivers for New Approaches to Value Social and Environmental Change in the Built Environment

Valuation is defined in the International Value Glossary as either 'the process of establishing the value of an asset or liability' or 'the amount representing an opinion or estimate of value'. The approach adopted in this report recognises that conventional methods of valuation used by built environment professionals may now need to be supplemented by other approaches in order to arrive at an overall or holistic sustainable value. While some non-tangible assets are valued through International Valuation Standards and by academic workers, many other preferences cannot be revealed through market prices, and approaches such as SROI and ESA focus (entirely or in part) on these. In doing so, they are consistent with welfare economics which is accepted to be good enough for organisational decision-making where it is supported by a robust evidence base and appropriate assurance.

The 2014 edition of the RICS Valuation Standards (commonly referred to as the Red Book) recognises the need to include a wider range of factors that can influence the value of built environment projects. It now contains the direction that sustainability considerations are important when undertaking valuation assignments. The 2014 version states that 'as commercial markets become more sensitised to sustainability matters, so they may begin to complement traditional value drivers, both in terms of occupier preferences, and in terms of purchaser behaviour', (RICS, 2014, p. 59). As a result valuers are invited to consider the implications of sustainability criteria, and reach 'an informed view on the likelihood of these impacting on the value [of the subject property]'.

The RICS Guidance Note on Sustainability and Commercial Property Valuation (RICS, 2013) contains advice to valuers on a building's sustainability characteristics as this relates to market value, fair value, market rents and investment value. The guidance is scoped on the consideration of sustainability factors as they affect the value of a building whereas the approach set out in this report is designed to assess the sustainable value that buildings and development can add to occupants' lives, people living nearby, and the wider environment and economy. However, the two approaches share the belief that wider social and environmental issues are beginning to enhance and complement the traditional drivers of a property's economic value, investment risk and performance.

In another development, the UNEP Finance Initiative's report on Responsible Property Investment or RPI (UNEP-FI, 2012) stated that 'it is the fiduciary responsibility of property investors to understand the implications of environmental and social issues on the performance of their investments and to seek appropriate risk-adjusted investment returns as well as economic ways to improve the sustainability of the assets they buy and hold.' This and other work on RPI implies, rather than explicitly sets out, how this responsibility can be realised, but it is nevertheless a further encouragement for valuers to include these issues in their calculations.

The advent of RPI and the additions to the Red Book have raised the profile of sustainability and its impact on property value in the profession, but two other developments have also been significant in influencing the sustainable value agenda. The first of these was the financial downturn of 2007/2008. In the UK, sections of the house-building market have yet to recover from this period. The economic difficulties were particularly significant in the social and affordable sector. The UK government reported that in 2013/14 'just 840 new homes were completed by local councils and 22,150 by housing associations in England…' (Osborne, 2014). The downturn has meant that fewer homes are being built in Britain than at any time since the First World War. The country now faces a shortfall of between 100,000 to 150,000 homes (Barker, 2004). If this lack of building remains at current levels there will be one million fewer homes than demand requires within seven years (Griffith and Jefferys, 2013).

The other development was the adoption of the Social Value Act in the UK. The Public Services (Social Value) Act 2012 received Royal Assent on 8 March 2012 and was put into force by a commencement order on January 2013. Introduced as a Private Members Bill, the procurement policy note issued by the UK government explained that 'the Act places a requirement on [public sector] commissioners to consider the economic, environmental and social benefits of their approaches to procurement before the start of the process' (Cabinet Office, 2012). The Act also invites commissioners to apply these considerations to the pre-procurement stage of contracts as this is the point where the introduction of social value is likely to be most effective. The note also suggests that 'commissioners can use the Act to re-think outcomes and the types of services to commission before starting the procurement process'. There is also a warning that in times of decreasing availability of capital 'commissioners will need to identify better targeted, more innovative and radical service delivery solutions to meet this demand'. It is conceivable that other countries will introduce similar legislation in the future.

2.2 Focus of the Research

The report integrates the following emerging valuation approaches to address built environment interventions:

- Social Return on Investment (SROI)
- Ecosystems Services Analysis (ESA)

The framework that allows these two approaches, and potentially many others, to be used in a single analysis is called Sustainable Return on Investment or SuROI. The aim of SuROI is to allow the environmental and social value of a project, programme or policy in the built environment to be made explicit through evidence.

SuROI is a flexible framework designed to incorporate any approach that places a value on social and environmental change. This allows the user to modify both the nature of the data and the ambition of the analysis in line with the developments in the field. Both SROI and ESA were developed to solve problems in areas including investment and natural resource management and the implementation of social programmes. The difference between SROI and other approaches such as ESA or Life Cycle Assessment or LCA is that the former has stated principles (see Section 2.3) which link the estimation of value of impacts to stakeholders. Some calculations within other approaches (ESA and LCA for example) may rely on stakeholder-centric methods such as willingness to pay, but others are derived from commodity pricing and do not conform to the requirements of SROI to involve those affected by the interventions.

The following sections will describe the mechanics and application of SROI and ESA to the problem of valuing social and ecological change in built environment contexts.

2.3 Social Return on Investment (SROI)

2.3.1 Defining SROI

There have been many tools that have been developed to measure social change. One sector that has led the way in the development of these tools is social landlord organisations. In the UK these are public or third sector owned and managed housing bodies for (predominantly) lower income tenants. Wilkes and Mullins (2012) found that 35% of the social landlords used internally developed tools while 41% used externally sourced tools and 9% used a mixture of the two. SROI is the favoured approach by this study for a number of reasons:

- It is flexible and can incorporate a number of other methods into its framework
- It has clear principles which encourage a consistent approach
- It relies on a combination of stakeholder accounts and statistical trends to ensure a robust and defendable result
- It is well-suited to built environment contexts.

SROI was developed from an interest in determining the value of outcomes from charitable donations. Early work was carried out by the Roberts Enterprise Development Fund (REDF) in San Francisco (Emerson and Twersky, 1996). The approach was further refined at the Harvard Business School (Maughan, 2012). The most current iteration is the 'Guide to Social Return on Investment' published by the SROI Network (Nicholls et al., 2012). In the UK, and later in the USA, interest started to go beyond individual philanthropic donor organisations and was adopted by a broader constituency including public sector resource providers such as local and federal governments. The SROI Network Guide explains that the current approach was developed from a combination of social accounting and cost-benefit analysis. It was developed to ensure all types of value were captured and reported in an evidence-based manner. The Guide states that SROI 'is a framework for measuring and accounting for this much broader concept of value; it seeks to reduce inequality and environmental degradation and improve wellbeing by incorporating social, environmental and economic costs and benefits' (Nicholls et al., 2012).

There is no definitive definition of social value. Tuan (2008) for example offers that social value is the 'concept and practice of measuring social impacts, outcomes and outputs through the lens of cost'. Emerson et al., (2001) explain that it is created 'when resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole'. Wood and Leighton (2010) say that social value refers to 'wider non-financial impacts of programmes, organisations and interventions, including the wellbeing of individuals and communities, social capital and the environment'.

Effectively SROI methodology compares the social value of the benefits of a particular action, project or programme against its costs. One recent application for this has been to determine the added value of the work of social enterprises. For example, if the Big Issue (the magazine and social business devoted to helping the homeless) takes 100 homeless individuals off the streets and improves their health, crime and employment prospects, this might save the public purse £1m in averted medical, social worker and police time. If the enterprise is successful in finding jobs for the 'vendors' (so called because part of their income is created by selling the magazine on the streets), it will also create income for the State through increased taxes. If the cost of the programme is £100,000 (raised through advertising revenue for the magazine) then the return on investment for this expenditure is 1:10 (cost/value). As long as the change in lives (or the environment) is known, and the cost of these consequences can be obtained, it can always be possible to calculate the monetary value of that change.

SROI has the potential to translate social change, first into data, and then into monetary values. While some may be uncomfortable with reducing life to a series of transactions, this is often the best way to influence investors, policy-makers, clients, beneficiaries, local community and many others as it creates a common unit of change. For built environment practitioners, this work will allow the language of sociologists, ecologists and criminologists (for example) to be heard earlier in the design process and may even be able to lever funding for social and environment elements of projects that otherwise may suffer from cuts to budgets or timescales. All that is required is that the social and environmental value of developments is understood through the change in experience (such as people's utility or wellbeing) or land use and then converted into a monetary value using a combination of first-hand accounts and statistical trends.

2.3.2 Understanding How to Operate SROI

The principles of SROI are stated in the SROI Network Guide (Nichols et al., 2012, p 9). These are:

- Involve stakeholders
- Understand what changes
- Value the things that matter
- Only include what is material
- Do not over claim
- Be transparent
- Verify the result.

Many of these principles come from the discipline of social accounting. By ensuring that individual reaction to the project is recorded, an SROI not only offers inclusiveness, but also a direct line to the value that is calculated. The approach makes it virtually impossible to set indicators, or even list the effects of a project without consulting those who have been affected or are likely to be affected by the project's impacts.

The SROI Guide sets out a number of objectives that should be achieved during a typical analysis including:

- Establish the scope of the project and identify the stakeholders
- Map the outcomes
- Evidence the outcomes and give them a value
- Establish the impact
- Calculate the social return on investment.

The primary vehicle for recording the data and calculating the return on investment is known as an Impact Map (see Figure 2.3) which divides these objectives into four stages.

Stage 1 Establish the scope and stakeholders

Stage 1 scoping often requires consideration beyond the physical boundaries of the development. Decisions about the purpose of the analysis, the audience, the aims and objectives of the scheme and the culture of both the contractor and the developer may be of significance. In addition it is important to consider the resources and capabilities that will be necessary to carry out the analysis and time available to do this. Finally, forecasts are less demanding on both time and resources compared to evaluations and this may also have a bearing on decisions that dictate the scope of the project.

Stage 1 also requires the identification and involvement of stakeholders. The SROI Guide defines stakeholders as 'people or organisations that experience change or affect the activity, whether positive or negative, as a result of the activity being analysed' (Nicholls et al., 2012, p.20). To be effective, the list should only include those groups or individuals who have been or are likely to experience material change as a result of the development. This process is best informed though a consultation process to ensure all the relevant parties are included at the start of the analysis. A certain amount of adjustment is often necessary as it takes time to ensure that some large stakeholder categories (residents or young people for example) are not masking a number of smaller groups (elderly or vulnerable residents, or at-risk youth) who will experience change to different degrees than the rest of the group. Overlaps (to avoid double counting) and those associated with the developer but not the scheme being assessed are other examples of this sifting process. Finally, the communication channels and media used to interact with the stakeholders is also an important consideration as not all groups respond to the same messages or methods of delivery.

Table 2.3 Interviews by project phase

Stage 1						
	Stakeholder Who do we have an affect on? Who has an effect on us?					
	Intended/unintended changes What do you think will change for them?					
Stage 2						
	Inputs What do they invest?					
	What is the value of the input in currency (only enter numbers)					
	Outputs Summary of activity in numbers					
Stage 3						
	The Outcomes (what changes) Description – How would the stakeholder describe the changes?					
	Indicator – How would you measure it?					
	Source – Where did you get the information from?					
	Quantity – How much change was there?					
	Duration – How long does it last after end of activity? (Only enter numbers)					
	Outcomes start – Does it start in period of activity (1) or in period after (2)?					
	Financial Proxy – How would the stakeholder describe the changes?					
	Value in currency – What is the value of the change? (Only enter numbers)					
	Source – Where did you get the information from?					
Stage 4						
	Deadweight % What would have happened without the activity?					
	Displacement % What activity did you displace?					
	Attribution % Who else contributed to the change?					
	Drop off % Does the outcome drop off in future years?					
	Impact Quantity times financial proxy, less deadweight, displacement and attribution					
TOTAL						

Source: Nichols et al. 2012

Stage 2

Stage 2 concerns the identification and development of the impacts and outputs of the scheme. Inputs are the financial value of the development. This should include all materials, labour and any in-kind or volunteer effort. The latter can be monetised by equating the type of work that the volunteers contributed to the hourly market rate of a worker doing the same task. Forecasts should be based on precedents for the cost of labour and materials for similar projects where possible.

Outputs are the quantitative summary of a given activity and are designed to ensure that the correct number of people benefiting from an aspect of the project is accurately recorded. A common output is training and awareness initiatives that offer attendees a skill or experience that could lead to a monetisable outcome later. A typical output would be numbers of life-skills training sessions, or numbers of energy conservation training and smart meter provision as part of a community outreach initiative.

The key element of Stage 2 is the description of the outcomes. The SROI Guide describes outcomes as confirmation that the change experienced by stakeholders has taken place or is taking place. It explains that it is common to confuse outputs with outcomes as exemplified by an employment enablement programme where the training is the output and getting the job is the outcome. There are a number of other guidance points when choosing outcomes including:

- Only link outcomes to the stakeholders that directly experience the change
- Seek evidence for change within and outside stakeholder groups; the process is stakeholder informed not stakeholder led
- Include intermediate outcomes for changes that take a longer time to evolve.

Stage 3 Evidence the outcomes and give them a value

Stage 3 involves evidencing the outcomes and giving them a value. The SROI Guide explains how to both develop indicators and place a value on them. It also explains how to collect data and consider the time periods that cover the changes to stakeholders' lives. An indicator is a measurable parameter which can be used to represent changes to a larger number of variables. If changes to general health are being investigated, it is possible to measure every improvement or detriment to health in the population. However, the frequency of visits to the General Practitioner may be sufficient to indicate changes to all of these variables. On other occasions, the selection of a specific complaint may be essential. If air quality changes as a result of the development, then the incidence of respiratory disease may be a better indicator to choose.

It is possible that one outcome may have multiple indicators. If a youth centre is built on a housing estate then the same stakeholder group (young people) may experience better mental and physical health, and better employment prospects, all for the same output depending on the activities that take place in the new building. Indicators should be chosen because they are the best way to calculate the value of the change, and not because they are readily measurable. Finally, indicators need to be expressed in specific numeric terms and not as a percentage change as this is too vague to be of use later in the calculation process.

Once the indicators have been chosen, each one needs to be valued by attaching a price or 'proxy' to the change. The certainty of proxy values will vary depending on the availability of commodity or service statistics, or precedents in other sectors or places. The Guide points out that all value is subjective and the only difference between commodity value and social value is that the latter is not traded in the market. Another important aspect is that the service does not need to be used to retain its value. The Guide's example is a park which has a value to the community regardless of the frequency of visit for each individual.

Some proxy values will be easy to identify such as the cost of treatment by the health service, or the income and tax generated by new jobs. However, even these may be a challenge in countries that do not collect statistics or have an organised welfare state and labour market. In areas where obtaining proxies are more challenging, then techniques such as stated preferences, contingent valuation, revealed preference and hedonic prices can all be used. This often relies on a greater degree of stakeholder engagement, which is good for inclusion, but can diminish the certainty of the proxy. For built environment projects, the savings in travel (in terms of fares, fuel and time) can often be significant. Another emerging method is Wellbeing Valuation which relies on large national surveys that reveal the influence of different factors on people's lives as expressed in monetary values. Section 2.3.3 covers this approach in more detail. The SROI Guide offers a number of examples of proxies that have been used in SROI analysis to illustrate the relationship between indicators and outcomes (Nicholls et al., 2012, p.49).

Some caution should be applied when calculating cost savings based on proxies. Unit costs can be misleading when combining fixed costs and variable costs. The example given in the Guide is that the cost of HM Prisons estate divided by the prison population suggests that the cost of housing someone in prison is £40,000 a year. However, if a programme stops 100 people going to prison the saving to the State is less than £4m because the fixed costs remain unchanged and may be closer to £700,000. This is still a significant saving, but far less than the apparent headline figure which, if challenged, could undermine the credibility of the analysis.

Stage 4 Establish the impact

Stage 4 involves a number of checks and adjustments to ensure that the value that has been calculated represents the impact created by the development. There are four main adjustments including:

- **Deadweight** – the amount of outcome that would have happened even if the development were not built
- **Displacement** – the amount of activity that has moved to another place because of the development
- **Attribution** – the amount of outcome that was caused by a contribution from other interventions beyond the scope of the development under analysis
- **Drop-off** – the deterioration of an outcome over time.

Often the adjustments are calculated in terms of negative percentages, which are deducted from the total value of the outcome to leave a smaller but more accurate figure. Coming to a conclusion about each of these adjustments can be subjective, particularly when stakeholder feedback and local knowledge is scarce. However, these steps are faithful to the principles in more standard approaches such as cost benefit analysis and hence conform to accepted methods that place value on changes in the built environment.

Stage 5 Calculate the social return on investment.

Stage 5 is the final step in the SROI process where the impact value is converted to a Present Value by discounting for the time value of money. The Guide suggests a discount of 3.5% for each year for the duration of the influence of the project should be applied. This should be reduced to 3% for projects that have a long enough time influence to have intergenerational implications. The Net Present Value can then be calculated by deducting the Input (investment) value from the Net Present Value. Finally, the ratio can be calculated by dividing the Present Value by the value of the inputs. Hence, if the Present Value is £2m, and the inputs are £1m then the ratio is 2:1. Put in another way, for every £1 invested, the project generates £2 in social and environmental value.

Finally, the Guide encourages a sensitivity analysis in the same manner as a standard cost benefit exercise. Checks against the assumptions that led to the placing of value on inputs, the value given to the outcomes, the value of the units for each proxy and the adjustment percentages for deadweight, attribution and displacement are all recommended. It is also possible to work out the payback period at this stage by dividing the total social value by the number of years in the life of the scheme and then dividing the input investment by the annual social return.

As SROI is a stakeholder focused approach, the Guide encourages clear reporting of the results of the analysis. It is important to consider how the results are communicated if this is part of the exercise. For example, the presence of a ratio in the report may stifle debate about the trade-offs between different impacts by reducing each scenario to a single figure. The amount of detail that is included in the narrative may also be a consideration depending on the audience.

2.4 Wellbeing Valuation

Wellbeing Valuation is an approach that assesses the impact of projects by measuring how much it increases people's life satisfaction based on large data sets from national (UK) surveys where people self-report on their current condition, and then answer hundreds of other questions about their lives which reveal the influences on their wellbeing. This avoids the psychological complexities of asking people how an intervention (a project programme or policy) has affected their lives. Fujiwara (2013), the architect of the approach, explains that 'welfare economic theory on valuation' underpins the main approaches to valuing social change. 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'. Fujiwara's work calculates the amount of money that induces the equivalent change in welfare for the individual.

Wellbeing valuation relies on information produced by four large UK surveys including the British Household Panel Survey (BHPS); Understanding Society; The Crime Survey of England and Wales; and The Taking Part Survey. These have been carried out on an annual basis with over 10,000 of the same respondents over a period of more than two decades. Fujiwara's work with social housing providers has calculated the average value of 53 headline outcomes and many more detailed outcomes relevant to a tenant. These values represent the worth to a tenant from an improvement (or removal) of each factor in monetary terms. The Housing Associations' Charitable Trust or HACT has produced a Guide to using the approach (Trotter et al., 2014) which contains these valued outcomes, examples of which include:

- Secure job – £12,034
- Good neighbourhood – £1,747
- Can rely on family – £6,784
- Relief from being heavily burdened by debt – £9,428
- Never arrested (youth) – £3,684
- Active in tenants group – £8,116
- Gardening – £1,411

These values are per person, per year and so can be aggregated throughout the life of the project. HACT has produced a Value Calculator[1] to assist users in applying the approach. The average values can be converted to specific values with adjustments (embedded in the calculator) including regional differences, age and deadweight. The latter are average percentages drawn from the Homes and Community Agency Additionality Guide. For example, the deadweight for crime prevention will be 19% in every case.

The advantages of this approach are that it is consistent and easy to apply. However, the approach can lack the direct relationship to specific projects where it relies on the experiences of the average person. It is therefore a cruder measure of social value compared to SROI. There is an argument that Wellbeing Valuation will be the favoured approach where it is either not possible or too expensive to carry out a project-specific stakeholder exercise. It can also supplement values into SROI calculations where feedback on certain aspects (crime, training etc.) was incomplete or unavailable.

2.5 Ecosystem Services Analysis (ESA)

2.5.1 The Value of Nature

In the 19th century, classical economists considered that the services offered by natural resources, for example the production of clean water, were free gifts of nature. Land, and in terms of economics this word means all the naturally occurring resources whose supply is inherently fixed (mineral deposits, water etc.), only had a value if it could be used. This explains why classical economists were concerned with the physical constraints of growth. Because land is finite and (it was assumed) can only produce a fixed amount of goods once it reaches the limit of production. Ricardo's law on diminishing returns on land, Malthus's concerns about population growth, and Mill's forecast that the economy would eventually reach a steady state were all examples of this view (Gómez-Baggethun et al., 2010).

1 http://www.hact.org.uk/social-impact-value-calculator/

The industrial revolution marked a critical change in this thinking and the focus shifted from use-values to exchange values (an item or service produced for, and sold on the market) (Naredo, 2003). Since the 1960s there has been the rise of environmental economics and ecological economics: two phrases that sound similar but have far reaching differences. Environmental economics operates mainly within the framework of neoclassical economics. Here the focus is on consumer choice, perfect information and marginal productivity theory of distribution (which explains how the prices of the various factors of production would be determined under conditions of perfect competition and full employment).

Ecological economics challenges some of these assumptions. This results in conceptualizing the economic system as an open sub-system of the ecosphere. The social and ecological sub-systems are seen as having co-evolved and energy, materials and waste flows are exchanged between these three systems (Daly, 1997; Noorgard, 1994). There is also a focus on issues of equity and scale in relation to the bio-physical limits of the systems (Daly, 1992).

From 2001 to 2005, more than 1,360 experts worldwide contributed to the Millennium Ecosystem Assessment. Together these experts assessed the consequences of ecosystem change for human wellbeing. Their findings provided a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably. The Millennium Ecosystem Assessment Report (2005) or MA defines ecosystem services as benefits people obtain from ecosystems and distinguishes four categories of ecosystem services: Regulating, Provisioning, Cultural, and Supporting (Table 2.5).

Table 2.5 **The four broad categories of ecosystem services**

Broad ecosystem service categories	Examples of services provided
Regulating services Benefits obtained from the regulation of ecosystem processes.	• carbon sequestration and climate regulation • waste decomposition and detoxification • purification of water and air • pest and disease control
Provisioning services Products obtained from ecosystems.	• food (including seafood and game), crops, wild foods, and spices • raw materials (including lumber, skins, fuel wood, organic matter, fodder, and fertilizer) • genetic resources (including crop improvement genes, and health care) • water • minerals (including diatomite) • medicinal resources (including drugs, pharmaceuticals, chemical models, and test and assay organisms) • energy (hydropower, biomass fuels) • ornamental resources (including fashion, handicraft, jewellery, pets, worship, decoration and souvenirs like furs, feathers, ivory, orchids, butterflies, aquarium fish, shells, etc.)
Cultural services Nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences	• cultural (including use of nature as motif in books, film, painting, folklore, national symbols, architecture, advertising, etc.) • spiritual and historical (including use of nature for religious or heritage value) • recreational experiences (including ecotourism, outdoor sports, and recreation) • science and education (including use of natural systems for school excursions, and scientific discovery).
Supporting services Necessary for the production of all other ecosystem services	• nutrient dispersal and cycling • seed dispersal • primary production (the synthesis of organic compounds from atmospheric or aqueous carbon dioxide)

Image source: Jason Batterham – Shutterstock.com

Since 2005 when the MA was published, there has been a plethora of other classifications. Some retain the four broad categories of the MA but others reduce this to three, ostensibly by placing what the MA categorised as supporting ecosystem services elsewhere within the categorisation. Another resource, The Economics of Ecosystems and Biodiversity (TEEB), is a global initiative focused on drawing attention to the economic benefits of biodiversity by highlighting the growing cost of biodiversity loss and ecosystem degradation. TEEB presents an approach that can help decision-makers recognize, demonstrate and capture the values of ecosystems and biodiversity, including how to incorporate these values into decision-making.

The underlying case for placing a value on ecosystem services is that it will contribute towards better decision-making, ensuring that policy appraisals fully take into account the costs and benefits of the natural environment. However, similar to social change, economic values have many shortcomings and limitations. They can (for example) be instrumental, anthropocentric, individual based, subjective, context dependent, marginal and State dependent (Goulder and Kennedy, 1997; Baumgartner et al., 2006, Barbier et al., 2009, EPA., 2009). However, despite these fundamental issues in economic theory and practice, information about the monetary importance of ecosystem services is a powerful tool to make better, more balanced decisions regarding trade-offs involved in land use options and resource use.

Those ecosystem services that can be bought and sold are easily monetised. These include the production of timber, textiles, minerals, potable water etc., although values can change; low values of the past can become highly prised for future generations and vice versa. Other services do not lend themselves to commodity trading and are difficult to assess. The value of beauty, or healing and spiritual value are examples of this.

2.5.2 The Importance of Ecosystems Services Analysis (ESA) to Built Environment Surveyors

The principles and valuation methods contained in ESA have now been incorporated into the DEFRA guide on 'Payments for Ecosystem Services' or PES (Smith et al., 2013). The Guide explains that 'PES schemes involve payments to the managers of land or other natural resources in exchange for the provision of specified ecosystem services (or actions anticipated to deliver these services) over-and-above what would otherwise be provided in the absence of payment'. Valuers may therefore already be carrying out ESA calculation if they are working in rural areas where PES is being taken up. Valuers working in more developed areas will have considered green space in terms of enhanced land value, and many studies have pointed to land value and property price enhancements as providing both direct and indirect benefits to local economies. Saraev (2012) explains that 'they can encourage further property development in an area and increase local council tax receipts.

The estimated impacts are not necessarily case and location specific and have a wide range of values. Having a well-managed green space nearby was found to result in average property premiums of 2.6% to 11.3%. A recent report by the Policy Exchange (Drayson, 2014) set out a wide range of green space benefits and proposed alternative funding regimes to ensure these services were maintained. Among their suggestions was a local tax or levy acknowledging the benefits afforded to those living in the vicinity of green spaces.

But while valuers have tools and metrics with which to judge the value of green space, these do not cover the breadth or consistency that is provided by Ecosystem Service Analysis. In particular, the versatility of ESA to value potential future land uses such as flooding or food production in urban areas in response to climate change will be particularly helpful when considering the value of schemes in vulnerable areas or places subject to resilience policies. The recuperative value of gardens associated with health facilities, urban farms (as opposed to grassed areas), areas of permeable hard standing and green roofs are a few examples of how ecosystem services valuations could bring in other factors beyond market-based considerations used in conventional valuation.

2.6 Anticipating Data Collection Requirements in SuROI Studies

The RICS Guidance Note on Sustainability and Commercial Value suggests that valuers should try to continually build up their environmental and social data as this will help to raise the quality over time. The RICS (Red Book) advises that valuation practitioners should 'extend their data collection and inspection routines accordingly' when working within the sustainability agenda. This advice is particularly important when planning to carry out a Sustainable Return on Investment (SuROI) analysis.

Better data will encourage markets to trust sustainability indicators to be integrated or compared with financial parameters. However, there has been some concern expressed by some about the ability of built environment organisations and public sector regulators to collect sufficient information to operate an SROI analysis (Hall Aitken, 2011, Trotter et al., 2014 for example), and this could easily be extended to Ecosystems Services methods. This is the primary criticism of those who favour a simpler method such as Wellbeing Valuation for example. While this may be the case for some sectors or countries, valuers with built environment skills should note that field work designed to understand social and environmental change requires similar methods to those employed at planning stage impact analysis and community consultations and tends to be less demanding than many participative design exercises. There are established ways in which this can be done, and many sources of information or guidance to assist in this process.

Generally the best primary data for these studies is obtained through face-to-face techniques such as interviews, focus groups, or telephone surveys as answers from the respondents can be qualified through follow-up questions against a semi-structured interview script. Larger numbers of returns can be achieved through questionnaires distributed through a range of channels including social media. Corroboration of survey returns can be found in many places including national and local social-economic statistics sets, academic and NGO websites. For social change metrics, the Global Value Exchange[2] contains the combined work of hundreds of researchers and organisations and is often the primary starting point to identify indicators and proxies. Ecosystem Services metrics are distributed across a wider range of sources, but the TEEB Valuation Database is one of the more comprehensive data sets in this area[3].

Data requirements do not significantly differ between predictive or evaluative analysis other than the obvious lack of performance and impact information for the forecasting mode. However, it is important to try to engage stakeholders when possible in predictive analysis by surveying for attitudes and expectations in anticipation of the intervention. Not as much store will be placed on stakeholders' expectations as opposed to their experiences in an evaluative study, but this information can help to scope the indicators and proxies when thinking about the added values or impacts of a proposed development.

2 http://www.globalvaluexchange.org/about/ 3 http://www.teebweb.org/

3.0 The Case Studies

3.1 Rationale for Case Study Selection

The criteria for case study selection included:

- A built environment project that combined construction (new, retrofits of existing buildings or building management) with an element of social and/or environmental improvement
- A range of schemes at different stages of design or completion
- A range of countries, one of which should be in Brazil, Russia, India or China (BRIC countries).
- The capacity to change people's lives through either social or environmental interventions, or a combination of the two.

Social interventions might include engagement of young people, health improvement programmes, enhancement to skills or better employment, crime prevention initiatives etc., while environmental interventions might include enhanced green space, urban growing programmes, natural flood prevention measures etc. The SuROI approach can be used either as an evaluative tool to calculate the return on investment once the development has had time to effect change in people's lives or as a predictive tool to test scenarios or options during the design stage. The case studies represent a mixture of completed and planned projects to show how the approach can be applied in both these circumstances.

The combined characteristics of the three case studies described in this report fit the criteria. The specific sites were chosen because the researcher was able to form collaborative partnerships in each place. This was important as access to residents, particularly in countries where language can be a barrier to data collection, was an essential aspect for the calculation of social value.

The three case studies included:

- The 'City Entrance Integrated Program' or PIEC, Porto Alegre, Brazil (evaluative – a review of the completed project)
- The Second Avenue Gateway Revitalisation Programme, Hazelwood, Pittsburgh, USA (predictive – an extrapolation of the effects of the scheme prior to completion)
- Social housing in Little Hulton, West Salford, UK (a combined evaluative and predictive study of a programme in mid-steam).

Data collection for SROI and ESA (social and environmental) studies both rely on establishing a base case prior to interventions, and then understanding how the intervention affects change in the population. Consequently each study obtained details of the planned or existing building work and the environmental and social conditions in each area prior to the commencement of the development under investigation as far as this was possible. The land use and conditions before and after landscaping were also recorded from historic or public sector records where possible. Actual or perceived change in the populations that were affected by the interventions was obtained in Brazil through semi-structured interviews with residents. In Pittsburgh evidence from the population was obtained through a focus group and a structured survey of residents. Data for the case study in the UK was obtained from structured surveys carried out by the residents' housing association. More detail about the nature of data, and the means by which it is collected, is given in the accounts of each case study set out in Sections 3.2, 3.3, and 3.4.

3.2 The 'City Entrance Integrated Program' or PIEC, Porto Alegre, Brazil

3.2.1 Description of the Case Study Area

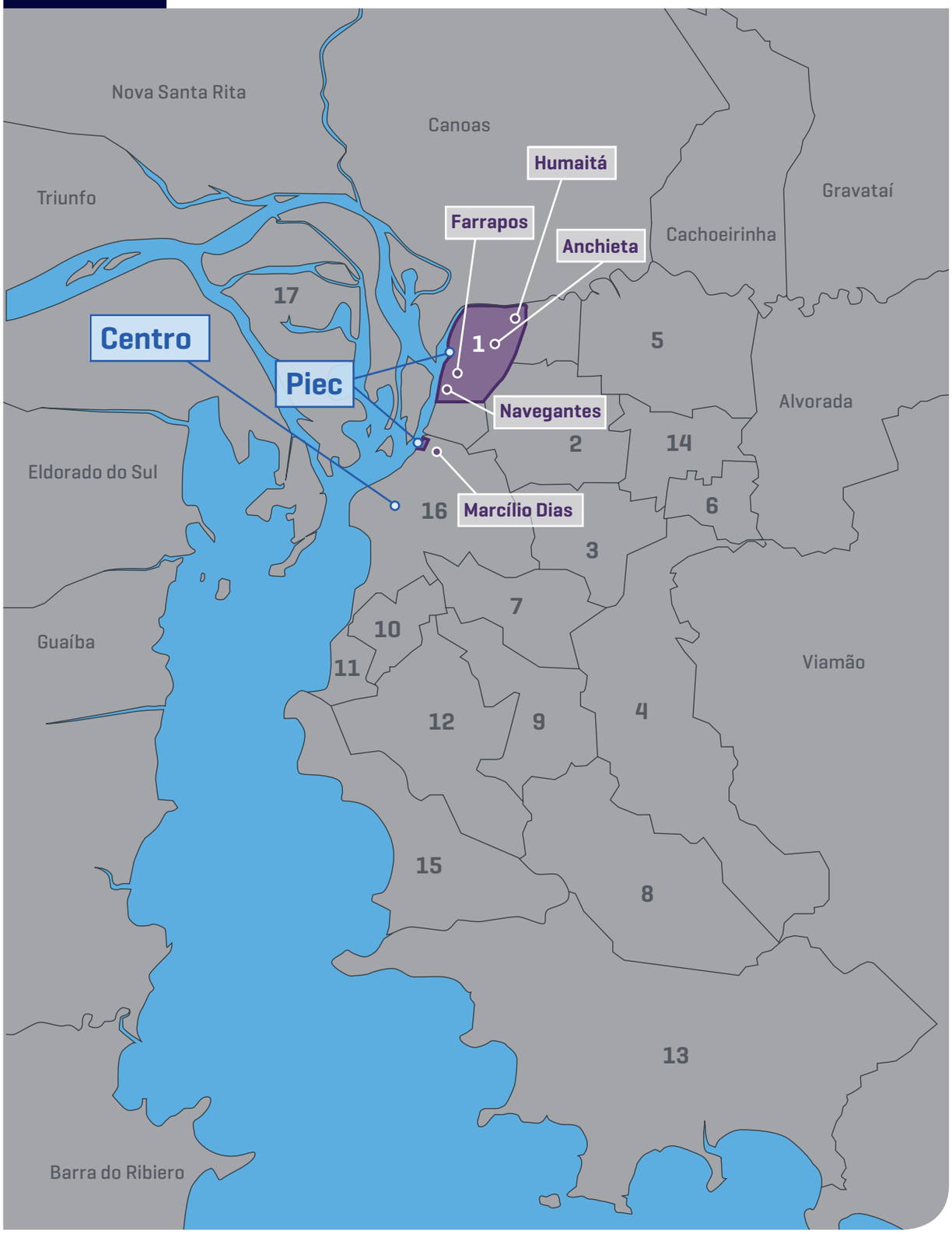
'The City Entrance Integrated Program' (Programa Integrado Entrada da Cidade or PIEC in Portuguese) started in 2002 in Porto Alegre, the capital of the State of Rio Grande do Sul in Brazil (see Figure 3.2A for the location of the Programme area relative to the metropolitan area). This programme has produced 10 projects including five separate housing estates over a 10 year period. The housing estates were built across a number of northern districts and will ultimately be responsible for re-housing 3,775 families who will come from more than 20 unplanned settlements or favelas on the periphery of the city.

The favela settlements house families that have come from the countryside and were not able to afford accommodation in mainstream housing areas due to poverty. In common with many unplanned settlements, the favelas in this part of the city did not have adequate urban infrastructure (sewers, drains and roads), or services such as water or electricity. They were areas of high crime and low employment. They had poor access to health and social services support and lived in squalid and unsafe conditions to the inhabitants. The Council's overall aim was to regenerate the area by building good quality social housing, whilst improving the social and environmental conditions for the residents.

The project was first proposed by the Council in 1999 as a result of the 'demands' from the City's Participatory Budget (OP). The OP was implemented in Porto Alegre in 1989. The system allows delegations from each of the 16 Districts to vote on and then request the City to adopt policies or programmes in the annual budget. The Districts close to the PIEC asked for social support, better community spaces and employment training opportunities in addition to the new housing, and many of these were adopted by the City. The full range of social and environmental elements of the PIEC scheme included:

- urban infrastructure including adequately sized sewers
- landscaping
- community activity space
- income generation programmes
- community development.

Figure 3.2A **Location of the PIEC programme in Porto Alegre, Brazil**



Source: Miron 2008

3.2.2 The PIEC Sustainable Change Survey

Data collection took place at the first three PIEC estates to be constructed on 28 and 29 October 2013. The survey was conducted in the resident's native language (Portuguese) by pairs of surveyors going door-to-door along designated routes. The survey was designed to gauge the change in their lives as a result of moving from the favela to the new PIEC housing areas. The questions covered general information about the households (income, residence period, age etc.) and went on to ask about changes in their experience in terms of their health, perception of crime, improvements to skills and employment, the effect of better open space and the relationship with neighbours.

The survey sample was time limited and designed to collect enough primary data to illustrate the SuROI approach, while not necessarily being representative of the whole resident population. There was an attempt to sample the range of housing typologies along the following criteria:

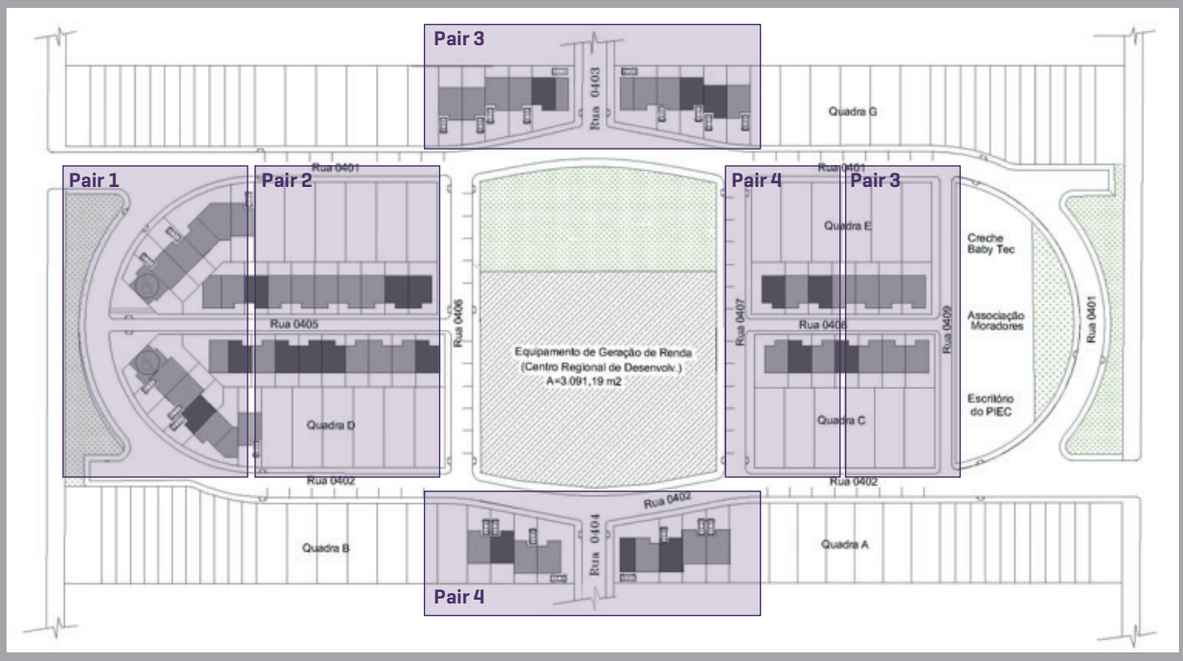
- Sample surveys in each of the three estates
- Stratification across the two types of housing units (both single storey and two storey houses)

Based on the criteria explained above, Table 3.2 shows the planned sample and Figure 3.2B shows the survey layout and plan for one of the three estates. Images form the three estates are shown in Figure 3.2C.

Table 3.2 **Size of the samples achieved at each of the three PIEC Estates**

Estate Name	Vila Tecnológica	Pôr-do-Sol	Progresso	
Typology of Unit	Single storey homes homes Térreas	Two-storey homes	Two-storey homes	
Population	N = 59	N = 130	N = 191	N = 30
Sample	19	21	24	7

Figure 3.2B **Plot Plan for Vila Tecnológica showing the boundaries between the survey zones**



Source: Miron 2008, 2014

Figure 3.2C **Images of Housing in the PIEC Programme**

Source: Miron 2008, 2014

3.2.3 Analysis of the Data

Data analysis was conducted using the CONT.SES. command in Microsoft Excel which enabled connections between the perceptions of the dwellers of the three estates to be determined before and after the PIEC was implemented. The connections between the elements are represented in Figure 3.2D.

Figure 3.2D **Synthesis of the change: data collected in the three PIEC estates**

Vila Tecnologica	Situation prior to the PIEC			Situation post the PIEC		
	Good	Fair	Poor	Improved	The same	Worsened
Health						
Qualification						
Education						
Security						
Environment						
Neighbourhood						
Infrastructure						

Progresso	Situation prior to the PIEC			Situation post the PIEC		
	Good	Fair	Poor	Improved	The same	Worsened
Health						
Qualification						
Education						
Security						
Environment						
Neighbourhood						
Infrastructure						

Pôr-do-Sol	Situation prior to the PIEC			Situation post the PIEC		
	Good	Fair	Poor	Improved	The same	Worsened
Health						
Qualification						
Education						
Security						
Environment						
Neighbourhood						
Infrastructure						

For the purposes of this research, a selection of the most pronounced changes recorded in the survey have been used to illustrate the Sustainable Return on Investment approach. This includes:

- Changes in prospects for pre-school children
- Improvements in qualification for school leavers
- Changes in employment status
- Changes in health
- Changes in perceptions of security
- Changes in the perception and use of open space
- Changes in relation with neighbours

The responses to questions regarding changes to health outcomes showed that almost 62% of the residents felt there had been improvements in the health services. However, more than 25% said they did not experience change since moving and over 12% thought that their health had worsened. The reasons for improvements to health were identified as improvements to sewage and drainage, and more frequent maintenance of the infrastructure in the PIEC area. This led to a reduction of respiratory and epidermal diseases (among others), mainly caused by the change from open sewers and the proximity of vermin to better services, pedestrian walkways and the regular collection of refuse.

In addition to improvements to infrastructure the provision of health increased due to the construction of three new health clinics in the PIEC area between 2003 and 2013, adding to the two existing facilities. According to information from health workers in Porto Alegre obtained by the university, these new units periodically monitor families attending the clinics and make follow-up home visits to their homes.

Just over half of the residents (about 55%) said that they had seen improvements in security since moving to a PIEC estate with over 18% saying they did experience change and almost 10% thinking that crime had worsened since moving. Features including more visible policing, better neighbours and more secure housing contributed to this. However, despite these improvements, the residents still said there was some evidence of drug trafficking and distrust in the safety of the PIEC squares and public spaces.

In relation to the quality of parks and public spaces, over 22% of dwellers thought they had better areas in the favela while 38% considered that this had improved since moving into PIEC. There was a clearer result when residents were asked about their relationship to their neighbours. The results indicated that about one third had seen improvements in this relationship while almost one half saw no change and just over 11% experienced a worsening in neighbour relations. This survey information was subsequently compared with available statistical information from public sector sources to compile indicators and proxies. The calculations for this are set out in Section 4.

3.3 The Second Avenue Gateway Revitalisation Programme, Hazelwood, Pittsburgh, USA

3.3.1 Description of the Case Study Area

Gatti and Kinder's (2007) review of Hazelwood revealed a District continuing to suffer from the legacy of deindustrialisation. By 2000 the median age of Hazelwood residents was 43 years compared to the State median of 32 years and the ethnic characteristics were mixed with about 60% of residents 'White' and 39% 'Black or African American'. The rest (4%) were 'Latino' and 'Other' (UCSUR, 2011). Just 10% were educated beyond a high school diploma and less than 1% held a bachelor's degree. Of the 1,475 families recorded in the 2000 Census, a quarter lived below the poverty line earning less than half the average State income. In 2000, nearly 70% of homes in Greater Hazelwood were valued at less than $50,000. In 2006, 40% of property owners had not paid city or school district tax. Violent crime rates had increased in the area and from the late 1990s, the total number of reported murders, robberies, and assaults had doubled. The SuROI analysis focuses on the main commercial street (a portion of Second Avenue) that had formerly served most of the needs of Hazelwood when the area was in its prime (see Figure 3.3A).

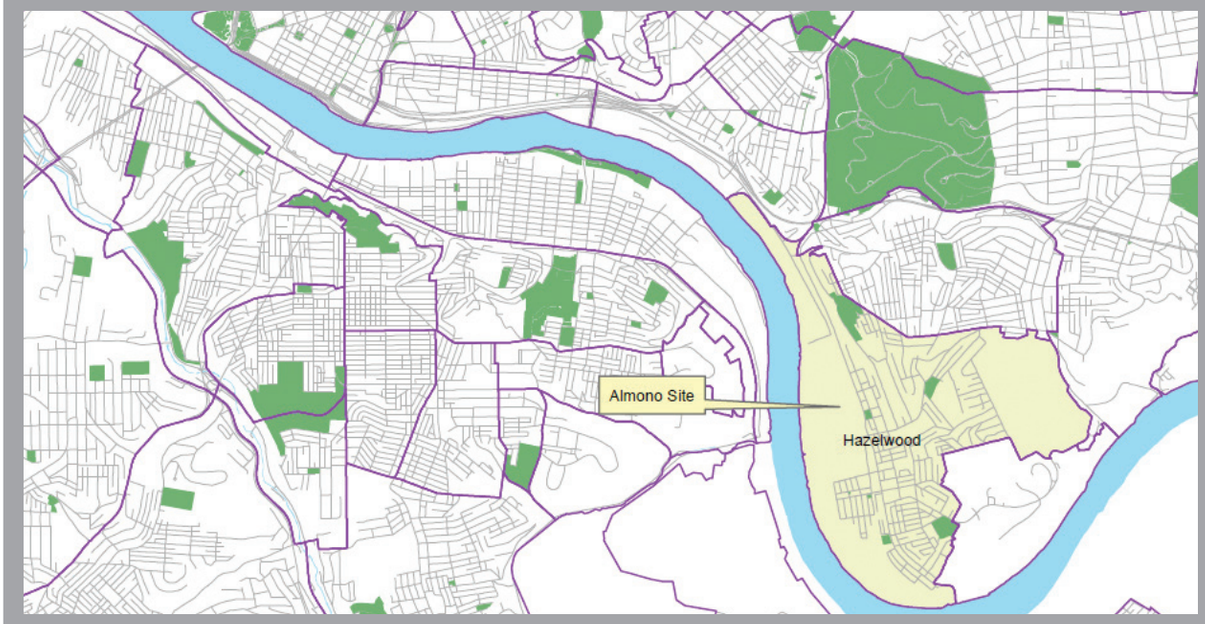
The proposal by the Almono Group (funded by large philanthropic foundations including the Richard King Mellon Foundation, the Heinz Endowments, the McCune Foundation, and the Claude Worthington Benedum Foundation) is to build a $900m mixed-use development on the site of a former coke works adjacent to the Hazelwood community (see Figure 3.3B). The new development will include office and research and development space, and as many as 1,300 units of housing in the form of townhouses, condominiums or apartments and is characterised as a high-tech and green-friendly development (Belko, 2013).

Hazelwood is typical of many Pittsburgh neighbourhoods in that it is built on a steep hillside that overlooks the floodplain formerly occupied by the coke works. Any new development planned for this land would therefore be in full sight of the remaining residents of the area. While areas of deprivation are commonly seen in close proximity to more exclusive successful areas in many cities around the world, the Heinz Foundation approached ACTION-Housing (a leading social landlord and regeneration agent) to consider a scheme that could integrate Hazelwood with the newly developed area. The design proposed by ACTION-Housing and other partners emphasised the aspects of the historically important community and the former industrial site. The proposal, referred to by Heinz as a 'zipper development' because its capacity to knit two communities together, was in the design and land assembly stage at the time of writing.

Figure 3.3A **Past (1950s) and Present Day Images of Second Avenue**

Source: Author and ACTION-Housing Inc

Figure 3.3B **Proximity of the Almono development to Hazelwood**



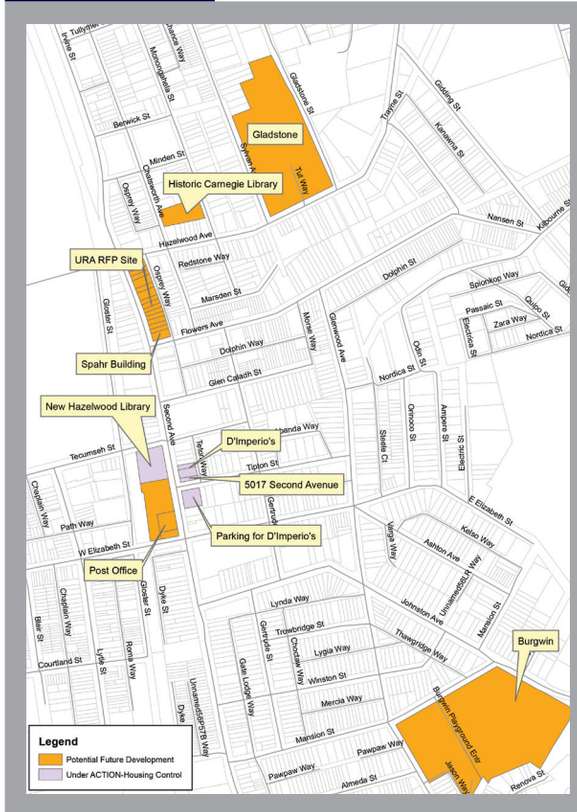
Source: ACTION-Housing Inc

The plans involve a mixture of renovation, demolition and new build along three city blocks of Second Avenue with a focal point around the intersection with Hazelwood Street. Figure 3.3C shows the plots of interest in this area. The main features of the proposal are:

- Renovation and re-use of the historic Carnegie Library
- Renovation (including retrofit design to Passiv Haus standard) of the disused Hazelwood Presbyterian Church into the 'Hazelwood Neighbourhood Centre' incorporating a new library
- Redevelopment of the D'Imperio Building and adjacent properties for food and commercial uses
- Re-development of the Spahr Building as a performing arts venue
- Acquisition and re-development for mixed use of a number of other properties along the east side of Second Avenue

Overall development costs in 2013 were $2.4m with $2m provided by the Heinz Endowments, $15,000 from Citizens Bank, a $250,000 regeneration loan from the city of Pittsburgh, and a loan from ACTION-Housing Inc.

Figure 3.3C **The ACTION-Housing proposals for Second Avenue**



Source: ACTION-Housing Inc

3.3.2 Establishing Social and Environmental Change in Hazelwood

In order to establish the current conditions and future expectations of residents living in Hazelwood, data was collected in association with an initiative that was funded by the Heinz Foundation. The Civic Census Project (CCP) was designed to run in parallel with the Second Avenue re-development initiative to understand the wider opportunities for the whole of Hazelwood. The CCP was developed as a strategy to measurably increase civic and voter participation as part of community revitalisation strategies in under-performing populations, including low-income, minority, disability and youth demographics.

Community planning and participation specialists Jackson/Clark were employed by the Heinz Foundation to carry out the survey who in turn employed community researchers to engage with residents using voter register lists. The survey was carried out between October 2013 and March 2014 covering over 100 streets and recording the views of approximately 800 residents. The author utilised the results from the survey, but also convened a Focus Group with seven members of the community researcher team.

The Focus Group was asked a number of questions that corresponded to the themes in the wider CCP (see Table 3.3A). However, in a Focus Group context it was possible to direct the discussion toward the aspirational or predictive views about the neighbourhood which assisted with the formation of the outcomes for the Hazelwood SuROI calculation.

Table 3.3A **Hazelwood focus group questions and summary of responses**

What would you hope that the improvement to Second Avenue will do for Hazelwood with specific reference to...?'	Focus Group Responses
Crime and Safety	• Reduce crime by providing more local jobs • More people on the street would deter gangs or criminals from gathering there • Business ownership would build more pride and protective feelings towards the community • Traffic speeds would slow as people stopped to shop making road crossing safer
Skills and Education	• Older unoccupied buildings could be used for adult education classes (Nutrition, Wellbeing, yoga etc.) • A better library could encourage a mobile book bus
Health	• Residents would be healthier due to a better Health Centre
Community	• Everybody would feel comfortable inside and near to their own home • Many houses will be saved, not demolished • The library would be a 'neutral zone' where all the community could mix • Development of Second Avenue could attract more community-centred activity
Open Space	• Vacant spaces would be planted with flowers • There would be dog parks and non-dog parks • Open space would have seating, tables for picnics and games • More trees would be planted
Employment	• There would be more business setting up on the main street with a bank, dry cleaner, a cinema theatre and other stores for a self-sufficient community

The responses from the Jackson/Clark survey reinforced the views of the Focus Group. In answers to the question 'what would you change about the community' the majority of answers were centred around lowering crime (drugs, violence etc.) promoting cohesion (programmes for young people, community events etc.) better schools, more jobs and training, more retail food outlets and improvements in the local environment including street repair and vacant and refuse-strewn land. A related question about 'the most pressing issue in their immediate area' added concerns over stray or wild animals, traffic congestion and poor pedestrian walkways. The responses to a question about ways to bring people in the neighbourhood together included food-related events and festivals, bingo, church events, and better communication (social media, flyers and newsletters, word of mouth etc.).

Table 3.3B shows selected responses from the Jackson/Clark survey. The University of Pittsburgh's Center for Social and Urban Research coded the responses and reported the results. The full survey used a 24-question "short form" and a full 108 question "long form."

Table 3.3B **Summary of Hazelwood Survey**

What do you like most about living in the community?

Response	Count	Percentage
Location	188	23%
Quiet/ Nice Environment	173	21%
People who live here	147	18%
Familiar/ Lived here my whole life	90	11%
Family	56	7%
Nothing	44	5%
Affordable/Good Living Conditions	32	4%
Close Knit Community	30	4%
Community Institutions	27	3%
Other	22	3%
Total	**809**	**100%**

What would you say is the most pressing issue on your block?

Response	Count	Percentage
Nothing	68	24%
Drugs	45	16%
Housing/ Vacancy	26	9%
Crime	24	9%
Road/Sidewalk/ Street lights	24	9%
Violence	22	8%
Traffic	17	6%
Need Kid Activities	13	5%
Wild Animals	9	3%
Other	30	11%
Total	**278**	**100%**

What would you change about living in the community?

Response	Count	Percentage
More food stores/Businesses	252	30%
Crime	68	8%
School	67	8%
Programs for kids & youth	58	7%
Nothing	58	7%
Violence	50	6%
Drugs	49	6%
Vacant/Dirty Environment	49	6%
Traffic/Street Repair	40	5%
More Community Events/ Unity	37	4%
Jobs/ Training	14	2%
Other	89	11%
Total	**831**	**100%**

How satisfied would you say you are with life in the neighbourhood these days?

Rating	Count	Percentage
1 (Lowest)	44	6%
2	18	2%
3	20	3%
4	30	4%
5	116	15%
6	81	10%
7	123	16%
8	145	19%
9	51	7%
10 (Highest)	153	20%
Total	**781**	**100%**
Average*	**6.8**	

*According to the UCSUR Pittsburgh Regional Quality of Life Survey (2011-12), the average ranking for this question in Allegheny County and the City of Pittsburgh was 7.7

continued

continued

How would you rate the overall appearance and physical condition of your own immediate area of the neighbourhood, including houses, buildings, trees, landscaping, streets, sidewalks, lighting and other key aspects?

Response	Count	Percentage
Excellent	42	5%
Very Good	110	14%
Good	265	34%
Fair	221	28%
Poor	142	18%
Total	780	100%

How would you rate your neighbourhood or local community as a place to live?

Response	Count	Percentage
Excellent	20	7%
Very Good	43	15%
Good	101	36%
Fair	84	30%
Poor	32	11%
Total	280	100%

What are the places, buildings or structures in Hazelwood that mean the most to you, or most symbolize Hazelwood for you?

Response	Count	Percentage
Library	47	19%
My House/Area	44	18%
Churches	36	15%
Drugstore	25	10%
St. Stevens Church	21	9%
Stores/Second Ave Business District	16	7%
YMCA	9	4%
Car Barn	7	3%
Other: [Gladstone Middle School, The Woods House, Glen Hazel High Rise, Post Office, Schools, Playground]	38	16%
Total	243	100%

What kinds of creative activities would you like to see available in the community?

Response	Count	Percentage
Kid Activities	68	37%
Arts and Crafts	22	12%
Sports/Fitness	20	11%
Adult and Elderly Activities	13	7%
Reading/Book Clubs	12	6%
Swimming Pool	12	6%
Sewing	8	4%
Gardening	8	4%
Music and Dance	7	4%
Other	16	9%
Total	186	100%

Taking all things together on a scale of 1 to 10, how happy would you say you are?

Rating	Count	Percentage
1 (Lowest)	6	2%
2	5	2%
3	4	1%
4	9	3%
5	21	7%
6	17	6%
7	23	8%
8	61	21%
9	49	17%
10 (Highest)	89	31%
Total	284	100%
Hazelwood Average		7.9
City of Pittsburgh Average*		7.9
Allegheny County Average*		7.9

*City and County Data from UCSUR Pittsburgh Regional Quality of Life Survey 2011-12

All 798 respondents completed the “short form” questions and 286 respondents completed the “long form” questions. Where possible, results were compared to data from the U.S. Census Bureau, UCSUR’s 2011-12 Pittsburgh Regional Quality of Life Survey, and other sources to give corroboration to the responses.

The combined survey, carried out by Jackson/Clark and the Focus Group facilitated by Salford University produced an outcomes list that could be used to calculate the social return on investment for the Second Avenue regeneration scheme. Elements of this calculation are set out in Section 4.

3.4 Little Hulton, West Salford, UK

3.4.1 Description of the Case Study Area

Little Hulton is a community in the City of Salford which is part of the conurbation of Manchester in the North West of England. One third of the City Council's sub-areas (called Lower Super Output Areas or LSOAs) are ranked amongst the 10% most deprived in the country but four LSOAs in Little Hulton rank amongst the lowest 2% (DCLG, 2011). The area remains a priority for key partners including Salford City Council (SCC), City West Housing Trust (CWHT) and Greater Manchester Police (GMP) because of the high levels of deprivation, unemployment, crime and disorder and low levels of educational achievement and health.

In 2012 CWHT (which provides rented housing units and community services primarily for lower income tenants) completed a survey which found that satisfaction with living in Little Hulton was lower than in other West Salford areas. Of the 31 neighbourhoods in which the Trust operates, tenants in the Amblecote, Armitage and Peel estates of Little Hulton had the three lowest satisfaction ratings. Only four of nine potential resident associations have formed in the area although work is in hand to establish two more. Figure 3.4A shows the typical housing units available to CWHT tenants in the Little Hulton area while Figure 3.4B shows the location and relative land interests in the district.

CWHT has committed resources to community development in Little Hulton. This is often done on a multi-agency basis by a range of partners (including Salford City Council). Pilot programmes have been running over the past few years to see how successful these partnership programmes can be in areas of particular need. There have been a number of key projects that incorporate a community development element. Aspects of community life that are addressed include:

- Better life chances
- Burglary reduction
- Environmental issues (litter legacy and use of green space)
- Outreach and community engagement (residents associations and young people involvement)
- Employment, skills and training for those not in education, employment or training (NEET)
- Financial Inclusion (illegal money lending and Credit Unions)
- Health and wellbeing (food banking)
- Growing communities (urban plots and gardens)
- 'Change Your Choices' (the avoidance of antisocial behaviour or ASB for young people).

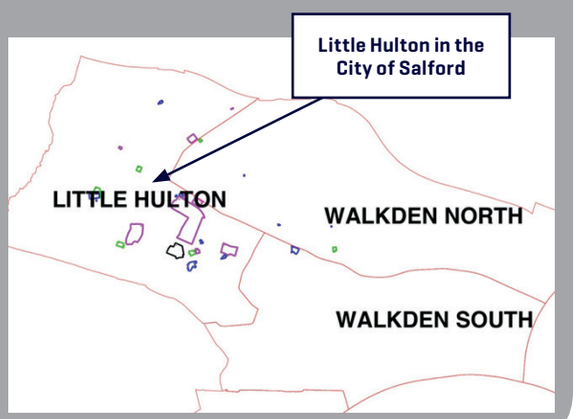
The Salford University SuROI research team identified the CWHT 'Change Your Choices' programme as a good way to demonstrate the SuROI approach. Change Your Choices is a project designed to raise awareness about the causes and consequences of antisocial behaviour or ASB. It targets young people in the 16 to 19 age bracket. The workshop-based programme includes sessions with the Fire Service, Police, Teenage Pregnancy Units, Drugs and Alcohol Units, the Prison Service, the employment bureau Connexions, the Magistrates Court and many others. Sessions include a visit to a prison to discuss the realities of incarceration with inmates, a trip to a homeless hostel, a day with staff at a fire station to understand the dangers of hoax calls and a session with a City West tenant who describes her own experience of ASB. The Trust states that the course provides 'a valuable opportunity for young people to see first-hand the impact that negative behaviour could have on their future. The activities, while remaining engaging and educational, have a big impact on their outlook and help them see that the right choices can get them on the path to a more positive future – and that is exactly what we want to achieve from this project' (Salford Online, 2013). The programme is designed to give young people the confidence to make the right decisions, deal with peer pressure and to look at their future in a positive way. The young people who are referred to the programme are those that have been involved in anti-social behaviour, have received warnings or are on the brink of causing problems within neighbourhoods. The first pilot for the programme ran in Little Hulton in 2012 and a second was completed a year later. To date CWHT is anticipating a 10% reduction in antisocial behaviour in the area where the participants live.

While CWHT is dedicated to building sustainable communities, there are very practical reasons why housing providers and those working in the wider areas of facilities management should be concerned with the control and minimisation of ASB. The management of tenant complaints, repairs and maintenance to vandalised buildings, contents and street furniture, clearing graffiti, higher and void periods are just some of the implications of ASB. Rather than leaving this issue to law enforcement agencies, many housing organisations are trying to reduce the incidents of ASB through tenant liaison programmes such as Change Your Choices. This can attract substantial resources and some Trustees can question the expenditure on these activities rather than directing resources towards new buildings or other capital programmes. The use of SROI can assist trustees and funders to understand the wider financial benefits of investing in social projects in the built environment.

Figure 3.4A Housing typologies in the Little Hulton area of East Salford

Source: City West Housing Trust

Figure 3.4B Community Assets and housing of interest to CWHT in Little Hulton



Source: City West Housing Trust

4.0 Calculating Social Return on Investment (SROI)

4.1 General Approach to Using the SROI framework

This section illustrates how SROI can be applied within the overall Sustainable Return on Investment (SuROI) approach. SuROI adopts the SROI Network Guide's Impact Map as the framework for both of the approaches demonstrated in this report although other approaches can be incorporated in the same way.

The common factor for each approach is the Stage 1 and Stage 2 elements of the Impact Map that require the establishment of:

- Stakeholders (those that have the potential to influence the project)
- Inputs (the cost of the project)
- Outputs (the number of units of delivery where applicable)
- Outcomes (predicted change/stakeholder defined change)

Tables 4.1 A, B and C show how these factors might be determined for each of the three case studies described in the report.

Records of the costs for elements of the PIEC development were either protected or lacked the itemisation needed to differentiate between the outputs, and so estimates based on pre-construction plans or precedents in other parts of Porto Alegre were used to illustrate how the Impact Map could be populated.

Table 4.1A **Selected Stage 1 and 2 findings for the residents stakeholder group in the PIEC development in Porto Alegre**

Stakeholder	Predicted changes/ Outcomes	Inputs (Nature of Project)	Inputs (Monetary Value in $USD)	Outputs
Residents who have moved from unplanned housing to PIEC estates including Progresso, Vila Technológica and Pôr do Sol	Residents have improved job prospects	Economic welfare (skills and training) programmes	$4,632 (unit cost of training sessions - estimate based on pre-build budgets)	20 programmes delivered to date
	Residents have access to (better) childcare and pre-schools	New childcare premises	$83,810(estimate for new pre-school facility on the Mario Quintana lot)	1 new pre-school facility serving 200 households with young children
	Residents have access to (better) schools	New schools/school rooms/teachers	$28,356 (Estimate for extension to Antonio Giudice school)	1 modified school serving 200 households with school children
	Residents have better access to parks and gardens	Communal open space and green space	$13,387 (One-off maintenance costs for Mascarenhas Park and $51,000 for landscaping the three estates (estimate)	Four open space projects for 410 households
	Residents experience improvements to health	More and better health clinics	$280,000 for the construction of three additional health clinics, and $170,000 per annum over 10 years for additional staff	Three clinics serving 410 households
	Fewer community disputes and more democratic demands made through the Participatory Budget process	New community centres built and community workers employed	$8,755 per community centre and $102,000 per annum for community workers salary over 10	3 community meeting rooms and 6 community workers serving 410 households
	Residents are better sheltered and more secure in new housing	New houses and infrastructure including drainage, sewage and street cleansing	$463,590 (construction only) and $93,500 per annum in street and drainage maintenance over 10 years	Improvements for approx. 1,640 people

Table 4.1B **Selected findings from the resident stakeholder group for the Second Avenue Project in Pittsburgh**

Stakeholder	Change/Outcomes	Inputs (Nature of Project)	Inputs (Monetary Value)	Outputs
Residents living in Hazelwood	Reduced crime and job creation by improving the whole of the main street	Redevelopment of a row of 3-storey buildings on Second Avenue to re-create mixed use retail businesses on the ground floor and residential and/or office space on the upper floors.	$24,500,000 to renovate disused buildings	Creation of 75 jobs in the new businesses
	Older unoccupied buildings could be used for adult education classes (nutrition, wellbeing, yoga etc.)	Creation of a neighbourhood arts and culture centre in the Spahr Building	$2,800,000 to renovate the building and to install a range of community services and an arts café	Wellbeing improvements to 300 people in the Hazelwood area
	People would be healthier following the establishment of a local food store	Redevelopment of the former D'Imperio Food Market	$838,000 to acquire land, renovate the building and fund the work of the Greater Pittsburgh Food Bank	Improvement to the diet of 25% (500 residents) of the population of Hazelwood
	Everybody would feel comfortable inside and near to their own home, and would mix more in the new library leading to better feeling of wellbeing	Redevelopment of the former Presbyterian Church into an expanded branch of the Carnegie Library	$2,380,000 for the renovation work and $85,000 for the next 10 years to fund group services to the community (estimate)	Crèche services for 24 children on weekdays
	Vacant spaces would be planted with flowers and trees and have more public seating	Creation of 0.2 hectares of new green space	$300,000 landscaping costs	50% (1,000 people) benefit from an uplift in wellbeing from the new green spaces.

Table 4.1C **Selected Stage 1 and Stage 2 findings from the young residents group in Little Hulton, Salford**

Stakeholder	Change/Outcomes	Inputs (Annual monetary Value)	Outputs
Young people attending the Change Your Choices Programme	Young people avoid becoming involved in criminal activity	£5,500	Three classes of up to 10 young people per year over three years (30 participants in total)
	Young people stay in school longer		
	Young people are more successful at applying for jobs		
	More young people avoid injury and damage to their health		

4.2 SROI Illustration 1: Calculating the Social Return on Crime Reduction Interventions in Little Hulton, Salford

The Change Your Choices programme recruits young people affected by their social environment and attempts to divert them from exerting a disproportionate cost to society. These costs include demands on public services such as health care, social work and policing, welfare costs caused by worklessness and incapacity as a result of violence, drug and alcohol dependency and mental disability. In order to calculate the return on investment from the programme, Stage 3 data is required to be collected or estimated using as many reliable sources as possible. Examples would include:

- An indicator for the reduction in crime
- The quantity of change (in this case this is likely to be a percentage decline against a baseline number)
- The duration of the change
- The financial proxy, or the unit used to value the change
- The monetary value of the proxy
- The source of the monetary value.

CWHT has collected baseline data from UK police statistics for Little Hulton. This shows that between April 2103 and March 2014 4,143 crimes were reported. Antisocial behaviour represented 46% (1,900 incidents) of this activity, much of which was perpetrated by young people. During this time CWHT opened 149 cases of tenants' complaints or reports about antisocial behaviour in and around their properties.

The Salford University team considered the variables based on previous work in this field and applied these to the Little Hulton case. Table 4.2A shows the assumptions and variables that are used to illustrate the SROI approach for this case study.

While the anticipated and predicted reduction in ASB is a significant outcome for both the residents of Little Hulton and CWHT, it cannot be used to calculate social return because the incidents are not addressed in a uniform manner either by the police or other associated bodies and services. Recognising the range of responses, the Salford University team has worked with neighbourhood police and drawn upon British Home Office sources to compile a range of monetised actions. For the purposes of illustration, the application of SROI in this report has been limited to the police response only. The breakdown included the following interventions:

- On average 40% of complaint calls would not result in a police patrol attending. This could be for a variety of reasons such as:
  - The matter could be referred to the City Council (the illegal tipping of waste for example)
  - It could be circulated for observations (off road vehicle nuisance for example)
  - The caller did not wish the patrol to attend
  - The call was required to be reported for logging purposes by CWHT (for example) wishing to collate incidents for potential investigation into breaches of tenancy agreements).

This would leave the remaining 60% resulting in police attendance. The estimate is that:

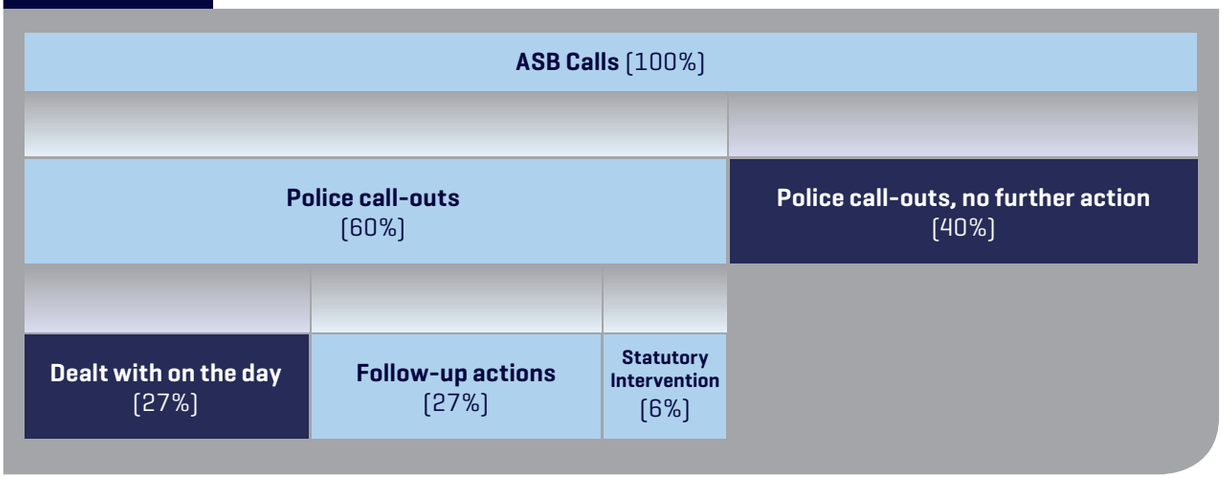
- Overall approximately 27% will be resolved on the day with advice, verbal warnings or referral to the local authority
- A further 27% would result in a follow-up call by the neighbourhood policing team dealing with longer term issues involving mediation between parties, and ASB care plans for victims
- Approximately 6% would result in statutory interventions such as cautions, referrals or through to the most severe sanctions including Antisocial Behaviour Orders or lesser sanctions such as Acceptable Behaviour Contracts.

This cascade approach can be seen in Figure 4.2.

Table 4.2A **Stage 3 outcome variables for calculating the reduction in anti-social behaviour in Little Hulton**

Indicator How would the change be measured?	**Quantity** How much change was there?	**Duration** How long does it last?	**Financial Proxy** What unit of change would be used?	**Value** What is the value of the unit?	**Source of Proxy Value**
Reduction in anti-social behaviour	10% reduction (anticipated)	First year	Cost of policing	Multiple values depending on nature of intervention (see explanation in text)	Local police records, researcher interviews with local police and Home Office statistics
Reduction in anti-social behaviour	50% reduction (predicted)	Year 2 and 3	Cost of policing	Multiple values depending on nature of intervention (see explanation in text)	Local police records, researcher interviews with local police and Home Office statistics

Figure 4.2 **Interventions following a call to the police about antisocial behaviour (ASB)**



Source: Author from report for Plus Dane Group

Searching Home Office records and the academic literature it is possible to find sufficient sources to be confident about the cost of each intervention. Table 4.2B shows the results of this research.

Note that some of the sources are not local to the East Salford area, and the values placed on anticipated change do not attempt to consider the cost of every intervention as this would not be possible. However, the approach was discussed with serving police officers and confirmed as a reasonable set of assumptions and approximations and this is typical of the work that SROI analysts will do in every case.

In this case two sources of evidence for anti-social behaviour were obtained: police callouts for incidents classed as ASB, and CWHT records of tenant complaints about ASB. The police numbers will be accurate but will map to the whole of Little Hulton, beyond the areas solely under CWHT management. The CWHT information will be more relevant to the Change Your Choices programme, but will not have picked up all of the reported anti-social behaviour, even within their area, as people will normally contact the police rather than their landlord if they are worried about criminality.

Taking the police records for the period coinciding with the start of the programme, there were 1,900 cases of reported ASB in Little Hulton where police investigated the complaint. By applying the 60% investigation weighting, this means that 1,140 of these complaints were investigated. During the same period CWHT recorded 149 complaints from residents which fell by 15 after the first year of the programme. CWHT has been encouraging the reporting of ASB (so that the police can help to address problems) resulting in an increase in ASB over the period of the Change Your Choices programme and so the 10% reduction in ASB can't be confirmed. However, assuming reporting levels remained the same then the 10% reduction around the Little Hulton estates would extrapolate to 114 fewer complaints across the ward.

However, and for illustrative purposes only, if the programme increased its efficacy in years 2 and 3 resulting in a decrease in ASB to 50% of baseline figures, then for the whole of the three-year project there would be 570 fewer investigations by the police. Tables 4.2C and D show how this data could be distributed among different responses and their associated cost savings as a result of the diminished workload of the police force against the two levels of impact.

4 http://www.restorativesolutions.org.uk/images/RAiN%20Case%20Study_AntiSocial_Updated.pdf
5 http://www.restorativesolutions.org.uk/images/RAiN%20Case%20Study_AntiSocial_Updated.pdf
6 http://www.audit-commission.gov.uk/nationalstudies/communitysafety/briefings/Pages/tacklingantisocialbehaviour.aspx
7 https://www.education.gov.uk/publications/standard/_arc_SOP/Page5/DCSF-00685-2009
8 https://www.education.gov.uk/publications/standard/_arc_SOP/Page5/DCSF-00685-2009

Table 4.2B **Estimates for ASB interventions in the UK**

Action	Cost	Calculation	Year	Reference	Other notes
Police call-out	£39	1 hour of police time for each call-out to an ASB case.	2011	Restorative solutions (2012) *Using restorative approaches to reduce police costs for dealing with repeat call outs*[4]	Based on ACPO 2011 Guidance on Charging Police Services calculation of £38.54 per hour direct costs (£54.84 FEC) per PC.
Delivering a mediation conference	£231	Average 6 hours police time to organise conference and follow-up	2012	Restorative solutions (2012) *Using restorative approaches to reduce police costs for dealing with repeat call outs*[5]	
ASBO (Antisocial Behaviour Order)	£5,350-£6,500	£2500 to obtain an ASBO and £4000 for supervision costs	2012	Audit Commission (2012) *Tackling anti-social behaviour briefing*[6]	Lower figure calculated by the Department for Education
Official warning (no intervention)	£200	Cost with young offender, based on Final Warning	2010	National Audit Office (2010) The youth justice system in England and Wales: Reducing offending by young people London: The Stationery Office	Criminal proceedings so not included in figures
Official warning (intervention)	£1,200	Cost with young offender, based on Final Warning	2012	National Audit Office (2010) The youth justice system in England and Wales: Reducing offending by young people London: The Stationery Office	Criminal proceedings so not included in figures
ASB Warning Letter	£66	NAO calculation	2006	National Audit Office (2006) Tackling Antisocial behaviour London: The Stationery Office	LA bears the cost. Calculation being used by DfE today
Arrest	£1,930	DfE calculation	2010	DfE (2010) Evidence for Think Family: Think Family Toolkit Guidance Note 3	Police bear cost. Criminal proceedings so not included in figures
Acceptable Behaviour Contract	£230	DfE calculation	2010	DfE (2010) Evidence for Think Family: Think Family Toolkit Guidance Note 3	Figure based on various reports (but all somewhat out of date), and used currently
Penalty notice	£74	NAO calculation	2006	National Audit Office (2006) Tackling Antisocial behaviour London: The Stationery Office	

The Stage 4 adjustments for this headline would question whether the CWHT youth programme was responsible for all of the decrease in ASB. The question of attribution is often the most significant as changes to other agency's tactics or resources could easily have a bearing on youth crime over an extended period. In this case two calculations can be carried out. The first would take the assumed 10% decrease after Year 1 and attribute the entire decrease to the programme as there is no evidence to show that anything else had changed in the area over this time. In that case the return on investment on police expenditure alone from the £5,500 annual investment in the Change Your Choices programme would be £47,926 (£53,426 - £5,500 = £47,926). This would mean the public purse would have reaped a social return on investment of £8.71 for every £1 invested in the programme through saving on police action alone.

The second calculation for the return after three years should contain an assumption that other effects could have influenced young people's behaviour. In this case it is assumed that Change Your Choices was only responsible for 50% of the reduction in ASB call-outs to ensure the case for the programme is not overstated. This would decrease the calculated social value to £119, 459. On conclusion of the three-year period, an analysis can be made and the figure can be inserted into the calculation. For the three-year forecast the return on investment would therefore be £102,959(£119,459 - £16,500 (£5,500 X 3) = £102,959. Even with the adjustment for diminishing attribution the return on investment over three years for the police would be £6.24 for every £1 invested in the programme.

Table 4.2C Estimated annual cost savings to the police from the Change Your Choices Programme if ASB decreased by 10%

Intervention	Unit cost	% of all call outs	Units saved by reduction in calls	Annual cost savings
Police call outs	£39	100%	114	**£4,446**
Mediation/care plan	£231	45%	51	**£7,161**
Antisocial Behaviour Contracts	£230	6%	7	**£1,610**
Antisocial Behaviour Orders (and proceedings)	£6,500	4%	5	**£39,000**
TOTAL				**£52,217**

Table 4.2D Estimated annual cost savings to the police from the Choice for Change Programme if ASB decreased by 50%

Intervention	Unit cost	% of all call outs	Units saved by reduction in calls	Annual cost savings
Police call outs	£39	100%	570	**£22,230**
Mediation/care plan	£231	45%	257	**£59,367**
Antisocial Behaviour Contracts	£230	6%	34	**£7,820**
Antisocial Behaviour Orders (and proceedings)	£6,500	4%	23	**£149,500**
TOTAL				**£238,917**

This of course ignores the many other outcomes that could be monetised including better health, education and job outcomes for the participants which could substantially increase this return if the tracking results proved favourable. This is because it would be reasonable to count the return to the public purse for a considerable period after the end of the course due to the potentially long-term change in the trajectory of young people's lives. In addition, the focus on the public purse is an important, but partial, aspect of the return on investment from a reduction in ASB committed by young people. The stakeholder derived element such as changes in levels of confidence, positive civic participation and the effect that better behaviour has on the surrounding population can also contribute to the returns, providing sufficient data has been collected from a representative section of the affected community.

There is one more calculation which, on a practical basis, should not be overlooked. CWHT has calculated that every antisocial behaviour complaint costs it and other agencies £629 to process and that at least £500 of this figure is based on its own staff time investment. This would mean that 149 complaints about ASB cost the Trust £74,500. The anticipated 10% decrease in ASB as a result of the Change Your Choices programme could save the Trust £7,500 producing a 1.36:1 return on investment. If ASB decreased by 50% over three years the gross saving would be £37,500. Adjusted for attribution this return would still be a £1.13:1 return for the Trust prior to the addition of the societal gains from its efforts. However, this number is likely to increase once additional savings such as repair, graffiti cleansing, and decreased void times are taken into account.

As the programme unfolds, CWHT will attempt to track the young people's progress both during the programme and afterwards for a period of at least two years to establish the impacts on the range of potential outcomes identified at the outset. This will concentrate on individual achievements, the avoidance of negative outcomes and the reduction of agency involvement. This is not always easy as youth schemes are often run on the basis that the young people are not questioned about their past or tracked concerning their progress once they leave the scheme. However, if permission for tracking is agreed, at least for some of the participants, then the SROI calculation would be able to include the full impact of the intervention.

4.3 SROI Illustration 2: Calculating the Social Return on Health and Wellbeing Interventions in Hazelwood, Pittsburgh

Health outcomes are often very challenging to calculate for built environment projects because there are many other factors (weather, income, genetic influences etc.) that can affect health in addition to the impacts from development under consideration. Accepting this, it is imperative that built environment professionals understand that the design of buildings, infrastructure and services, and the community activities that are facilitated by these developments, have a direct influence on the way people feel about their area and on their health. An evaluative SROI will research the baseline health and wellbeing trends and interview prospective stakeholders who may be influenced by the scheme prior to the commencement of construction. The SROI team would then return after a period (usually not less than 12-24 months) to re-interview the same respondents and check the statistics to see if there has been a discernible change. This assumes much in that both the people and the statistics many not be readily available and this is where precedents and assumptions are researched and inserted into the Impact Map as second level data.

The SuROI analysis for Hazelwood is based on the forecasted impacts of the planned Second Avenue project. Forecast analysis removes the need to evidence change as this has yet to occur. However, it is still necessary to source reliable evidence for the indicators and proxies that will be used in the predictions. In the case of the Hazelwood case study, this evidence included primary data collection from a focus group and an attitudinal survey that included questions about residents' aspirations for their area. This was then combined with proxy values and assumptions about the number of people likely to be affected by the Second Avenue development. The survey evidence was explained and set out in Section 2 of this report. Table 4.3A shows health related proxies collected from all three case study areas to give an indication of the range, sources and qualifications for this type of data.

The proxy data enables a broad forecast to be attempted. For some calculations, assumptions are necessary to predict the impacts of the programme even before the Stage 4 adjustments as not all of the population will be affected, and some of the baseline information may not be in place. For example, an assumption that only 25% of the current population will benefit from some degree of health improvement if there is investment in the local health clinic and the provision of additional wellbeing services is conservative but reasonable at the outset of the scheme. The Centres for Disease Control and Prevention estimate that the average American visits their family doctor just over 4 times a year. As there are a larger number of low income families in Hazelwood, and this economic situation is associated with a higher incidents of health problems, the assumption is that the residents of Hazelwood visit the doctor (on average) 8 times a year. Table 4.3B shows how these frequency assumptions could influence the predicted return on investment from health improvements as a result of the Second Avenue development.

These gross values then need to be adjusted against the Stage 4 tests. At present there is more research to be carried out in the Hazelwood area and so there are no reliable figures for either the attribution rates or the overall capital costs of the new clinic and associated wellbeing services. However, a conservative attribution rate of just 10%, and the inclusion of the whole of the $2.4m development costs of the combined Second Avenue projects gives a social value for health improvements of $4,515,585 or a return on investment of $1.88 for every $1 invested in the scheme. As set out in Section 2, there are many other potential social outcomes that could be calculated, including crime reduction, job creation and a number of other wellbeing improvements, indicating that this initial return on investment result is likely to be considerably larger once the final analysis for the Second Avenue scheme is completed.

Table 4.3A **Selected world-wide health-related proxies**

Health-Related Activity	Value	Sources and Qualifications
The cost of visiting health practitioners (UK)	Average cost of a district nurse visit $51 Average cost of a family doctor appointment (10 minutes) $8.50-$42.50 The cost of an out-patients visit to hospital $17 Total per capita healthcare spend against GDP approx. $5,950/yr.	NHS Scotland Green Book NHS Scotland Green Book Proposed range of patient charges by the Kings Fund (Barker, 2014) Proposed upper limit charge by the Kings Fund Kings Fund analysis of OECD 2013 data
The cost of visiting a family doctor (US)	$130	Average consultation 10-20 minutes from practitioner communication with researcher
The cost of robbery with injury (US)	$33,778.20 (adjusted for inflation)	Miller, Cohen, and Wiersema, (1996)
The cost of drunk driving with injury	$126,223.80 (adjusted for inflation)	Miller, Cohen, and Wiersema, (1996)
The cost of treating patients for depression (US)	$11,000 (annual outpatient treatment)	Star*D research protocol[9]
The cost of visiting a family doctor (Brazil)	$10.42 -$12.68 (per person – average cost per visit)	Applies to clinics in low-income areas of Porto Alegre. Practitioner communication with Rio Grande do Sul University
The cost of health care in Porto Alegre	$368.68 per capita per year for whole city	Porto Alegre Municipal Health Plan 2012
UK Wellbeing value for relief from depression and anxiety (adult)	$62,502.20 per year	Trotter et al., (2014)
UK Wellbeing value for relief from health problems that limit daily activities	$17,374 per year	Fujiwara (2013)
UK Wellbeing value for relief from alcohol and drug related problems	$41,236.90 per year	Fujiwara (2013)
The cost of visiting a family doctor (New Zealand)	$34 to $42.50	Timmins and Ham (2013)
The cost of visiting a family doctor in Sweden	$28.90	Barker (2014)
UK Wellbeing value for high confidence	$22,236 per year	Trotter et al., (2014)
UK Wellbeing value for smoking cessation	$6,817	Trotter et al., (2014)
UK Wellbeing value for feelings of belonging to the neighbourhood	$6,238.10	Trotter et al., (2014)

9 www.ccjm.org/content/75/1/57.full.pdf

Table 4.3B Selected Stage 3 variables for calculating the predicted reduction in negative health outcomes in Hazelwood venue development

Indicator *How would the change be measured?*	Quantity *How much change was there?*	Duration *How long does it last?*	Financial Proxy *What unit of change would be used?*	Value *What is the value of the unit?*	Source of Proxy Value	Gross Social Value Added over 10 years
Fewer visits to the family doctor	1,260 people (25% of the population) showed a 50% decrease in annual family doctor visits against a pre-scheme frequency of 8 visits per year.	10 years	Cost of a 10 minute consultation	$104	Debt.org (2011 prices)	$5,241,600
The cost of assaults with injury	50% decrease from 110 incidents in 2011 (http://apps.pittsburghpa.gov/pghbop/2012_Annual_Report_v2.pdf	10 years	Cost of treatment and attendant services after assault	$33,778.20	Miller, Cohen, and Wiersema, (1996)	$18,578,010
Feelings of belonging to the neighbourhood	755 people representing an improvement for half of those who said they were dissatisfied with their neighbourhood	10 years	Wellbeing value	$6,004	Trotter et al., (2014)	$45,336,240

5.0 Calculating the Value of Ecosystem Services

5.1 Sources of Data

A summary of the approach and current developments in Ecosystem Services Analysis (ESA) was set out in Section 2 of this report. In this section the open spaces of the PIEC development in Porto Alegre are used to illustrate how ESA can be added to SROI to give a combined sustainability (natural environment and social value) return on investment calculation. The initial requirement for this is to ensure adequate research has been carried out on the values that will be used in the calculation. The Economics of Ecosystems and Biodiversity (TEEB) database described in Section 2 currently covers more than 1310 values of ES for a range of different ecosystems from 267 references[11].

The InVEST (Integrated Valuation of Environmental Services and Trade-offs) tool kits also contain guidance. InVEST is a suite of software models used to map and value the goods and services from nature that sustain and fulfil human life. InVEST enables decision-makers to assess quantified trade-offs associated with alternative management choices and to identify areas where investment in natural capital can enhance human development and conservation.[12]

There is also specific guidance available on urban forestry from the i-Tree website (www.itreetools.org). i-Tree is a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban forestry analysis and benefits assessment tools. The i-Tree Tools help communities of all sizes to strengthen their urban forest management and advocacy efforts by quantifying the structure of community trees and the environmental services that trees provide.

These sources provide estimates of values for the different services that species or habitats provide under the four main service sub-divisions. While it would not be feasible to set out the whole range of values in this report, Table 5.1 offers a selection of values that were of interest when considering the ESA calculation for the open space in the PIEC estates.

It is desirable (although not always practical) to collect empirical data on values such as the cost of food or health care, for example, this is because values in the literature may not be relevant to the study site. When local data can not be sourced and the literature is used instead, it is important to use the narrative to explain why a substitute indicator or proxy was chosen.

11 Available at http://www.fsd.nl
12 The toolkit is available from http://www.naturalcapitalproject.org/InVEST.html

Table 5.1 Examples of some ecosystem service values

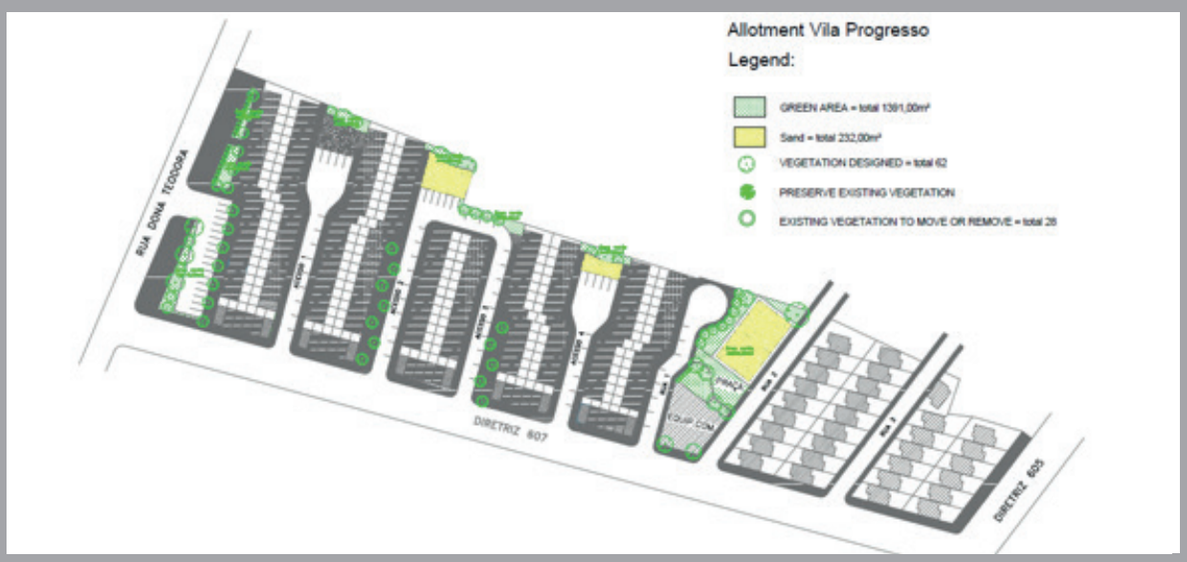
Ecosystem service	City	Biophysical accounts	Economic value estimates
Air purification (tonnes of pollutants per year)	Barcelona, Spain	305.6 t/yr.	€1,115,908
	Chicago, USA	5575 t/yr.	US$ 9.2 million
	Modesto, USA	154 t/yr.; 3.7 lb./tree	US$1.48 million US$16/tree
	Sacramento, USA	1457 t/yr.	US$28.7 million US$1500/hectare
	Philadelphia, USA	802 t/yr.	US$ 3.9 million/yr.
Urban cooling/heating	Chicago, USA	0.5 GJ/tree (cooling) 2.1 GJ/tree (heating)	US$15/tree US$10/tree US$50–90 per dwelling unit
	Modesto, USA	110,133 Mbtu/yr.; 122 kWh/tree	US$870,000 US$10/tree
	Sacramento, USA	157 GWh (cooling) 145 TJ (heating)	US$18.5 million/yr. US$ 1.3 million/yr.
Climate regulation (tonnes of Carbon per year.)	Barcelona, Spain	Storage: 113,437 t Sequestration: 6187 t/yr.; 5422 t/yr. (net)	Not assessed
	Modesto, USA	13,900 t 336 lb./tree	US$ 460,000 US$ 5/tree
	Philadelphia, USA	Storage : 530,000 t Sequestration 16,100 t /yr.	US$ 9.8 million US$ 297,000
	Washington, USA	572 t/yr. 1.0 t/ha/yr.	US$ 13,156
	Chicago, USA	Storage: 5.6 million t (14–18 t/hectarea)	Not assessed

Note: Figures were not converted to net present values and should be taken as illustration only (adapted from Gómez-Baggethun and Barton, 2013)

5.2 Ecosystem Service Illustration: Calculation of the Green and Open Space Value of Additional Park and Landscaping in the PIEC Estates of Porto Alegre

The PIEC project included 'landscaping' improvements as one of five key elements of the public housing programme. For example approximately 6% of the plot set out for the 2.3 ha Vila Progresso estate was planted with increased tree cover from the 28 existing plants to the current 62. Residents enjoy 0.14 hectares of land that was established as open space. Figures 5.2, shows the landscaping designs for Vila Progresso, one of the three PIEC estates.

Figure 5.2 **Landscaping designs for Vila Progresso in Porto Alegre, Brazil**



Source: Landscaping designs for Vila Progresso in Porto Alegre, Brazil

A summary of the land areas and the tree cover information for all three estates is shown in Table 5.2A.

Table 5.2A **Land areas and tree cover for the PIEC estates under consideration**

	EHIS Vila Progresso	EHIS Vila Pôr-do-sol	EHIS Vila Tecnológica
Total area (m^2)	22,957.55	9,781.32	34,516.40
Green space (m^2)	1,391.00	913.00	2,834.00
Sand (m^2)	232.00	No sand	No sand
Trees before development	28	2	No data
Trees after development	62	21	No data

After 10 years some of this green space has been eroded (particularly green verges bordering housing) as a result of encroachment by small extensions constructed by the residents. However, the key public open spaces remain. Land use and the condition of these spaces have varied in each of three estates. In order to demonstrate the flexibility of the SuROI approach the value that Ecosystems Services provides has been estimated to show the change between the pre-development situation (i.e. when the residents were still living in the favela) and two scenarios. The first is the enhanced biodiversity (added planning) of the green spaces, and the second shows the return if half of the green space was to be used to grow food by the residents.

Based on data from the TEEB database and other sources (notably McPherson et al. 1999) estimates for the ecosystem services associated with the three estates have been identified and monetary values calculated for both 2007 and 2012 (Table 5.2B). The recommendation of TEEB is to calculate prices to 2007 values. For this report an inflation corrected calculation was made based on 2012 prices, the most recent estimate available at the time of writing. With the vegetation, surface area, and database values at hand, it was possible to set the calculation values for the three PIEC estates and this is shown in Table 5.2C.

Having established these values, the calculations for each of the three estates against three outcomes can be made. These include:

- Contribution from the pre-construction land service
- Contribution from the existing landscape
- Contribution if 50% of the existing open space was converted to plots where residents could grow fruit and vegetables.

Table 5.2C shows these three outcomes for each estate against 2012 prices.

The figures show that the landscaping and open space provision offered the residents of each PIEC estate the following added value:

- **Vila Progresso:** $6,287 (new landscaping) − $2,268 (pre-construction) × 10 (years) = $40,190
- **Vila Pôr-do-sol:** $2,427 − 162 × 10 = $22,650
- **Vila Tecnológica:** $1474 − $0 × 10 = $14,740

The added ecosystem service value for the three estates over 10 years is therefore $77,580. The estimate for the capital cost of landscaping was approximately $45,000 for the three estates meaning the net present value (the social return minus the investment required to generate it) was $32,580.

Table 5.2B **Estimation of the value of ecosystem services in the PIEC estates**

Ecosystem services	US$	Date of estimate	Value in 2007 (US$)	Value in 2012 (US$)
Tree cover				
Aesthetics and other benefits	16/tree/year[2]	1999[5]	20	24[8]
Air purification	16/tree/year[2]	1999	20	24
Energy saving (urban cooling)	11/tree/year[2]	1999	14	16
Storm water run-off	7/tree/year[2]	1999	9	10
Climate regulation	5/tree/year[2]	1999	6	7
Urban green space				
Recreation and cognitive development[1]	5266/hectares (ha)/yr[3]	2004[6]	5,827	6,848[9]
Water flows[1]	15/ha/yr[3]	2004	17	20
Climate	830/ha/yr[3]	2004	918	1 079
Food production	7426/ha/yr[4]	2003[7]	8,464	9,947[10]

Notes: 1 Applies to both sand and open green space 2 Based on Modesto, USA from McPherson et al. (1999) 3 Based on TEEB database 4 Based on TEEB database for orchards 5 Based on 25.06 % inflation from 1999 to 2007 6 Based on 10.66 % inflation from 2004 to 2007 7 Based on 13.98 % inflation from 2003 to 2007 8 Based on 46.98 % inflation from 1999 to 2012 9 Based on 30.05 % inflation from 2004 to 2012 10 Based on 33.95 % inflation from 2003 to 2012

There was no evidence of ground maintenance work carried out by the city council over the 10 year period and residents told researchers that they had done the additional planting and upkeep of the plants in the communal spaces themselves so no additional sum is added for costs in this respect. This would mean that Porto Alegre had a return on investment of $0.72 for every $1 invested in open and green space. This low return fits the (observed) poor condition and use of the open space after 10 years in each of the estates. However, if the residents of each of the estates decided to use half of the open space to plant fruit and vegetables, the net added value of the ecosystem would rise to $158,720 and a net present value of $113,720, offering a much healthier $2.53 for every $1 the city invested in greening the estates.

The case study of three housing estates in Porto Alegre illustrates how the value of ecosystem services can be estimated. Behind these estimates there are a considerable number of assumptions: that sand and open green space have the same value with regards to recreation and cognitive development and water flows, that growing food on half the open space does not alter the recreational and cognitive development and water flow values, that the monetary values included in the calculations are relevant to Porto Alegre and so on. Hence these figures are only illustrative. To derive more accurate figures it would be necessary to calculate the values that are relevant to each of the three sites, and that requires detailed investigation, which is currently being undertaken by the joint Salford/Rio Grande do Sul academic team.

Table 5.2C **Added value of ecosystem services against three different outcomes in the PIEC estates**

Ecosystem services	Vila Progresso			Vila Pôr-do-sol			Vila Tecnológica		
	Pre-Development (US$)	Current Use (US$)	50% Food Planting (US$)	Pre-Development (US$)	Current Use (US$)	50% Food Planting (US$)	Pre-Development (US$)	Current Use (US$)	50% Food Planting (US$)
Tree cover									
Aesthetics and other benefits	672	1488	1800	48	504	768	0	0	840
Air purification	672	1488	1800	48	504	768	0	0	840
Energy saving (urban cooling)	448	992	1200	32	336	512	0	0	560
Storm water run-off	280	620	750	20	210	320	0	0	350
Climate regulation	196	434	525	14	147	224	0	0	245
Urban green space									
Recreation and cognitive development	0	1111	1111	0	625	625	0	1474	1941
Water flows	0	3	3	0	2	2	0	0	6
Climate	0	150	150	0	99	99	0	0	306
Food production	0	0	692	0	0	454	0	0	1409
TOTALS	**2268**	**6287**	**8032**	**162**	**2427**	**3773**	**0**	**1474**	**6497**

6.0 Integrated Sustainable Return on Investment

6.1 Combining Social and Environmental Values

The SuROI approach allows multiple valuing systems to be combined within the framework of the Impact Map. This is possible because the social and environmental impacts are monetised so that, regardless of the type of impact, or the impacted stakeholder, the unit of value is common to all. The information that is required to make these calculations is not always available, or is presented in forms that cannot be easily utilised, or may not precisely cover the scoped area of interest. The description of the calculations resulting from the case study work in the UK, the USA and Brazil has shown that this approach requires valuers to make assumptions, approximations and use precedents from similar situations to provide the best indication of the social and environmental value for each development. Providing the sources for indicators and proxies are made transparent, readers of SuROI reports will benefit from the attempt to set out all of the impacts from the development, and can then determine how much weight to place on the conclusions based on the evidence.

Larger developments are likely to affect a wide range of stakeholders with multiple impacts. Unlike social policy interventions that are designed to help vulnerable groups, construction projects are going to have both positive and negative impacts and all of these need to be assessed and added together to achieve a balanced return at the end of the analysis. This figure can then be added to conventional valuations to give a more complete picture of the economic implications of built environment projects and programmes.

The final stage in any SROI type analysis is to show how all of the outcomes combine to provide a final ratio. This report will use the context and data from the PIEC case study in Porto Alegre to show what this might look like for a built environment project. The PIEC SuROI study is still in progress and has reached the stage where trends and proxies are being sought. Consequently, where there are no verifiable sources, an estimate based on local knowledge has been inserted so that the Impact Map can be populated. As in any SuROI study, these assumptions are then replaced when better data is obtained. If the need to publish comes before all proxies can be verified, then it is important to be transparent about this in the narrative and to place a note on the Impact Map where possible. It is rarely the case that all proxies can be located in the literature, but as long as the assumptions are based on an understandable precedent, then the calculation is likely to be more helpful to decision-makers than a complete absence of information about the hidden value of social and environmental change.

6.2 Combined Social and Environmental Illustration: The PIEC Developments, Porto Alegre

The calculation contained in Table 6.2 shows how a range of selected social and environmental outcomes can be combined in one return on investment report.

The final calculation for this limited SuROI exercise for the PIEC development shows that the net present value of the social and environmental benefits to residents is £32,670,678. The net social return ratio for the first 10 years of the scheme is therefore 26.46:1. In other words, for every £1 invested in the buildings, open space and social improvements of the PIEC estates, the wider economy received £26.46. No adjustment for time or inflation has been made in order to keep the example as simple as possible.

Table 6.2 **Selected outcome calculations on the added value of social and environmental change in the PIEC Developments, Porto Alegre**

Predicted Change or Outcomes	Inputs (Nature of Project)	Inputs (Monetary Value in £/ GBP)	Outputs	Indicator	Quantity	Proxy	Value	Gross Social Value over 10 years	Impact after Adjustments
Residents have improved job prospects	Economic welfare (Skills and training) programmes	£2,725 The unit cost of training sessions - estimate based on pre-build budgets.	20 programmes delivered to date	Improvement to working status	167 household heads become formal workers	Annual average income	£6,136.23 IBGE.gov.br	£10,247,320	£4,098,928 (minus 60% for deadweight and displacement from informal employment)
Residents have access to (better) childcare and pre-schools	New childcare premises	£49,300 The estimate for new pre-school facility on the Mario Quintana lot.	1 new pre-school facility serving 410 households with young children	Improvement to working status	75 people are able to find part-time work (E)	Annual average income	£6,136.23 IBGE.gov.br	£2,301,086	£920,435 (minus 60% for deadweight and displacement from informal employment)
Residents have access to (better) schools	New schools or rooms and more teachers	£16,680 (Estimate for extension to Antonio Giudice school)	1 modified school serving 410 households with school children	Improvement to working status	25% of 820 children find jobs (2011 – 2013)	Annual average income	£6,136.23 IBGE.gov.br	£3,773,781	£1,509,512 (minus 60% for deadweight and displacement from informal employment)
Residents experience improvements to health	More and better health clinics	£165,000 for new health clinics, £200,000 per annum over 10 years for additional staff (E) and £55,000 per annum in street and drainage maintenance over 10 years (E)	3 new clinics with 3 doctors and 3 support staff serving 410 households	Cost of treatment	62% of all residents better health (1,017 people) leading to reduction in doctor visits from 6 to national average 2.6 (AHO/ WHO http://new.paho.org/hq/dmdocuments/2010/Health_System_Profile-Brazil_2008.pdf).	The average cost of treatment (low-income patients)	£ 6.80 The average cost for a 15 minute consultation - local practitioner estimate	£235,130	£176,348 (25% deadweight)
Residents are better sheltered and more secure in new housing	New houses and infrastructure including drainage, sewage and street cleansing	£272,700 (construction only)	Improvements for approx. 1,640 people	Wellbeing	55% of 1640 (902) residents experienced better security	Wellbeing value for not being worried about crime	£2,968 (from £11,873 using Trotter et al., 2014 adjusted for Brazil economy)	£26,773,615	£20,080,211 (minus 25% for displacement)
Fewer community disputes and more democratic demands made through the participatory budget process	New community centres built and more community workers employed	£5,150 per community centre and £6,136.23 per annum for 6 community workers over 10 years (E)	Three community meeting rooms and six community workers serving 410 households	Wellbeing	45% of 1640 residents (738) experience better neighbour relations	Wellbeing value for talking to neighbours regularly	£962 (from £3,848 using (Trotter et al., 2014 adjusted for Brazil economy)	£7,099,560	7,099,560
Residents gain from multiple ecosystem services benefits	Communal open space and green space	£7,875 (One-off maintenance costs for Mascarenhas Park) and £30,000 estate landscaping costs	Four open space projects for 410 households	Multiple services(see Table 5.2.4)	5,138m²	Pricing for multiple services(see Table 5.2.4)	Pricing for multiple services (see Table 5.2.4)	£48,488	£20,363
Totals		**£1,234,679**							**£33,905,357**

7.0 Conclusions

7.1 Early Interest in Sustainable Return on Investment (SuROI)

The practice of valuing social and environmental change in the built environment is still at a very early stage of development. While the methods and approaches such as SROI and ESA are maturing, they are still relatively young and so it is important to accept that this is an evolving area of interest. The illustrative calculations set out in this report were designed to show, in the context of actual built environment conditions, how the approach might be applied in the field. However, there is already interest from housing providers, developers and local authorities in SROI-based approaches to valuing social and environmental change.

In April 2013, Birmingham City Council (2013) agreed a policy that committed it to apply the principles of the Social Value Act (SVA) to the whole of its £1bn procurement budget including the purchase of both goods and services. Many other UK local authorities are considering the extent to which the Act should be applied in commissioning and procurement. Private sector interest in carrying out Sustainable Return on Investment exercises may be stimulated by statute, client requirement or commercial advantage to differentiate a competitive edge in their bid. However, the early interest in the approach has been from innovative developers working together with civic authorities to provide mixed developments (including low-income residential) without the need to sell publically owned land banks.

7.2 Some Emerging Issues for Practitioners

There are a number of issues that have emerged during this study that valuers should recognise before planning a SuROI analysis. The first is that the capacity to understand and carry out the calculations for social and environmental value will need to increase significantly within the discipline. In the short-term developers may be able to partner with specialist practitioners or universities to supplement their workforce. The SROI Network is a membership group and current focal point for workers in this field and can be contacted for assistance and training. In the medium term government subsidised vehicles that link universities and business to enhance profitability by increasing in-house technical capacities may be worthy of investigation. In time the in-house valuers that can gain experience with both manipulating the data sets and understanding the potential to enhance development schemes through socio-environmental added value will be able to assist clients and employers to work through complete scenarios and evaluate planning and design decisions across the whole range of development impacts.

A second issue concerns the potential problem of split-incentives, commonly exemplified by the dilemma some private sector owners have in making buildings more energy efficient for their tenants. In this example the owner is disincentivised from investing as the tenant benefits, but passing on benefit through higher rents is commercially risky. The tenant is disincentivised from investing as they do not own the property. The same principle applies when a developer invests in a scheme that may improve health, crime or employment outcomes for the occupants. These benefits accrue to the State through savings to the public purse, or a dispersed local economy. This is not an issue when complying with legislation such as the UK Social Value Act. The imperative to employ an approach like SuROI is less obvious for a speculative developer selling on the private market. However, the approach is finding favour where a client/landowner has the longer-term interests of the occupants and the wider population surrounding the development site in mind. Typically this might be a social housing organisation that has development criteria that includes both value for money and the welfare of its tenants. Local authorities that want to enhance the amenities and aesthetics of their area will also wish to see the evidence that development proposals can fulfil these ambitions. Approaches such as SuROI will be in demand where the economic public benefit of sustainable development is sought by clients, and understood by developers and their contractors.

Finally, there needs to be a wider recognition by built environment organisations that the impacts that are caused by development should be monitored through the experiences of the stakeholders affected by scheme. Traditionally stakeholders (and community members in particular) are consulted at the planning stage and may be asked about their reactions during the construction phase, either by the developer or the local authority. The way both of these exercises are undertaken is inconsistent across the built environment. To carry out an effective return on investment analysis these practices will need to become common-place and more effective.

In time it is hoped that the SuROI approach will become so easy and accessible that it will become part of the natural scenario testing and evaluation mechanism for all projects. The need to build sustainable development in the face of rising social expectation and declining environmental conditions suggests that this anticipated common practice is not only desirable but necessary.

7.3 Key Findings

The report shows that it is possible to combine two different approaches that value social and environmental change and apply them in built environmental contexts to reveal the return on investment of hitherto unquantified benefits. The key findings of the report are:

- The illustrative return on investment calculations (expressed as ratios) for the three case studies revealed the following results :
  - For every £1 invested in antisocial behaviour workshops for young people in Salford, England the project yielded £11.51 in return;
  - For every £1 invested in health and wellbeing developments in Pittsburgh, USA the project yielded £1.88 in return;
  - For every £1 invested in open space areas in public housing estates in Porto Alegre, Brazil the project yielded £0.72 in return; and
  - For every £1 invested in housing with open space and social support services in Porto Alegre, Brazil the project yielded £26.46 in return;
- The emerging discipline of Social Return on Investment (SROI) provides a useful framework in which to embed a number of approaches that can value social and environmental change.
- The spread sheet design of the Impact Map in the SROI Guide (Nicholls et al., 2012) is capable of incorporating other approaches, such as Ecosystems Services Analysis (ESA).
- Stakeholder data collected in the field can be used to evaluate social and environmental change caused by completed projects, and to predict future changes from planned projects.
- The socio-economic and environmental data required to carry out a sustainable return on investment calculation was often required to be obtained from a variety of central and local government sources, developer sources, and primary sources collected from stakeholders in the locality of the project. In some countries, where this data is unavailable, practitioners can be consulted to construct reasonable assumptions.
- Organisations that wish to understand the value of social and environmental change should seek out partnerships with practitioners working in this field until such time as capacity in this field increases.

7.4 Future Developments in this Field

There is a lot of scope for growth and development in the field of sustainable return on investment. The primary need is for the approaches to be tested in a wide range of contexts and development types to ensure the values associated with the observed or calculated changes are both reliable and flexible enough to be used in any circumstance.

In addition, the use of spread sheets to display complex interactions, particularly for large developments may become limiting. This is because not all impacts that stem from developments can be tracked in the linear manner required by filling out a spread sheet. In time it may be more appropriate to apply a 'mind map' or fault tree type of notation to ensure that the numerous outcomes for multiple stakeholders can be developed and recombined if necessary to avoid double counting and ensure clarity and transparency for the readers of SuROI reports.

Further to expanding on the two approaches developed in this research, it is feasible and desirable for other approaches to be added to the SuROI groups of tools. This would certainly include Life Cycle Assessment, but could also incorporate Building Information Models, derivations of Cost Benefit Analysis and many others. In time it should be possible to draw upon a library of approaches and insert them into the Impact Map as and when their application is appropriate.

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