Co-Creating Community with a Needs Based Approach to Urban Design and Planning

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Abstract: The development of the human built environment is an essential component to achieving and maintaining a sustainable society. Much has been done to develop tools, techniques and approaches for creating ‘green’ or ‘sustainable’ neighbourhoods yet they rarely demonstrate the capacity to address the wider socio-ecological requirements for achieving success. This paper studies the current approaches to green design and planning, proposes a new approach called Needs Based Design (NBD), and identifies the gaps that exist between the two. Results indicate that NBD is based on a firm foundation, is widely applicable, and can support and spur regional sustainable development initiatives and positive behaviour change within communities. It fills three major gaps identified in current green design by utilising systems thinking and a shared language and framework, and focusing on the needs of individuals within communities. Concerns exist, however, about its reliance on broad community participation and ongoing education. In theory, NBD allows project teams to implement their work from a strategic sustainable development perspective. Recommended now is practical application and testing.

Keywords: Sustainable urban design, Strategic Sustainable Development, backcasting, needs, participation, behaviour change.
Acknowledgements

“There are no experts here. We are all co-learners.” – Bill Reed

First, a thank you to our advisors. Richard Blume, as our primary advisor, helped us to clarify which ‘process of the process of the process’ we were actually talking about and provided us with invaluable feedback. Dr. Karl-Henrik Robèrt has challenged and inspired us all year and is responsible for the evolution of many of the concepts that we build from. Bill Reed has continually challenged us to explore the world beyond sustainability. And Grant helped us through our many, many edits.

We would like to thank the programme staff for their insight and strategic hands-off approach to leadership and learning. They have done a wonderful job at giving us the crucial guidance when needed. We wish you all luck on your own journeys.

We would also like to thank our collaborators and interviews that graciously took time to participate in our learning journey. We thank them for all of the input, insights and inspiration they were able to provide.

Tack så mycket to each of the members of the MSLS class from whom we have learnt uncountable life lessons. We would also like to acknowledge those in the class that have attributed so much through their drive and energy to initiate, invite and invigorate the class around countless social and learning opportunities – thank you for making the year truly happen.

None of us would be here without the unconditional love and support of our close families and friends back home. If absence makes the heart grow fonder, our fondness is full!

And finally, our great appreciation goes to the planet on which we live. We collectively promise to undertake the challenge of leading society towards a positive, participatory and healthy relationship with the biosphere. We will live out each day seeking a deeper understanding of our own relationships with the communities in which we reside in order to take the best advantage of the opportunities that are afforded to us.
Executive Summary

This paper aims to address the challenge of sustainability by proposing a practical approach to urban design and planning, and to progress the discussion about how to best advance society’s transition towards global sustainability at the practical project level. It aims to answer the following research question:

How might the approach to urban design be changed to better facilitate the realisation and maintenance of a sustainable society?

Objectives include: obtaining an understanding of current approaches to ‘green’ urban design; developing a proposed approach that addresses sustainability from a holistic overview; and clearly identifying the gap between the two to help provide insight on where change can occur.

Introduction

The way we conceive, plan and build our human habitats must change if society expects to make progress towards sustainability. Although much has been proposed under its appearance (Vale & Vale 1991), little progress has been made. With some exception, urban landscapes lack aesthetic appeal and human needs are insufficiently met on a global scale (Hugentobler 2006). To rise above the challenge, we must move beyond the many existing technical (Ding 2008) and principled based solutions of current design practices. We must understand and adopt a whole systems perspective to building our living communities (Reed 2007), understanding that urban areas only exist because of the many interconnections between them and their surroundings (Doughty & Hammond 2004). Necessary are consistent approaches to inclusive (Vale & Vale 1996) integrated design (Patan & Birkeland 2005, 352) that allow us to work towards the goal of sustainability. Current approaches mainly focus on the design of objects rather than the needs of individuals. Max-Neef (1991) provides us with a definite way to approach social sustainability (Robèrt et al. 2004, 149) by suggesting nine basic human needs that are universal to all people for all time.

Setting the premise that we as humans can positively participate in the larger systems upon which our survival is dependant, perhaps plays the largest role in overcoming this task – current rationale aside.
Methods

The research method for this study consisted of four parts. In part one, a broad understanding of the general way green design is currently practiced was acquired. Exploratory interviews, a literature review, and a survey of green design were utilised to gather data. The main part of the research took place in part two, which involved the development of a strategic approach to urban design and planning. The proposed approach was adapted from the Framework for Strategic Sustainable Development (also referred to as The Natural Step framework), a planning method used to guide users towards the goal of sustainability within complex systems. In part three, a theoretical testing of the approach took place. Twenty four professionals from numerous countries commented on the benefits and constraints that its implementation might offer. In part four, a brief gap analysis was undertaken to highlight the differences between the two approaches and to suggest how current approaches might change to help society move towards sustainability.

Results

Part 1: Current approaches to green design

Green design has made much progress in recent years and can be heralded, in general, to be making strides in the right direction. It is based on a general desire to act responsibly in making design decisions and to have less impact on ‘the environment’. While green design strives for sustainable stature and is more progressive than conventional design, it still approaches community development from a project-centric, ‘inside-out’ view. Project parameters are largely constrained by economic factors that form the basis for decision-making. Social and environmental concerns are often overlooked.

Three main shortfalls were identified within the current way green design is approached:

- By addressing sustainability from the limited and mechanistic perspective of the objects on the site only, neglecting a comprehensive whole systems perspective;
- Through inadequate use of frameworks and tools – no practical definition of sustainability is used, nor is a shared language or
structure for working together commonplace. Confusion between the use of strategies and tools is also common; and

- It has insufficient means to consider the social aspects of sustainability into a project’s vision.

Part 2: Proposed approach – Needs Based Design

Needs Based Design (NBD) is a systems thinking approach that provides design and development teams with a common language, strategy and method for designing, constructing and maintaining the physical and social infrastructure of a sustainable society. NBD was developed with the goal of inspiring behaviour change in residents to reflect more sustainable actions.

It details an overall approach, proposes a structured framework, and provides a tool, the IDEA method, to put it all into practice. I (Intend) asks participants to consider what they intend to create together. D (Discover) encourages the discovery and development of a thorough understanding of the needs of the community and the ‘place’ in which the project will participate. E (Envision) asks for the co-creation of a shared definition of success. And A (Act) asks participants how they might act together to design a project that will contribute to life within that community. Backcasting from principles of success, meaningful participation, and prioritising guidelines are utilised to strategically move projects forward. Refer to Figure A below for a summary of the NBD framework.

Part 3: Testing

NBD underwent one round of theoretical testing with professionals from numerous related fields. In terms of benefits, NBD was noted to be a thorough and complete approach to aid urban development in its transition towards sustainability. It provides a means to understand the ‘bigger picture’ and a generic enough outline to be used in development at various scales. It was suggested, for example, that the approach could benefit a single-building project and also support sustainability efforts at the regional level.

Some interviewees however, claimed NBD to be both too idealistic in nature, especially with respect to the degree of community engagement that it invites, and not idealistic enough, as it is still is a ‘rational’ approach to design and development. The shift in mindset necessary to implement it
was seen as significant and difficult, predominantly because of the current way we think and rationalise.

The budgetary and financial pressure that most projects are under is also seen to counteract the widespread use of the NBD approach, as it counts on significant amounts of work to happen prior to beginning the design of the project.

Part 4: Creative tension between the two approaches

Table A below can be referred to for a summarised gap analysis between the two approaches.

Discussion and Conclusion

By providing solutions to the shortcomings of current approaches with similar visions, NBD provides a way to better facilitate the realisation of vibrant and healthy urban communities. It is holistic in nature, provides a working structure and framework, and presents a way to address social sustainability within the design and planning of our communities. While NBD cannot claim to shift behaviour to reflect more sustainable actions, it can claim to plant and nurture the seeds of individual and community change for the growth of a sustainable society.

Despite the noted strengths of NBD, it is important to recognise a few significant factors that could influence its successful implementation. Participation to smaller degrees than anticipated or regional planning based on less progressive visions may hamper the sustainable intent behind any project where NBD is used. However, when all participants including regional influence are aligned in vision, results can be insurmountable. And while difficult to quantify, anecdotal evidence suggests that there is a strong business case for its use.

Recommended now is to put NBD into practice. Also suggested is a longer term study looking at the effects that holistic approaches have on long term behaviour change. The built environment is only one consideration. The functioning of the community and the larger regional effort must also inspire and foster sustainable living. We must challenge ourselves to change the way we think, and BE the change we wish to see.
Participants envision future for project constrained by FSSD SPs:

**In a sustainable society:**

4. people are not subject to conditions that systematically undermine their capacity to meet their needs

and natural systems are not subject to systematic increases in:

3. degradation by physical means,

2. concentrations of substances produced by society,

1. concentrations of substances extracted from the Earth's crust.

**Backcasting**

A planning procedure by which a successful outcome is imagined in the future, followed by the question: "what do we need to do today to reach the successful outcome?"

**Meaningful Participation**

is a basic need and vital for success within community development. Participation also refers to the relationship where society once again functions as nature, fully participating in biological systems.

**Prioritising guidelines** (refer to Table 2.2)

Do actions provide a: 1. Step in the right direction? 2. Flexible platform? 3. Return on investment?

**Steps taken to integrate and implement project**

Each project team must choose and consistently evaluate its actions in the context of the strategic guidelines and its definition of success.

**IDEA method:**

- Intend
- Discover needs + place
- Envision
- Act (ABCD Analysis)

**Other tools as appropriate:**

- Green Rating Systems
- Human needs assessments
- Process indicators
- Documentation
- Communication

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**Figure A. Needs Based Design framework**
Table A. Summarised gap analysis – the creative tension

<table>
<thead>
<tr>
<th></th>
<th>Current Green design approaches</th>
<th>Proposed Needs Based Design approach</th>
</tr>
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<tbody>
<tr>
<td><strong>System</strong></td>
<td>Mechanistic, linear</td>
<td>Holistic</td>
</tr>
<tr>
<td></td>
<td>Fragmented perspective</td>
<td>Pattern-based perspective</td>
</tr>
<tr>
<td></td>
<td>An understanding of ‘place’ and ‘needs’ is often confused with the ‘wants’ of only the people directly involved</td>
<td>An understanding of ‘needs’ is based on nine culturally and historically independent basic human needs</td>
</tr>
<tr>
<td><strong>Success</strong></td>
<td>Common understanding of sustainability is rare</td>
<td>Common, scientific understanding of sustainability</td>
</tr>
<tr>
<td></td>
<td>Economic gain</td>
<td>Design within, and beyond the constraints of the FSSD Sustainability Principles</td>
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<tr>
<td></td>
<td>‘Green’ design intention to ‘reduce impacts’ of development</td>
<td>Vision co-created with community</td>
</tr>
<tr>
<td></td>
<td>Vision determined by owner</td>
<td></td>
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<tr>
<td><strong>Strategic Guidelines</strong></td>
<td>Often constrained by forecasting</td>
<td>Backcasting</td>
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<tr>
<td></td>
<td></td>
<td>Meaningful participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prioritising guidelines</td>
</tr>
<tr>
<td><strong>Actions</strong></td>
<td>Use conventional project phases and structure</td>
<td>‘Front loaded,’ progressive process</td>
</tr>
<tr>
<td></td>
<td>Project considered first</td>
<td>Community considered first</td>
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<tr>
<td><strong>Tools</strong></td>
<td>Green Rating Systems</td>
<td>IDEA method</td>
</tr>
<tr>
<td></td>
<td>Cradle to Cradle</td>
<td>ABCD Analysis</td>
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<tr>
<td></td>
<td>Matrices</td>
<td>Economic Capital ($)</td>
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<td></td>
<td>Measurements &amp; indexes</td>
<td>All Others</td>
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Glossary

**Approach / Mindset / Paradigm:** Refers to a set of assumptions, methods or notations held by one or more people which is so established that it creates a powerful enough incentive for them to adopt different or accept current behaviours, choices, or tools.

**ABCD analysis:** A strategic tool used within The Natural Step Framework for Strategic Sustainable Development developed for applying backcasting from basic principles of success using four steps: A (Awareness) encompasses a complete understanding of the system, B (Baseline) assesses the current reality, C (Visioning) brainstorms solutions based on an envisioned state of success, and D (Setting and managing priorities) allows for strategic application of solutions. (Holmberg & Robèrt 2000) The ABCD analysis is used to inform the IDEA method.

**Backcasting:** A planning procedure by which a successful outcome or vision of success is imagined in the future, followed by the question: “what do we need to do today to reach a successful outcome?”

**Barriers:** Challenges or obstacles that prevent people the opportunity to fulfil their basic human needs as defined below.

**Basic human needs:** A comprehensive set of fundamental human needs that are culturally and historically universal, non-overlapping, non-substitutable, complimentary to one another, and seek continual satisfaction. They are recognised as: subsistence, protection, affection, idleness, identity, freedom, creativity, participation and understanding. (Max-Neef 1991)

**Co-create:** The collaborative creation of ideas and concepts between individuals and groups.

**Co-learn:** A process in which participants encourage each other to acquire information or skill.

**Community:** A group of people who have one or many distinguishing component(s) of their lives in common. The parameter of the community is often defined as all those who live in the same geographic area.
**Creative tension:** The gap between two states that comes from “seeing clearly where we want to be, our ‘vision’, and then telling the truth about where we are, our ‘current reality’”. Creative tension draws attention to the differences between two states by acknowledging aspects of the vision-state not present or lacking in the current reality.

**Firesoul:** An individual who adds significant character to the community, often described as someone who makes things happen and inspires others to do the same (James & Lahti 2004).

**Forecasting:** To calculate or estimate something in advance, or predict the future, based on ‘today’s’ potential. Planning within the constraints of the current conditions.

**Framework for Strategic Sustainable Development (FSSD):** A framework for strategic planning in complex systems that applies backcasting from sustainability principles to help guide society towards sustainability. Refer to Appendix A. (Robèrt et al. 2002; Robèrt 2000)

**Holistic:** The inclusion or involvement of something in its entirety.

**IDEA method:** A clear and strategic implementation tool used to apply NBD. The IDEA method has been adapted from the concepts of the ABCD analysis (see above) and utilises the approach outlined by the NBD framework. It involves an understanding of the project’s intent (Intend), a baseline understanding of the community’s needs and place (Discovery of needs and place), clear and constructive visioning of potential solutions to address the needs of individuals and the project (Envision), and an action phase where all participants present begin the integrated design phase(s) (Act).

**Inside-out:** The project is viewed first from the physical and economic constraints and limitations, and then the larger regional wide view of the project is considered.

**Integrated design:** A project delivery approach that integrates people, systems, business structures and practices into a single process for all phases of design, fabrication, and construction (AIA 2007).

**Key community members:** See ‘Firesoul’ above.
Living community: The community that the project intends to become once individuals move in and it takes on a life of its own.

Meaningful Participation: The act of taking part or sharing in something that invites transparency and honesty. This interaction forms a trustworthy relationship that positively connects with people on a personal level to fulfil the individual and community basic human need for participation.

Mental models: Deeply ingrained assumptions, generalisations, or pictures and images which influence how we understand the world and take action (Senge 1990a).

Needs Based Design: A strategic approach to sustainable urban design and planning adapted from the FSSD, an approach that utilises a structured framework, and the IDEA method to implement it.

Outside-in: The project is viewed first from ‘a larger systems’ point-of-view. The physical and economic constraints and limitations of the project can then be considered with a much more holistic analysis, and broad-thinking solutions can be found.

Project: The development assignment of the human built environment, be it an urban office tower or a residential development of, for example, 3000 homes.

Regenerative urban development: Projects that positively contribute to, actively participate in, and co-evolve with social and natural systems (AIA 2007).

Residents: The people who inhabit or occupy the community or building, also considered to be occupants.

Shared understanding of needs and place: An awareness of basic human needs (see above) and barriers to their potential fulfilment, and an understanding of the environmental, cultural, social, economical and governance contexts that depict the true essence of the system that the project participates in. It describes the ‘what’ and the ‘who’ of the place.

Shared vision: The capacity to hold a shared picture of the future sought to be created (Senge 1990a). It consists of two components (Collins & Porras 1996):
• Core ideology: The enduring character of an organisation, or a consistent identity based on a set of core values and a core purpose.
• Envisioned future: A 10-to-30 year audacious goal and a vivid description of what achieving that goal would entail.

**Sustainability Principles:** Generic principles used to define sustainability from a strategic science-based and whole systems perspective. They exist as the following:

In a sustainable society, nature is not subject to systematically increasing…

1. …concentrations of substances extracted from the Earth’s crust,
2. …concentrations of substances produced by society,
3. …degradation by physical means
   and, in that society…
4. …people are not subject to conditions that systematically undermine their capacity to meet their needs. (Ny et al. 2006; Robèrt 2000)

**System:** The institutions, structural influences and natural cycles beyond the neighbourhood, that define the broader environment of which the neighbourhood and initiative are a part. Examples include the government (at the municipal, county, state, and national levels), economy and the natural environment from a local micro-climate level to global climate systems.

**The Natural Step:** An international non-profit organisation founded in Sweden in 1989 by Swedish scientist, Karl-Henrik Robèrt. The Natural Step has pioneered a "Backcasting from Principles" approach to effectively advance society towards sustainability. The Natural Step has developed, through a consensus process, a principled definition of sustainability (see ‘Sustainability Principles’ above).

**Urban design and planning:** The process of creating the human built environment.

**Whole systems thinking:** “The entirety is interconnected moving us beyond mechanics into a world activated by complex interrelationships” (Reed 2007).
## Interviewees and Collaborators

<table>
<thead>
<tr>
<th>Name</th>
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<tr>
<td>Dennis Carmichael</td>
<td>EDAW / AECOM</td>
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<td>Duke Castle</td>
<td>Oregon Natural Step Network</td>
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<td>David Cook</td>
<td>The Natural Step International</td>
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<td>Deb Guenther</td>
<td>Mithun</td>
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<td>Todd Galarneau</td>
<td>The Corky McMillan Companies</td>
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<td>Geoffrey Gooch</td>
<td>Linköping University</td>
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<td>Mina Hilsenrath</td>
<td>Howard County Planning and Zoning</td>
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<td>Stephen Haase</td>
<td>Sudberry Properties</td>
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<td>Sarah James</td>
<td>Sarah James &amp; Associates</td>
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<td>Maggie Lawton</td>
<td>The Natural Step, New Zealand</td>
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<tr>
<td>Nick Lee</td>
<td>The Corky McMillan Companies</td>
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<td>Katja Lietz</td>
<td>Hobsonville Land Company</td>
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<tr>
<td>Wil Mayhew</td>
<td>Howell-Mayhew Engineering Inc.</td>
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<td>Nando Micale</td>
<td>Wallace, Roberts &amp; Todd</td>
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<td>Stanley Nyoni</td>
<td>The Natural Step International</td>
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<td>Mike Purcell</td>
<td>The Natural Step, Canada</td>
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<td>Tim O’Riordan</td>
<td>UK Sustainable Development Commission</td>
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<td>Kay Saville-Smith</td>
<td>Centre for Research Evaluation and Social Analysis (CRESA)</td>
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<td>Marco Sessa</td>
<td>Sudberry Properties</td>
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<td>Timothy Smith</td>
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<td>John Startt</td>
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<td>Jack Sullivan</td>
<td>University of Maryland</td>
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<td>Erland Ullstad</td>
<td>Växjö Municipality</td>
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<td>Sim van der Ryn</td>
<td>Ecological Design Institute</td>
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<td>Robert Vale</td>
<td>University of Victoria</td>
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<td>Dennis Wilde</td>
<td>Gerding Edlen Development</td>
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<td>Alex Zimmerman</td>
<td>Applied Green Consulting Ltd.</td>
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Author’s Note

This thesis was undertaken over a six month period beginning in December and ending in June 2008. It was a collaborative venture and learning opportunity for the authors. Staff at BTH and our external collaborator supervised the research. It was tested and peer-reviewed by numerous professionals in the field of community design and development from around the world (Canada, New Zealand, Sweden, United Kingdom and United States) specialising in many fields of expertise (sustainability, community engagement, science, natural resource management, project management, community development, architecture and design, and academia).

The views expressed in this report are our own (or are otherwise referenced) and do not necessarily reflect the views of any of our collaborators. Any errors, omissions or inconsistencies are solely our responsibility.

We come from Canada, New Zealand, and the United States with backgrounds in landscape architecture, law, ecology, biology, environmental studies and integrated natural resource management. This work is a testament to the shared strategic sustainable development language and framework that we use. As a kayak guide, a lawyer and a landscape architect we were able to collaborate to produce a single, comprehensive study on how we make our places in the world.

Natalie Haltrich is a certified guide with the Sea Kayak Guides Alliance of British Columbia, a graduate of Advanced Wilderness Leadership from Capilano College in British Columbia, and holds a Bachelor’s degree in Biology and Environmental Studies from McGill University in Montreal. Her inspiration for sustainability stems from a passion of people and places, and a recognition that both can live in harmony within the finite provisions of this planet. She is compelled by a desire to actively and artfully enjoy the better things in life, and welcomes all on her journey.
Ella Lawton’s upbringing on a small farm in South Auckland, Aotearoa created the foundation for her passion for the environment and appreciation of society’s place within natural systems. Ella has a Bachelor’s of Science in Ecology and a Bachelor’s of Law from Otago University, Dunedin. She has also spent time studying and researching in Canada, Finland, Sweden and Antarctica. Upon return to New Zealand Ella hopes put her theoretical knowledge to practical use, through involvement in regional development projects and sustainability networking and education.

Geoff Stack combines his experience in design, education and ecology to co-create ways to invite, integrate and inspire a move towards sustainability. With a Bachelor of Landscape Architecture degree from the University of Maryland, Geoff has worked on plans for public open space, university campus and urban redevelopment projects. He is a Leadership in Energy and Environmental Design (LEED®) Accredited Professional and looks forward to exploring further how to create human infrastructure that functions in partnership with the natural life support systems of the planet.

We welcome your comments and suggestions on our research.

Sincerely,

Natalie Haltrich. nhaltrich@gmail.com

Ella Lawton. elawton66@gmail.com

Geoffrey Stack. geoff.stack@gmail.com
A long, long weekend...

The three of us met on our first excursion during a long weekend at the end of September. Bleary from four intense weeks of coursework and getting acquainted with Karlskrona, 14 of us piled into rented vehicles and headed to Gotland, an iconic Swedish landscape three hours by ferry from the mainland. It was a beautiful late summer weekend, and the music, food, the scenery and, of course, the company, were all spectacular. We chatted, sang, laughed, gorged, explored, imbibed, and lounged. We played a two-hour game of capture-the-flag with hilarity. We jumped naked into the Baltic.

The weekend was not without its hiccups. We rushed to get out of the supermarket to get to the ferry terminal in time. We almost left two of our comrades in Visby. We got a scare when our van was hit from behind in an accidental fender-bender. But at no point did we really worry too much. We knew the right people were in the right place at the right time, which is as much as we could ask for.

Our thesis collaboration has been much the same. Ella initiated, Geoff jumped on board, and Nat brought the get-up-and-go. It has been six months of complete and pure learning, an exploration of what can be achieved when three people find the way to add their individual skills, thoughts, laughter, voices, and passions to a collaborative effort. We talked, doodled, planned, laughed, stressed, explored and wondered out loud. We covered 40 whiteboards with thoughts, outlines and scribbles. We completed deadlines with scotch.

Of course, the experience couldn’t have been complete without a couple fender-benders. We melded individual dynamics with the interests of the whole. We saw that semantic choices consistently led to bigger discussions of ideals and ideas and needs. We balanced patience and passion. But at no point did we really worry too much. We knew the right people were in the right place at the right time.

And we couldn’t have asked for better. Cheers.

Nat, Ella & Geoff.
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1 Introduction

Sustainability is more than just a design problem.

We have created a certain way of making and maintaining our social and physical communities in the world that is currently failing (Baird 1996; Lynch 1972). In the interest and necessity of creating urban environments that support a sustainable society, much has been proposed under the banner of sustainability (Vale & Vale 1991). Generally, the focus of these efforts is to create ‘sustainable’ ‘things’ – neighbourhoods, buildings and sites that decrease the impact of human development on the natural world (Haggard n.d.). But limiting sustainability simply to the design of buildings is largely insufficient (Vale & Vale 1996). The greater socio-ecological context in which communities exist are rarely thoroughly embraced or adequately considered within the design process.

Case studies suggest that although projects are built with the vision of being ‘sustainable’ by design, they often fall short of actual intent. One such example is the Landcare Building in Auckland, New Zealand. Despite a process that rigorously worked to achieve green design standards and pursued sustainability goals, quality interaction during the design process with the future occupants of the building was neglected. When they occupied the newly constructed space, the scientists working there did not understand the intent or functioning of the building’s ‘green’ features, which eventually led to the decommissioning of several of these systems as a result. (Lawton 2008)

The account above highlights the urgency for a parallel movement between the technical side of urban development, and a deeper understanding of people’s needs and the context in which a project exists. As the Brundtland definition of sustainable development indicates, the challenge of sustainability is not about physical objects – it is about the needs of people now and in the future (WCED 1987). We must focus on our own needs and how to satisfy them (Max-Neef 1991), and reconsider how we can best make our place in the world while positively contributing to the systems we depend on for survival.

While these considerations are essential to the successful outcome of a design project, this paper is not about what constitutes a ‘sustainable’ or ‘regenerative’ mindset or the learning required to make this paradigm shift.
Rather, the research applies these worldviews to the application of one specific aspect of sustainable development – the design and planning of our human built environments.

This paper studies the current approaches to ‘green’ or ‘sustainable’ design and planning, proposes a new approach, and identifies the gaps between the two. It intends to provide information that will allow project teams to implement their design and planning work within the context of a strategic sustainable development perspective, at the practical project level.

1.1 The challenge of shifting the approach to urban design

“How come that our built environment has not fulfilled our lofty expectations, but rather leaves us disappointed?” (Wolfgang Welsch 2002)

The building and maintenance of urban infrastructure is incredibly resource intensive, contributing significantly to our current unsustainable practices. With some exception, much of our urban landscape is neither strikingly aesthetic in appearance, nor caters sufficiently to human needs (Hugentobler 2006). Buildings account for forty percent of the world’s material and energy use, avoidably adding to our exhaustive emission of greenhouse gases, among other pollutants, and expend roughly one third of the energy consumed by the world economy (Rees 1999). In addition, fifty-five percent of the wood harvested for non-fuel use is consumed in construction. And, perhaps most remarkably are the negative impacts resulting from their inefficient functioning – thirty percent of newly-built or renovated buildings suffer from ‘sick building syndrome’ exposing occupants to mould and stale, and often chemically spoiled, air (Patan & Birkeland 2005, 350).

Careful planning of urban areas that promote the development of sustainable communities is being progressively advocated by planners and their critics alike (Bruegmann 2005, 3). Urban designers have been urged by government to address a range of sustainability issues, placing emphasis on the need to tackle its inherent social requirements (Boyko et al. 2006). Necessary are consistent approaches to urban design that allow us to work towards the goal of sustainability (Patan & Birkeland 2005, 352; Vale & Vale 1996). Patan and Birkeland (2005, 352) stress this point further by
agreeing that new approaches are essential if the shift is to occur: “Without a design process that is more inclusive and more rigorous in pursuing integrated design solutions, sustainable design cannot be realised and developed fully.”

Critical factors for enhancing social sustainability of urban renewal projects (Chan & Lee 2008) and quantitative indicators of sustainable urban environments (Ghosh et al. 2006) have been identified and developed to aid and assess progress towards sustainability. Difficulties arise however, in that current literature and policies do not explain “when specific issues should be addressed and by whom” (Boyko et al. 2006).

1.2 Addressing the challenge

Approaching sustainability from a whole systems, or holistic perspective, becomes essential. It acknowledges “that the entirety is interconnected”, moving us “beyond mechanics into a world activated by complex interrelationships” within and between natural systems, human social systems, and the conscious forces behind their actions (Reed 2007).

Reed (2007) elaborates further and sets the premise by emphasising that: “In the act of building design, we are inextricably engaged in direct and indirect reciprocal influence in the immediate community (place) and the larger systems operating on this planet.” Sustainability requires an understanding of the ‘whole’ – nothing on its own is sustainable. Cities only survive because of human, material, and communication networks (Doughty & Hammond 2004) and natural interconnections with their surroundings.

The design and planning process is one of the most upstream of confluences in the river of urban development, thereby providing ample opportunity to address holistic thinking in ways that could most influence the final outcome. Basic errors of societal design can trigger thousands of negative impacts occurring downstream (Robert et al. 2004, xxiii; Ullman 1992) – decisions and behaviours exhibited by design teams in the initial stages of the design and planning process have been noted as crucial to the aims and outcomes of the final project (Zimmerman 2008) – and must be minimised to reduce the need for the costly and unnecessary future redesign of projects.
More importantly, decisions made in these early stages could influence both resource consumption patterns (Ding 2008) and behaviour of residents (Hugentobler 2006) well into the future. If addressed early and appropriately, approaches can challenge the much-needed shift in perspective away from short-term profits and resource over-consumption to long-term views on the necessary transformation (on cultural, social, ecological and technical levels) of urban areas (Hugentobler 2006).

The process of urban design and planning is vital to creating sustainable human settlements of the biosphere. But even today’s best ‘green design approaches’ do not fully take account of the need for dramatic change in the way that we conceive, plan and build our habitats.

1.2.1 Green and sustainable design: Current approaches, frameworks and tools

Considerable efforts have been made thus far in the fields of green building and regenerative urban development (USGBC 2008; Lyle 1994), urban ecology (Platt et al. 1994), materials management (McDonough & Braungart 2002), and community outreach and participation (Sutton & Kemp 2006; James & Lahti 2004).

Various concepts and principles now also exist to provide guidance in green design, all proving to be great catalysts of varying degree for reducing the impact of human development on ecological and social systems. They include:

- Triple Bottom Line – an overall approach to considering economic, social, and environmental impacts (Elkington 1999) proven to be successful at the organisational level of sustainable development (Willard 2005; Topfer 2000).

- Sustainable living principles and tools – One Planet Living (2008), Smart Growth (2008), New Urbanism (n.d.), Community-Based Social Marketing (McKenzie-Mohr 1999) and Ecological Footprint Analysis (Global Footprint Network 2008) to name a few, the last proving only recently to encourage changes in behaviour towards less resource intensive lifestyles (Sutcliffe et al. 2008).
• Green rating systems – BREEAM (BREEAM 2007) and LEED (USGBC 2008) among others, the former proving to create significant positive impact worldwide (Ding 2008).

There are numerous ‘improved’ construction practices that strive to minimise detrimental effects on the natural environment (Holmes & Hudson 2000; Cole 1999; Rees 1999; Johnson 1993). However, they have been shown to be insufficient in reaching sustainability within complex systems as they are often forecasted from flawed paradigms and mainly use approaches that address only part of the whole.

To address some of these shortcomings, approaches that do include more holistic perspectives have only just started to emerge, stressing the importance of co-learning within processes (Reed et al. 2006), absolute understandings of place (Regenesis 2007), complex social systems (Smith 2008a) and behavioural patterns affecting production and consumption (Hugentobler 2006) within sustainable contexts. Of great interest to the current work is SuN Living. It is an inclusive approach for planning, designing and implementing ‘sustainable neighbourhoods’ by applying sustainability from an overviewed perspective to all decision-making throughout a project. Its framework has adapted process elements from ‘Fostering Sustainable Behaviour’ based on Community-Based Social Marketing (McKenzie-Mohr 1999) and the same framework for strategic planning toward sustainability that this paper will use. (Mayhew & Campbell 2008) Refer to section 2.1 for a description of the framework.

1.3 Purpose, scope and limitations

The primary research objectives are as follows. To:

• Assess the current approach to green urban design and planning;
• Propose and test the proposed approach to sustainable design that uses the concept of basic human needs, and provides a common language, framework and method for creating the infrastructure for a sustainable society, and
• Clearly articulate the creative tension between the current and proposed approach to provide a better understanding of where mental, habitual or practical shifts might occur to help achieve change.
The secondary research objectives are as follows:

- Establish a rapport with urban professionals in or related to the field of urban design.
- Create a simple industry guidebook that clearly explains the proposed approach to sustainable design and planning.

The scope of this research is two-fold. One, it focuses on the early stages of urban development where design and planning takes place, but does not proceed beyond the ‘Construction Documentation’ milestone of project development. Figure 1.1 below illustrates the research scope and depicts the milestones of a project from start to finish. It also suggests that all decisions made within each are guided by the community vision.

![Figure 1.1. Research scope](image)

And two, it is generically applicable to both new development projects and existing urban areas undergoing redesign.

The scope of the work lies within the following assumptions:

- A project is moving forward. Development will and needs to occur in order for us to change and meet the challenge of sustainability.
- Development can be positive. The creation of the human built environment can positively allow participation in, and contribution to, the healthy and continual flourishing of natural and social systems.
In this study, ‘green’ urban design will encompass both those approaches intending for green and/or sustainable outcomes, recognising that both often fall short of sustainability.

In addition, the authors would like to highlight the importance of good practice in land use planning at a regional policy level. Having a greater regional vision with integrated sustainable development plans in place – at varying scales – is immensely beneficial so that individual projects fit within their surroundings. In an ideal world we would not start building on a project site without first establishing such an integrated plan, at least at the regional level. However, recognising that such planning efforts require extensive stakeholder engagement, take time, and are not always in place, it is important to ensure that projects are still designed to implicitly align with and support the needs of the surrounding community and bioregion. Ultimately the proposed approach will build impetus for and ensure that future regional plans can be developed coherently. It was designed to be executed within or outside the guidance of such plans.

1.4 Research question

The aim of the research is to answer the following research question:

How might the approach to urban design be changed to better facilitate the realisation and maintenance of a sustainable society?
2 Methods

This study included a theoretical understanding of current urban design and planning practices, a theoretical testing of a proposed approach, and a brief summary of the existing gap to reveal where current approaches could become more holistic in nature.

The Framework for Strategic Sustainable Development (FSSD) is an intellectually strict model for making systematic progress towards an attractive and sustainable society. It offers a principled definition of sustainability and a means to apply it to the urban design process from a whole systems perspective. Relevant aspects of the FSSD are described in section 2.1 below, while Appendix A can be referred to for a more complete understanding of the framework.

2.1 The Framework for Strategic Sustainable Development (FSSD)

The FSSD, widely known as The Natural Step (TNS) framework, was initiated by Swedish cancer specialist Dr. Karl-Henrik Robèrt in the late 1980’s. The FSSD encourages dialogue, consensus-building and incremental change to create the conditions necessary for significant transition towards sustainability. Based on scientific consensus at the principle level, the framework provides a widely applicable approach to sustainable development at multiple scales (global, national, business, community and individual) and has been proven successful in planning towards sustainability in numerous endeavours (Ny et al. 2006; Broman et al. 2000). Much of its success can be attributed to its strategic use of backcasting from basic principles of success. (Robèrt et al. 2002; Robèrt 2000)

Grounded in systems thinking, the FSSD is based on a generic five level framework for planning within complex systems (refer to Figure 2.1 beside) (Robèrt et al. 2002; Robèrt 2000). The ‘Systems’ level describes the system as such with all its constituents. The

Figure 2.1. Five level framework
‘Success’ level defines success within the system, whereby basic minimal constraints and requirements for achieving ecological and social sustainability are described. These constraints are set by four Sustainability Principles (SPs) which provide a complete, fundamentally-based and scientific understanding of how we, as humans, are currently eliminating our own means to address sustainability, and can be found in Table 2.1 below. Beyond these constraints, finding creative ways to artfully develop and implement successful actions is encouraged.

Table 2.1 Sustainability Principles of the FSSD (Ny et al. 2006; Robèrt et al. 2002)

<table>
<thead>
<tr>
<th>Sustainability Principles of the FSSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a sustainable society, nature is not subject to <strong>systematically increasing</strong>...</td>
</tr>
<tr>
<td>1. …concentrations of substances extracted from the Earth’s crust,</td>
</tr>
<tr>
<td>2. …concentrations of substances produced by society,</td>
</tr>
<tr>
<td>3. …degradation by physical means</td>
</tr>
<tr>
<td>and, in that society...</td>
</tr>
<tr>
<td>4. …people are not subject to conditions that systematically undermine their capacity to meet their needs.</td>
</tr>
</tbody>
</table>

‘Strategic Guidelines’, built on the concept of ‘backcasting’, describe the strategic principles for achieving success within the system. Backcasting is a planning procedure by which a successful outcome, or vision of success, is imagined in the future, followed by the question: “what do we need to do today to reach a successful outcome?” Priority is given to those actions that proceed in the right direction, and provide both a flexible platform upon which to make future decisions and a reasonable return on investment (including social, ecological, financial and otherwise). (Holmberg & Robèrt 2000) Refer to Table 2.2 below for the prioritising guidelines.

These guidelines act to steer planning so that ‘Actions’, activities considered as tangible steps towards sustainability or actual monitoring deeds, can be strategically prioritised. ‘Tools’, additional techniques, measurements, and monitoring and management approaches to assist in the movement towards or maintenance of success, act to evaluate and measure actions taken to inform progress towards sustainability.
Table 2.2 Prioritising guidelines of the FSSD (Robèrt et al. 2002; Robèrt 2000)

<table>
<thead>
<tr>
<th>Prioritising guidelines of the FSSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does this measure proceed in the right direction with respect to all principles of sustainability?</td>
</tr>
<tr>
<td>2. Does this measure provide a stepping-stone (i.e. ‘flexible platform’) for future improvements?</td>
</tr>
<tr>
<td>3. Is this measure likely to produce a sufficient return on investment to further catalyse the process?</td>
</tr>
</tbody>
</table>

To assist in the application and communication of the framework, the ABCD analysis is used as a planning and decision-making tool. It was developed to strategically apply backcasting within four steps: A (Awareness) encompasses a complete understanding of the system, B (Baseline) assesses the current reality, C (Compelling measures and visioning) brainstorms solutions based on an envisioned state of success, and D (‘Down to action’ – Setting and managing priorities) allows for strategic application of solutions (Holmberg & Robèrt 2000).

For this study, the FSSD was adapted for application within the urban design process, allowing the authors to develop an approach, framework, and tool, or method, to build their research upon.

### 2.2 Research overview

The remainder of this section will thoroughly describe the manner in which the research was conducted. It is divided into four parts as outlined below:

1. An understanding of the general current approach to green design and planning.
2. The development of a proposed desired approach that aims to better inform sustainable urban development – the focal point of this research.
3. The testing of both approaches.
4. A comparison between the two approaches to highlight the gap, or creative tension, existing between them.

Early inspiration for the overarching methods used in this research came from the work done by Ny et al. (2007) on ‘Templates for Sustainable Product Development’.

2.3 Part 1: Understanding current green approaches

‘Green’ design and planning was used as a baseline understanding to base the current approach upon. The ‘green’ approach or mindset refers to a set of assumptions held by all those involved in the project. Assessing more ‘progressive’ green approaches to design in comparison to conventional ones was thought to provide an indication of where overall fundamental shortcomings or ‘gaps’ with respect to sustainability exist within the industry. It was believed that if gaps were evident in green approaches, they would also be present throughout the profession.

Three main sources complimented one another to provide an understanding of current green approaches: background information, a survey of professions in the field of green design, and an expert review on initial findings and understandings.

2.3.1 Background information

Background information was acquired though a literature review and exploratory interviews. Both progressed to provide a more complete understanding of approaches to green design, and were inspired by the following questions:

1. What are the essential phases and elements of the design and planning approach, so essential that they are common to every project?
2. Who are the key actors in design and planning approaches? When are they invited to participate in a project and what are their roles?
3. When, if at all, is public participation and/or community consultation used? How is it incorporated?
4. How are processes within differing approaches managed and by whom?

**Literature review.** An in depth literature review was undertaken in the academic areas of urban and green design, the design process, sustainable communities, behavioural change, and community participation. The review suggested that academia has only briefly touched on the need to look at structured approaches to sustainability, particularly at the process level of urban design projects, and provided the initial information upon which an understanding of urban design was founded.

**Exploratory interviews.** Initial exploratory interviews were undertaken with professionals to discuss community development and planning, architecture and design, participatory processes and behavioural change. TNS sustainability practitioners well versed in the use of the FSSD were also interviewed in reference to their expertise in championing and establishing numerous sustainable communities in both Sweden and North America. Further insight was provided from successful communities and development projects, including Växjö, Sweden and Hobsonville, New Zealand.

### 2.3.2 Survey of green design professionals

A web-based survey was created and completed by 21 professionals practicing or familiar with green design (refer to Appendix B for green design survey questions). Included, amongst others, were urban developers, architects, community planners and government officials. The purpose of the survey was to supplement the growing understanding of current approaches to green design with their actual and practical application within the industry.

### 2.3.3 Expert review on the current approach

All background information and survey results on the current approach were amalgamated by simple qualitative analysis and complied as ‘Part 1’ of a ‘Progress Package’ for review and critique by interviewees. Additional information on the Progress Package and testing by expert review can be found below in section 2.5.
2.4 Part 2: Developing the proposed approach

The proposed approach to urban design was created based on a vision of success. It was developed with the intention of providing a robust and widely applicable process to inform the design and construction of the human built environment. Equally important was the recognition that its successful implementation was dependant on the creation of an additional clear and a generic tool, or method, for its practical application.

2.4.1 Creative dialogue to inspire

The goal of this research was to go beyond current practices to envision an ideal urban design process from a strategic sustainability perspective. The method of backcasting from basic principles of sustainability (Holmberg & Robèrt 2000) inspired the co-creation of the proposed approach. This encouraged the authors to envision well beyond the constraints of the current ways of doing things and develop an approach that would have the ultimate potential to aid society in its transition towards sustainability. The authors embarked on a creative envisioning and dialogue-based journey to develop numerous conceptual models. Thoughts were inspired from information gained throughout the research and experience-based knowledge, but were especially enthused by creative ways to address the need for a holistic tactic to sustainable urban development.

Concepts such as Basic Human Needs (Max-Neef 1991), Learning Organizations (Senge 1990a), regenerative design (Regenesis 2007) and participatory processes in community development (James & Herr 2007; AUMA 2006; Reed et al. 2006) were also studied to inspire the proposed approach. SuN Living (Mayhew & Campbell 2008), Swamp Yankee Planning for Sustainability by James & Herr (2007) and the municipal sustainability planning guide crafted by TNS and sponsored by the Alberta Urban Municipalities Association (AUMA 2006), were especially insightful to the development of the study.

The outcome of these studies and numerous conversations reflected the union of innovative thought with existing and tested methods in use today. The final product consisted of a descriptive mindset, a shared framework adapted from the FSSD and a method for its implementation by developers,
designers, planners, municipalities and community groups alike. The method was adapted from the concepts of the ABCD analysis.

The proposed approach completed ‘Part 2’ of the Progress Package for review, critique and testing with interviewees. Additional information on the Progress Package and testing by expert review can be found below in section 2.5.

2.5 Part 3: Testing

2.5.1 The Progress Package

The Package consisted of a summarised version of the research to date – the progressive understanding of current approaches, the proposed work, and brief descriptions of all background information used to inform the research. The Progress Package was emailed to 24 professionals for review and testing. Figure 2.2 below provides a breakdown of the diverse sector representation between the interviewees. Refer to Appendix C for a list of interviewees and their related professions.

![Figure 2.2. Distribution of 24 interviewees by professional background](image)

2.5.2 Testing

Over the course of two weeks, all 24 professionals participated in one to one and a half hour-long phone interviews based on a list of interview questions (refer to Table 3.3). The current approach was tested for completeness and clarity, while the proposed approach was tested against benefits and constraints to its use and overall applicability.
Test results were absorbed, and final changes were made to the descriptions of both approaches. Feedback was thoroughly discussed and scrutinised by the authors prior to its integration into the evolving work, keeping the initial intent and goals of the research in mind.

### 2.6 Part 4: Creative tension between the two approaches

The reviewed and updated information gained from the interviews allowed the authors to first illuminate and then simplify the creative tension between the understood current approach and proposed approach to urban design and planning. Creative tension, often described as the gap between two states, comes from “seeing clearly where we want to be, our ‘vision’, and then telling the truth about where we are, our ‘current reality’” (Senge 1990b). Creative tension draws attention to the differences between two states by acknowledging aspects of the vision-state not present or lacking in the current reality.

In regard to the research in question the proposed approach is synonymous to “our vision” in the above statement, and the current approach, “our current reality”. Creative tension was expected to arise in the areas of backcasting, visioning and participation. The two ‘states’ were compared to ultimately highlight where current approaches could be more holistic and sustainable in intent.

### 2.7 Expected results

The authors expected the results to highlight numerous areas within current approaches to urban design where progress towards sustainable development could be improved. Results were expected to reflect narrow perspectives at the systems level (refer to Figure 2.1 above), weak visioning processes, minimal community engagement, and inadequate definitions of sustainability to effectively inform development. Furthermore, it was expected that minimal attention, if any, is given to the impact that the physical and social design of the community has on known and unknown residents of a community. The authors expected to establish a way to fill the identified gaps by creating a whole systems, needs based design approach and method for its successful implementation.
3 Results

3.1 Part 1: Current approaches

Interviews, literature reviews and survey results reflect fundamental and significant differences between the aims, frameworks and tools of current green design approaches, and those proposed by the Needs Based Design (NBD) approach suggested in this paper.

This section provides a detailed understanding of current approaches to green design and planning and outlines the proposed approach developed by the authors. Data gathered to develop both has been amalgamated in Appendix D.

3.1.1 Current state of green design

Survey and interview results highlighted that current practices vary significantly between projects and teams, but provided enough insight on the general aims of the process and intent of project participants. All those that contributed to our results expressed a firm desire and goal to advance change towards sustainability within the practices of design and planning.

3.1.2 Current definition of green design

Many professionals working in the field of design and planning loosely define ‘green’ design as that which makes advances in the direction of sustainability, aiming to improve environmental performance in comparison to conventional design. It has been described as a means of responsibly developing human habitat with respect to the environment by considering the laws of nature and natural energy flows.

Many of those interviewed associate green design with sustainable design often interchanging the two terms, and note that many of their projects do involve a shared understanding of sustainability. Interviewees most commonly identified with the Brundtland definition of sustainability (WCED 1987), some extrapolating on it further to include thoughts such as “an understanding of the basic laws and design principles of nature”, “a balancing act”, and “a way to live in harmony within the carrying capacity of the earth”.

16
Few respondents use fundamentally based principles of sustainability to establish rigorous definitions for sustainability itself. Some however use secondary principles or have created matrices and ‘check-lists’ to ‘apply’ sustainability to project efforts.

Interviewees express the socio-cultural aspect to be “the least tangible aspect of project development” and therefore the most difficult to incorporate into the design and planning process. As a result, socio-cultural aspects are rarely accounted for in green design.

### 3.1.3 Green design approaches

Research highlighted current approaches generally to have five distinct phases within the Design and planning process milestone as shown in Figure 3.1 below: Pre-project, Problem definition, Concept Design, Schematic Design and Design Development (Boyko et al. 2005; Motloch 2001, 289). It is important however to recognise that “design processes [themselves] are not linear in character; they are rather cyclical and ongoing” (Motloch 2001, 289), despite their occurrence over a period of time, and goal-orientation (Hall 2002, 213).

![Figure 3.1. Common phases within current approaches to green design projects](image)

Green design approaches usually attempt to use a process that is more holistic, integrative, and inclusive than the process for conventional design, yet almost every urban design project in progress today is still based on a site-centred approach that considers the project from the ‘inside-out’ (refer to Figure 3.2 below).
Figure 3.2 uses three interwoven circles to portray the common perception of environmental economics (Kneese & Russell 1987), a perspective often taken by current approaches to address sustainability. The figure illustrates how each realm of sustainability (economics, social and environment) has independent objectives, yet areas also exist where overlap or partial integration occurs (Dalal-Clayton et al. 1995; Munasinge 1993; Serageldin 1993). The economy however, is often the driving determinant of current projects and over-rides necessary social and environmental considerations significantly. The project is considered first from its own constraints within this ‘triple bottom line’ mindset, and then the project is studied to determine its ‘impacts’ on surrounding systems. This can be characterised as an ‘inside-out’ approach, as the project itself is the first, and most important, focus of the design process.

Projects generally begin with the recognition to satisfy a ‘need’ (more housing for example), and the program for the project is crafted (single detached homes). A gathering of all data for the site and the financial market that the project will serve often follows. The architectural program, the forms and the technical solutions are usually derived to meet the developer’s requirements. Studies, such as ‘Environmental Impact Reports’ are commissioned to look at how the project will impact certain aspects of the community it is built within. The needs of the community may be touched on with respect to governance, health and safety, however are often mitigated monetarily through park, school and infrastructure fees.

Multiple planning and design checks are commonly required by public development agencies to ensure compliance with restrictive government regulations. Frustrations include both time constraints and delays when dealing specifically with local and national government consent and zoning processes, and bureaucratic agencies.
Public consultation is commonly required to gather input or feedback from key stakeholders. It is generally perceived as beneficial to both developers and the design team as it can help gain ‘buy-in’ from the existing community and provide a better understanding of what residents want from the project and the developing community. The design process is sometimes considered a success if, in the end, “everyone is equally unhappy” (Carmichael 2008) with the result. In other words, the consultation process can often become an achievement independent of the final outcome.

Refer to Appendix E for a partial summary of existing frameworks and tools that address different approaches to urban design.

### 3.1.4 Strengths & weaknesses of green design approaches

**Strengths:** Green design has made much progress in recent years and can be heralded, in general, to be making strides in the right direction.

- It is supported by numerous tools and principles, and a general awareness to act more responsibly and do ‘less bad’.
- Green design efforts produce buildings that raise standards for resource efficiency, reduce energy consumption, and decrease negative impacts on the environment and local infrastructure.
- Green building rating systems have proven effective at promoting voluntary change through incentives derived from public recognition of positive efforts (Lawton 2008) and reactionary social marketing tools such as Community Based Social Marketing (McKenzie-Mohr 1999).

**Weaknesses:** Overwhelming agreement exists that there is a fundamental need to change the way things are done. Below are the key shortcomings to the current approach to green urban design and planning.

- Green design techniques by themselves are recognised to be insufficient to reach sustainability (O’Riordan 2008; Sessa & Haase 2008; Startt 2008).
Green building standards can be mechanistic and fragmented in approach, therefore not embracing the holistic systems overview necessary to achieve sustainability (Hilsenrath 2008; Lawton 2008; Reed 2008; Smith 2008b; van der Ryn 2008).

Unfortunately, structured overviews to address sustainable design and planning are all too often absent within current practices. Existing frameworks and tools lack structure for strategically moving towards sustainability (Purcell 2008; Wilde 2008). They also align poorly, therefore proving ineffective at thoroughly informing one another.

Communication gaps between the many groups involved in the process were stated as common. Lack of communication is heightened further due to the lack of a shared vision and common goals.

Shared visions were reported to be rare within current practices, and co-created shared visions even rarer. Project visions are suggested by owners or developers in most situations, and are often tokenistic in approach – they are forecasted from current situations. An emphasised need by design teams and professionals for shared visioning however is increasing (Carmichael 2008; Guenther 2008; Lawton 2008; Nyoni 2008; Sessa & Haase 2008).

Current approaches to green design are recognised to poorly consider social considerations of sustainability. Although social ‘well-being’ and the notion of ‘creating community’ are commonly referred to by green developers, limited insight into how to fulfil of these considerations often over-rides the ability to address them. (Smith 2008b; Zimmerman 2008)

### 3.2 Part 2: Proposed approach – Needs Based Design (NBD)

*The best development process will be that which allows the greatest improvement in people’s quality of life.* (Max-Neef 1991, 16)

NBD is a systems thinking approach that has been created with the intention of providing design and development teams with a common language, strategy and method for designing, constructing and maintaining
the physical and social infrastructure of a sustainable society. It provides a robust structured understanding of how, at the practical project level, project teams are able to address the ways individuals can actively, artfully and positively participate in the social and natural systems that they depend on.

To best provide design teams with a way to help society move towards sustainability, NBD consists of an ‘outside-in’ approach, a framework adapted from the FSSD for planning within complex systems, and a tool developed by the authors as the ‘IDEA method’. It is imperative to understand each of these components as they support one another in progressing towards a successful project. As part of the approach to NBD, the core design team is asked to focus on and understand the concept of basic human needs and place, and then backcast from a publicly co-created vision of success to arrive at project-level solutions and actions.

NBD provides a new way to think about and pursue the full potential of a development project by addressing complex and interrelated problems early in the process with everyone present. As illustrated in Figure 3.3 below, the NBD approach recognises that all projects participate (either in a positive or negative manner) within the larger systems that ultimately allow for their existence. NBD understands projects to exist within the finite provisions of all systems, and as such approaches them from an ‘outside-in’ perspective. It centres itself on the human needs of individuals within society within the biosphere.

### 3.2.1 Needs in design

*Sustainable development “...meets the needs of the present without compromising the ability of future generations to meet their own needs”* – UN Brundtland Commission (WCED 1987).

The proposed approach will focus heavily on the roles that basic human needs and behaviours play within a sustainable future.
The term ‘needs’ in this work has a dual purpose. It addresses both the needs of individuals within the community (including the project team) and the needs of a sustainable global society, both now and in the future as defined above by the WCED.

Max-Neef (1991) hypothesises that “basic needs are finite, few and classifiable” and that they “are the same in all cultures and all historical periods.” Barriers to the fulfilment of these needs can be imposed in a social, environmental and/or economic manner to both project participants and, on a wider scale, the community members that the project itself is intended for. While basic human needs themselves are universal, ways to satisfy them are individual and are most influenced by cultural and societal norms and forces. (Max-Neef 1991) The recognition of such barriers and satisfiers can be considered into the project’s master plan respectively, once the design team is made aware of them by project participants.

Basic human needs, as seen in Table 3.1 below, play a central role within NBD. In order to recognise how human needs may best be used within the design approach to address sustainability, a shared understanding (or mental model) is required.

Table 3.1. Nine basic human needs (Max-Neef 1991)

<table>
<thead>
<tr>
<th>Nine basic human needs</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Subsistence</td>
<td>Protection</td>
<td>Affection</td>
</tr>
<tr>
<td>Participation</td>
<td>Understanding</td>
<td>Identity</td>
</tr>
<tr>
<td>Freedom</td>
<td>Idleness</td>
<td>Creativity</td>
</tr>
</tbody>
</table>

An understanding of the following points and subtleties is encouraged to develop a shared understanding:

- **Basic needs are never actually ‘met’ or ‘satisfied’ for good – they must continually be met within time and place.** Needs never change, but the satisfiers selected to meet them do, and must do so on a continual basis. This is true for all of our needs – we are constantly looking for ways to satisfy them.
• **Basic needs are often confused with the satisfiers and goods that serve to satisfy our needs.** We often say things such as ‘what we need is more park space.’ A basic needs perspective on this statement would rephrase it as ‘a park will provide us with a space to experience our needs for idleness, identity, participation, creativity and freedom.’ A society’s culture is defined by the ways the people within it use satisfiers to address their needs.

• **A deprivation of one or multiple basic need(s) implies poverty and opens the door for opportunity.** Seeing needs in terms of deprivation also provides an understanding of how to define ‘poverty’ and ‘potential’ for action within society. For example, subsistence poverty may lead to crime and has the potential to result in other people feeling the need to protect themselves through gated communities. The built form therefore has the potential to create alienating spaces. However, the identification of unmet needs within a community also provides a way to engage, motivate and mobilise people. The recognition of this leverage point provides us with a way to identify the best places to make change and tap the potential within that community.

• **Barriers inhibit the fulfilment of needs.** Constant work is required to recognise and minimise the barriers that exist to inhibit the fulfilment of human needs. This consideration is especially pertinent in development projects – asking what barriers people experience in meeting their needs may be just as important as asking them what new features they want designed and planned for in their community. (Max-Neef 1991)

In its broadest sense, development and human needs are components of the same equation. “The best development process will be that which allows the greatest improvement in people’s quality of life” (Max-Neef 1991, 16). How can we design and develop our built environment in a way that allows people to have the greatest influence on the physical and societal structures that will affect the opportunities they have to meet their own needs today and in the future?

NBD is centred on this question, using a shared understanding of fundamental human needs and a broad and diverse participation process to address them.
3.2.2 Needs Based Design framework

The NBD framework (refer to Figure 3.7 below) is based upon the generic five level model for planning in complex systems (refer to Figure 2.1 above) and is designed to aid teams in choosing appropriate tools (level 5) to take deliberate actions (level 4) by applying strategic guidelines (level 3) to help advance towards success (level 2) within interconnected and complex systems (level 1). A holistic understanding of the system is paramount to arrive at success.

Figure 3.4 above shows the progression of frameworks that NBD has been adapted from.

**System (Level 1):** NBD considers a project to exist within society within the biosphere. Figure 3.5 to the right describes the systems in which a project participates – the biosphere and social systems set the boundaries within which the project can function. All systems are important and deeply interconnected and must be considered with a patterns-based (Murphy & Marvick 1998) understanding of needs and place (Regenesis 2007).

**Success (Level 2):** Success in the design and development of an NBD project will afford individuals the opportunity to consistently and abundantly realise the fulfilment of their needs. The project will actively, positively and artfully participate with nature in the healthy functioning of society and the biosphere. A project built on a co-created vision for success...
has a firm platform from which project teams and the larger community can create a shared understanding of ‘what’ and ‘how’ they want the outcome of the project to be.

NBD considers this perspective within the constraints of the following four sustainability principles for achieving, and exceeding, the minimum goals of the sustainability as defined by the FSSD. Refer to Table 3.2 below.

Table 3.2. Sustainability Principles of NBD

<table>
<thead>
<tr>
<th>Sustainability Principles of NBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a sustainable society:</td>
</tr>
<tr>
<td>4. …people are not subject to conditions that systematically undermine their capacity to meet their needs,</td>
</tr>
<tr>
<td>and natural systems are not subject to systematic increases in:</td>
</tr>
<tr>
<td>3. …degradation by physical means;</td>
</tr>
<tr>
<td>4. …concentrations of substances produced by society, and</td>
</tr>
<tr>
<td>5. …concentrations of substances extracted from the Earth’s crust.</td>
</tr>
</tbody>
</table>

In comparison to the FSSD, the above Principles for Sustainability are alternatively in reverse order. Principle number four focuses on ensuring that barriers are removed so individuals can live in conditions that do not undermine the capacity for them to meet their needs on a continued basis. Although all SPs are considered equally necessary, an understanding exists that violations to the latter three is more likely when people are subject to systematic poverties with respect to needs. Refer to Appendix F for an explanation of how the SPs relate specifically to urban design.

The Strategic Guidelines (Level 3): Strategic guidelines are the essential concepts that project participants must use to achieve a successful outcome. NBD uses backcasting, meaningful participation and prioritising guidelines to strategically move projects forward.
• **Backcasting** (refer to section 2.1) allows participants to create their community without constraining themselves by the problems of today, otherwise known as forecasting. Instead, planning is undertaken from the perspective of a future sustainable community within the minimal constraints of the sustainability principles. The question then asked is “what do we need to do today to reach a successful outcome?” Actions brainstormed would then be organised in a strategic manner, based on the prioritising guidelines described below, to inform a master plan (refer to Figure 3.6 below).

![Figure 3.6. Backcasting from the principles of success](image)

• **Meaningful participation** is recognised not only as a basic human need, but also as a strategic guideline due to its importance in the process of design. Allowing greater community engagement in the design and planning process increases the opportunity for the project to satisfy the needs of both participants and future inhabitants. Increasing participation in the creation of the community vision and planning of the built environment has huge potential to optimise chances for success. Participation also refers to the relationship between humans and nature that must be fostered to a point where society once again functions as nature, fully participating in biological systems.

• **Prioritising guidelines** allow the project to be tackled from a strategic perspective. Design teams must ask themselves whether the proposed actions are a step in the right direction, provide a flexible platform for supporting future actions, and offer a reasonable return on ecological, social and economic investment (refer to Table 2.2 for the list of prioritising questions) (Holmberg & Robèrt 2000).
**Actions (Level 4):** The Actions level describes the steps taken to complete the project. This level is completely defined by the project team as the framework does not dictate any specific actions beyond the broad outline of the IDEA method (refer to section 3.2.3 below).

**Tools (Level 5):** The Tools chosen for a project, beyond the IDEA method (refer to section 3.2.3 below), are chosen to provide systems, strategy and capacity support to the process. Interestingly enough, NBD considers economic flows of capital to be social tools rather than an indication of success, as many current approaches consider them to be.

Figure 3.7 below provides an overviewed summary of the NBD framework as explained above.
Needs Based Design framework

Participants envision future for project constrained by FSSD SPs:

**In a sustainable society:**
1. People are not subject to conditions that systematically undermine their capacity to meet their needs.
2. and natural systems are not subject to systematic increases in:
   - Degradation by physical means,
   - Concentrations of substances produced by society,
   - Concentrations of substances extracted from the Earth’s crust.

**Backcasting**
A planning procedure by which a successful outcome is imagined in the future, followed by the question: “what do we need to do today to reach the successful outcome?”

**Meaningful Participation**
Is a basic need and vital for success within community development. Participation also refers to the relationship where society once again functions AS nature, fully participating in biological systems.

**Prioritising guidelines** (refer to Table 2.2)
Do actions provide a: 1. Step in the right direction? 2. Flexible platform? 3. Return on investment?

**Steps taken to integrate and implement project**
Each project team must choose and consistently evaluate its actions in the context of the strategic guidelines and its definition of success.

**IDEA method:**
- Intend
- Discover needs + place
- Envision
- Act (ABCD Analysis)

**Other tools as appropriate:**
- Green Rating Systems
- Human needs assessments
- Process indicators
- Documentation
- Communication

**Economic Capital ($)**

---


**Figure 3.7. NBD framework**
3.2.3 IDEA method – A strategic tool for NBD

The NBD approach is implemented using the IDEA method which consists of the following phases: Intend, Discover, Envision and Act. Documentation, Construction, Occupancy and Community engagement all fall outside of the design process itself, and therefore, out of the scope of this research (refer to Figure 3.8 below). The IDEA method is complimented by a document of guidance notes and questions that can be referred to in Appendix G.

![Milestones in the urban design and planning process](image)

**Figure 3.8. IDEA method – an alternative to phases within the current approach**

The IDEA method (refer to Figure 3.9 below) addresses an awareness of the NBD framework and the project’s intent (Intend – I), a baseline understanding of the community’s needs and contexts of place (Discover needs and place – D), clear and constructive visioning of potential solutions to address the needs of individuals and the project (Envision – E), and then allows participants to get down to action and begin the integrated design phase(s) (Act – A). All phases act to address and better inform participants about the systems in which the project will participate, and each builds on its preceding phase. Once the project’s intent within the system is properly understood, a thorough discovery of needs and place can be encouraged. A project’s vision is then co-created based on the results of the ‘D’ phase and set within the SPs. Finally, in the ‘A’ phase, participants can begin dialogue on how to best fulfil the goals of the project and create their community. As an ‘outside-in’ approach, the project’s supporting systems are considered first – the project itself and the design solutions for the site are not directly addressed until the ‘A’ phase.
IDEA method

Phase questions

What do we intend to create?

What allows life to flourish within us and within this community?

What will we create to contribute to the flourishing of life in this place?

How can we fulfil the project's vision to allow people the opportunity to meet their needs both now and in the future?

What can we do to continually meet our needs and positively participate in the flourishing of this place?

Project Participants

ALL Everyone interested in participating
L Leadership Team
C Core Team
D Design + planning teams
B Contractors + builders
P Public (inc. business + NGOs)
G Government

Figure 3.9. IDEA method
Figure 3.9 above also suggests degrees of participation that should be included in each phase. The Leadership Team (L) consists of the people responsible for the completion of the project, often the owners, clients, and project managers. The Core Team (C) are the members of project leadership, extending beyond the Leadership team to also include key members of design teams, general contractors, public leaders, and other potential firesouls of the community. All Project Participant groups should include the necessary people or teams to complete the project. In the ‘All’, ‘Public’ and ‘Government’ groups, an open invitation should be considered. The following paragraphs provide a more detailed understanding of all phases within IDEA, including a description of the varying degrees of participation that they invite.

**Intend.** The ‘Intend’ phase begins with a commitment from the participants that the project will be designed and implemented in a way that will allow for its creators and future occupants to actively, artfully and positively participate in the social and natural systems of the community. This phase asks the team to answer: What do we intend to create?

The entire project team is selected consisting of the core design team, the owner(s) and general contractor(s), necessary government officials, and firesoul-individuals of the community. All members of the team are introduced to the NBD approach and the IDEA method. Subsequently the motivations for pursuing sustainability and completing the project as intended are shared, agreed upon and documented.

“Design is a signal of intention.” (McDonough and Braungart 2002, 9)

**Discover needs and place.** IDEA continues with the ‘Discover’ phase. A commitment from the team members to fully understand their own needs as individuals, the needs of the community’s social networks and the requirements of the surrounding ecological systems are acquired. This phase asks the team to answer: What allows life to flourish within us and within this community?

The understanding of these different systems and how they interrelate are seen at both the smallest (e.g. self) and the largest graspable scale (e.g. the project’s place in the world). This understanding of the community’s historical, cultural, economic and ecological past and how the project team will participate with the ‘place’ is generated with the aid of reflection,
research, study, and most importantly, intimate dialogue with the vital members of the project team and larger community.

This step is undertaken with all those who would like to be involved – a clear and broad invitation is made to the community. All are welcome to hear and add to an evolving story of place, and indeed, the project itself will be a way to extend this story from the past into the future. It is recommended that these teams visit the potential project site however it is important that the particulars of the project itself are not yet considered as focus must remain on the understanding of the whole system.

“What we call place is actually an entity – a unique constellation of patterns nested within patterns, interwoven with other patterns in families and guilds and social relationships, all endlessly changing, cycling, evolving and building to greater levels of complexity over time. “Place” is an incredibly dynamic and complex being.” (Murphy & Marvick 1998)

Envision. A shared vision and story of what the project intent is aiming to achieve is the ‘Envision’ step of the IDEA method. The goal of this step is to solidify what the project participants see as ‘success’ with reference to the project. This phase asks the team to answer: What will we create to contribute to the flourishing of life in this place?

This step is undertaken with all those who would like to be involved. Again, a clear and broad invitation is made to the community. This is important as the success of the project depends on all actions by both the designers and community members to be undertaken in a positive direction towards the goals.

A principle-based vision consists of three parts: the core purpose, core values and strategic goals (Collins & Porras 1996), and is guided by the sustainability principles (refer to Table 3.2) to significantly increase the probability that strategies implemented and actions taken will lead to success.

“A shared vision is not an idea…. It is a force in people’s hearts, a force of impressive power.” It is the picture of the future we seek to create (Senge 1990a, 206), and provides guidance for future actions (Collins & Porras 1996).
It is only now in the ‘Act’ phase that focus turns directly to the project itself. The goal is to build from the project’s intent and understanding of needs and place to fulfil the participants’ vision to its greatest potential. This phase asks project participants to answer: How can we fulfil the project’s vision to allow people the opportunity to meet their needs both now and in the future?

This phase is built upon the concepts of Integrated Delivery (AIA 2007; Reed et al. 2006) which requires constant feedback, communication and coordination to fully integrate the planning work of the various design disciplines, and the construction work of the contractors guided by the shared vision of the community.

The Act phase invites all project participants who would like to participate and consists of numerous sub-phases. The design team decides how many project sub-phases there will be within the Act phase as a whole, often dictated by size or complexity of the project, which in turn dictate the number of public ABCD co-creation sessions will be held. These sessions provide all project participants with the opportunity to develop solutions in a fully transparent and constructive way. Larger and more detailed projects will require more sub-phases than lesser ones, as the number of milestones necessary to complete the project will be more involved.

Between each of these progressive sessions, design teams from various sectors discuss solutions. They then break off into their specialised design teams for more detailed study and research where they prioritise, explore and test design solutions, then meet again. It is up to the leadership team to determine if more study and preparation is required before the next core team meeting or public session.

Once the project is at a point of being ready for construction documentation, the project team holds one final public review session to verify that the project intent has been met. This last check-in is crucial to keep the project team focused on their responsibility for addressing the needs of all project participants and the community that the final product will participate in.

“Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimise project results, increase value to the owner, reduce waste, and
maximise efficiency through all phases of design, fabrication, and construction.” (AIA 2007)

**Documentation, Construction, Occupancy and Continued community engagement.** Although outside the scope of this research, the IDEA phases continue to inform the production and review of construction documentation and technical studies, the construction of the project and continued community engagement. The final document, consisting of all recorded information form the IDEA method, acts as a reference for all future project decisions to be based upon. It is with continued engagement that community members within and between the new and existing communities can create their own understanding of place and contribute to the well-being of society at large. *These phases ask project participants to answer: What can we do to continually meet our needs and positively participate in the flourishing of this place?*

### 3.3 Part 3: Testing the approaches

This section reflects information from 24 interviews (refer to Appendix C for a full list of interviewees) with professionals working or familiar with green urban design and planning. The conversations were structured around the five interview questions below (refer to Table 3.3), and focused on the information provided in the Progress Package (refer to section 2.5.1 for a description of the Package). The information gathered is more qualitative than quantitative in nature, and therefore the sections below reflect general patterns within responses. Sections 3.3.1 to 3.3.5 below reflect commentary from questions 1 through 5 respectively. Sections 3.3.6 and 3.3.7 include commentary from other topics that consistently came up within the interviews: the role and impact of meaningful participation within projects, and the role and impact of regional planning efforts on local projects. Refer to Appendix D for results from all interviews.

Note: During the time of the interviews, the proposed approach was called ‘Whole Systems Design.’ Subsequent changes included renaming the approach ‘Needs Based Design.’ Refer to section 3.5 below for more information regarding changes made after testing was completed.
Table 3.3. Interview questions

<table>
<thead>
<tr>
<th>Expert interview questions</th>
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</thead>
<tbody>
<tr>
<td>1. Can you provide any additional insights to our understanding of the current state of green design and development?</td>
</tr>
<tr>
<td>2. Do you consider the models, frameworks and concepts that Whole Systems Design is based upon to be comprehensive and generic enough to provide a robust basis for approaching urban design projects?</td>
</tr>
<tr>
<td>3. What would you consider to be the benefits and constraints of applying Whole Systems Design to your work?</td>
</tr>
<tr>
<td>4. Do you think the use of Whole Systems Design would have positive effects on the behaviour of project participants and the broader community with regards to sustainability?</td>
</tr>
<tr>
<td>5. Can you suggest any additional ideas, information or case studies that may help further our research and this discussion?</td>
</tr>
</tbody>
</table>

3.3.1 Current state of green design

The results from this question are reflected in section 3.1 above. Interviewees, in general, expressed the authors’ understanding of current approaches to be complete and accurate.

3.3.2 Applicability of FSSD concepts

This section reflects impressions of the FSSD with respect to its foundational strengths.

- Most interviewees familiar with the FSSD feel that it can provide urban design and planning projects with a robust model to work from. (Castle 2008; Lawton 2008; Leitz 2008; Mayhew 2008; Nyoni 2008; Purcell 2008; Wilde 2008; Zimmerman 2008)
• Three of the twelve designers and developers interviewed use backcasting from principles of success, the four SPs, as a strategy in their work. All other already use a form of backcasting although they may not label it as such. Design teams consistently recognise a common future condition and work towards fulfilling it (Guenther 2008).

• The principles were considered to have tremendous worth and essential to work toward a common definition of success. They are however seen to be complex, wordy, and potentially difficult to apply in practice. (Gooch 2008; Guenther 2008; Sessa & Haase 2008; van der Ryn 2008; Wilde 2008)

• The generic, non-prescriptive, somewhat-complex nature of the framework was thought to act as a potential hindrance to the process (Sessa & Haase 2008; Ullstad 2008).

3.3.3 Benefits & constraints of NBD

Benefits of NBD

“When you frame the issues as sustainable development, or healthy communities, or quality of life, you dissolve a number of those controversies because people can see a bigger vision, how everyone can win.” – Guenther 2008

“We have never had anyone say to us that they want a project that is less sustainable.” – Sessa 2008

The main benefits of using the NBD approach and IDEA method were found to include the following:

• NBD could help to advance sustainability at a regional level, improve relations between developers and government, and enhance the overall ‘wealth’ of the community.

• NBD recognises the need to move beyond linear models to more holistic ones (Carmichael 2008; van der Ryn 2008; Zimmerman 2008).
• Similar approaches, techniques and frameworks have been used with success in existing eco-communities and on new projects (Guenther 2008; Hilsenrath 2008; James 2008; Purcell 2008; Reed 2008; Zimmerman 2008).

• The approach provides a generic and broad outline for guiding a project (Galarneau & Lee 2008; Leitz 2008; Sessa & Haase 2008; Startt 2008).

• It will provide participants with an understanding of the bigger picture of sustainability and how to work towards broader goals instead of individual values (Guenther 2008; Reed 2008; Startt 2008). The design process is a good place to provide a shared mental model of how to live in a sustainable way and keep a long-term view on the various ways individual projects affect a community (Smith 2008b; Startt 2008; Ullstad 2008; Zimmerman 2008).

• It is an effective way to reach and engage individuals in community affairs at a local level.

• Benefits to wide participation are clear – the approach addresses needs and personal values, and allows the community to “be in control of their destiny” (Smith 2008b).

• ‘Front loading’ the project was seen as a good idea by some – work done and decisions made early in a project have been shown to save time and resources in the long-run (Hilsenrath 2008; Startt 2008; Wilde 2008).

Constraints of NBD

“A lot of people are impatient with process – period.” – Zimmerman 2008

“This is a rational way of thinking, but I don’t believe that we can do it in a rational way.” – van der Ryn 2008

“Have to spend time and money upfront to make this happen, might be a lot of resistance to this.” – Startt 2008

The main constraints of the NBD approach and IDEA method were found to include the following:
• Mindsets must shift from mechanistic to holistic for this type of approach to be successful (Galarneau & Lee 2008; van der Ryn 2008).

• Clarity and complexity are an issue (Galarneau & Lee 2008; Hilsenrath 2008; Lawton 2008; Leitz 2008; Startt 2008; van der Ryn 2008). Its success is extremely dependant on good leadership and facilitation (Gooch 2008; Lawton 2008; Reed 2008; Zimmerman 2008).

• Communication gaps and intents currently exist between private and public sectors. Goals of government and the development community often differ. (Castle 2008; Galarneau & Lee 2008; Hilsenrath 2008; Startt 2008; Sullivan 2008)

• Project timelines and budgets are usually very tight. ‘Front-loading’ the process will take more time and money up front, which may lead to resistance of implementation (Galarneau & Lee 2008; Hilsenrath 2008; Sessa & Haase 2008; Startt 2008).

• It may be idealistic and difficult to apply in reality – design and planning processes do not start with a ‘blank piece of paper,’ but within the context of existing rules, regulations and accepted practices (Galarneau & Lee 2008; Sessa & Haase 2008).

• It may be difficult to engage people throughout the whole process – planning, design and development processes can extend for months, years and decades, and the goals, expectations and desires of community members may change with time (Galarneau & Lee 2008; Lawton 2008; Sessa & Haase 2008; Smith 2008b; Startt 2008; Ullstad 2008).

• Participation can bring problems because people arrive with different visions and expectations. Public charrettes and consensus processes have failed in the past. Personal interests can lead to a focus on narrow goals (Galarneau & Lee 2008; Sessa & Haase 2008; Startt 2008).

• It is unknown how much progress could be made with a voluntary process. A legislative mandate might be required to implement NBD. (Lawton 2008)
### 3.3.4 NBD role in guiding societal behaviour

“Communities are by definition organic people places. Construction is only part of the backdrop .... Sustainable communities are never defined in terms of their consumption habits. They are only defined in terms of their bricks and mortar, energy and waste. [The] problem is that we don’t understand that sustainable communities are about totality for wellbeing, and that includes consumption habits.” – O’Riordan 2008

“The key is to create places that people will invest in over time.” – Guenther 2008

“Developers should consider “what could this project do to create a positive impact within the community?” to best meet community needs, and market demand.” – Saville-Smith 2008

“People do as good as they can, and as good as they can afford” – Ullstad 2008

This section provides trends perceived with respect to how interviewees thought NBD might shift behaviour to reflect sustainable intent.

- Many people love the idea of sustainability until it affects them in ways they perceive to be negative (Galarneau & Lee 2008; Leitz 2008; Zimmerman 2008).
- It is difficult to include a consideration of how to meet the needs of future residents or project occupants (Lawton 2008; Leitz 2008; Mayhew 2008).
- A general perception exists that people are driven by their personal values and that they are unwilling to give things up unless benefits of doing so are direct and obvious (Guenther 2008; Lawton 2008; Purcell 2008).
- The values of participants must be addressed at a fundamental level (Galarneau & Lee 2008; Reed 2008).
- The project must be approached with a long-term perspective, discussing personally valued needs in relation to needs that reflect the greater sustainability intent of the community. How the project will contribute to the latter must then be discussed. (Lawton 2008; Guenther 2008; Mayhew 2008)
• Using a good process that encourages behaviour change is only one part of the shift. Sustainable mindsets must also be promoted and supported by community infrastructure (social and physical) once the community becomes established. (Reed 2008; van der Ryn 2008)

• Education will be required to heighten the level of discourse and get all participants on the same page. Concepts of sustainability must be personalised to encourage individual change at a community-wide level (Galarneau & Lee 2008; Smith 2008b). Applying Community Based Social Marketing, CBSM, may also raise awareness (Smith 2008b).

• The consumption habits of individuals must be addressed with ongoing outreach and education (O’Riordan 2008; Smith 2008b; Wilde 2008; van der Ryn 2008).

• A higher quality of life is achieved when people have a stronger bond to their community. Community must be able to help choose the directions and the function of the project. (Guenther 2008)

• Adaptability and operability of project features is important in encouraging sustainable behaviours within built spaces (Examples: changing building use over time, providing operable windows for natural ventilation) (Sessa & Haase 2008).

3.3.5 Stories to build meaning – Identification of case studies

Refer to Appendix D, section 5.0 for a list of identified case studies.

3.3.6 The role of participation in NBD the process

“In reality it (participation) makes our jobs much easier than pushing against a process when the community are feeling that they are not being included.” – Guenther 2008

“Some of our best ideas have come from the people who come to these public meetings because they open our eyes to the unique qualities of a place, history or something that we would not have gotten ourselves.” – Carmichael 2008
“Most people don’t have a bigger picture – they mostly respond to the things that have the greatest impact on their lives....” – Sullivan 2008

“Engage everyone, every issue, early in the project.” – Reed 2008

The following trends were observed with respect to the benefits arising from participation:

- Participation provides the ‘big picture’ and gets people on the same page with respect to sustainability, the project process and needs of the community – “the more people on board, the better”. It provides better understanding of what people want from the design which means the designers can better respond to demand. (Guenther 2008; Hilsenrath 2008)

- It provides a place for the creation of agreed upon documentation that can be referred to when analysing various alternatives against the goals of the project (Carmichael 2008).

- Identification of key leaders within the community is key to initiating change (Carmichael 2008; Mayhew 2008; Saville-Smith 2008; Reed 2008).

- Expert knowledge can be just as important as local knowledge – specialised information should be on hand to help make informed decisions (Galarneau & Lee 2008; Gooch 2008).

- People can become frustrated with slow processes but meetings at regular intervals can help keep the interest of participants (Saville-Smith 2008). Project websites can work well as a centre of communication (Carmichael 2008).

- Focusing participants on principles rather than on narrow positions to make decisions can help overcome NIMBYism (‘Not In My Backyard’ advocacy) (Reed 2008; Sessa & Haase 2008; Zimmerman 2008). NIMBY is used to describe a situation where, although a new project is generally considered a benefit for many, residents living near the immediate location of the new project consider it undesirable and would generally prefer the building to be ‘elsewhere’.

The following trends were observed with respect to potential difficulties arising from participation:
• People often go to public meetings based on a sense of fear – they are afraid of change and want to guide whatever change is about to happen so that it doesn’t negatively impact their life (Carmichael 2008; Sessa & Haase 2008; Startt 2008).

• Participation has the potential to increase the risk of the process not going well. A general level of discomfort with the project may therefore be generated and then spread. (Carmichael 2008; Galarneau & Lee 2008; Gooch 2008; Hilsenrath 2008; Reed 2008; Startt 2008; Zimmerman 2008)

• Discourse can quickly descend from global level issues that enjoy broad consensus down to the level of personal impacts of a project at a local level (Carmichael 2008; Galarneau & Lee 2008; Hilsenrath 2008; Reed 2008; Startt 2008; Zimmerman 2008). Participants can sometimes get into “complaining mode” (Gooch 2008). It usually takes time for people to articulate what really is important to them, beyond just what initially appears to be personally based values (Saville-Smith 2008).

• NIMBYism is common in every project, but must be overcome (Carmichael 2008; Reed 2008; Sessa & Haase 2008; Zimmerman 2008).

• Policy implementation can be a long process – this needs to be communicated to project participants in order to manage expectations (Gooch 2008).

• Trust is an important aspect to public discourse. Processes unravel when information is communicated to some people and not others, therefore creating a sense that decisions are made ‘behind closed doors’ (Carmichael 2008; Hilsenrath 2008; Reed 2008; Smith 2008b).
3.3.7 The role of regional sustainability efforts and governance of the process

”Let us [the development community] solve the problem in a creative way. Let us be creative. We will come up with ways to be creative.” – Startt 2008

“Currently, if you’ve got a good development or a bad development, if you don’t abide by the rules, you’re treated exactly the same.... Many [New Zealand] jurisdictions have worked to reduce the complexity of the process so that people can try to focus on the complexity of the issue.” – Saville-Smith 2008

“We have no right to expect that the developer will have the view of the wider implications of the project” – O’Riordan 2008

The following trends were observed with respect to benefits arising through regional planning:

• Design approaches that focus on social needs can enhance the ‘wealth’ of the community at large by developing ideas that allow for multiple benefits for many people and sectors of the community (Smith 2008b).

• NBD would be much easier to apply if there was a supporting regional plan already in place. Regional government must be on-board to make the most of this approach, but it may require more staff hours to deal with the added responsibilities inherent in the NBD process. (Galarneau & Lee 2008; Hilsenrath 2008; O’Riordan 2008; Smith 2008b)

• Connecting the project vision with the larger regional vision can be very beneficial and help promote sustainable regions. Public visioning was highlighted as being very beneficial if everyone has a common vision and understanding of sustainability, otherwise it can be difficult (Gooch 2008; Hilsenrath 2008; Leitz 2008; Nyoni 2008; Sessa & Haase 2008; Startt 2008).

• Local government and regulators provide great leverage point for change. It is important to have the support of those at the top of government or in charge of the departments that can help you (Sullivan 2008).
• Public participation may not be necessary in places where there is an existing municipal master plan and the project conforms to those standards (Galarneau & Lee 2008).

The following trends were observed with respect to potential difficulties arising through regional planning:

• Existing regional planning and governmental structures are “woefully inadequate” to pursue long-term sustainability (Carmichael 2008; O’Riordan 2008; Saville-Smith 2008).

• Most elected officials want to be involved in some fashion and appreciate being given an opportunity to be involved at the beginning; however, they don’t want to mislead the proponent or appear to be supportive of a project until all the facts about it are available for them to make a decision (Sessa & Haase 2008). Government regulators may not participate in early discussions between developers and the community in order to reduce the impact of their presence in the process of informal community input (Hilsenrath 2008).

• Development rules and regulations can constrain creativity and service the purpose of enforcing minimum constraints rather than encouraging maximum potential (Galarneau & Lee 2008; Hilsenrath 2008; Saville-Smith 2008; Startt 2008).

• Little dialogue and communication exists between development interests and government officials; what does exist is often negative or contentious (Galarneau & Lee 2008; Startt 2008).

• People generally feel disenfranchised by the political process (O’Riordan 2008).
3.4 Part 4: Highlighting the creative tension

Table 3.4 below provides a summarised gap analysis and highlights the creative tension between current approaches and NBD. The ideas and themes collected have been further compiled, assessed and discussed in section 5 below.

Table 3.4. The creative tension between current approaches and NBD

<table>
<thead>
<tr>
<th>FSSD</th>
<th>Current approaches</th>
<th>Needs Based Design approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Mechanistic, linear approach</td>
<td>Holistic approach</td>
</tr>
<tr>
<td></td>
<td>Fragmented perspective –</td>
<td>Whole systems perspective –</td>
</tr>
<tr>
<td></td>
<td>(i) An understanding of place rarely goes beyond the</td>
<td>(i) An understanding of the project’s place within the biosphere exists</td>
</tr>
<tr>
<td></td>
<td>project’s site and the people directly involved</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) An understanding of ‘needs’ is often confused with</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘wants’ in the form of goods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frameworks mainly based on green design</td>
<td>Frameworks based on an overviewed lens of sustainability</td>
</tr>
<tr>
<td></td>
<td>A shared understanding of sustainability is rare</td>
<td>A shared understanding of sustainability is necessary</td>
</tr>
<tr>
<td></td>
<td>To design with green or sustainable intent, mindset and</td>
<td>To design with sustainable intent, from an integrative approach</td>
</tr>
<tr>
<td></td>
<td>objectives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To emphasise technology-based improvements</td>
<td>To make decisions based on socio-cultural, ecological, and technically-based considerations</td>
</tr>
<tr>
<td></td>
<td>To design based on good, responsible decisions</td>
<td>To design based on good, responsible decisions</td>
</tr>
</tbody>
</table>
| **Success** | Often based on ‘check-list’ matrices  
Financially and temporally based  
Based within project parameters  
Vision determined by owner/developer | Based on sustainability principles at the fundamental level  
Based on basic human needs and Understanding of place within the minimal constraints of the SPs  
Vision is co-created and shared |
|---|---|
| **Strategic Guidelines** | Backcasting is common, though rarely from principles of success  
Communication:  
• Consultation-based  
• Eco-charrettes, although rare  
• Project is understood within its site constraints and opportunities | Backcasting from the principles of success  
Meaningful participation:  
• Integrative dialogue  
• Integrative Design Phases  
• Project is understood as a participant within the biosphere  
Prioritising guidelines |
| **Actions** | Often based on forecasting, to be “less bad” than conventional design | Strategically prioritised steps based on backcasting from principles of success |
| **Tools** | Green rating systems  
ISO Standards  
Triple Bottom Line  
Cradle to Cradle | IDEA Method  
ABCD analysis  
Financial capital  
Other (Strategy, Systems and Capacity-based) |
3.5 The evolution of NBD

This section briefly outlines the changes that were made to the preliminary version of the approach, Whole Systems Design (WSD), to inspire the second and final version, NBD. Apart from small edits and alterations to better the approach from a more useable perspective, the larger leap encompassed changes to allow the process to emphasise the importance of a resonating understanding of needs and place. Only larger, more significant changes are described below.

The overall approach. Numerous discussions led to the authors’ realisation that a complete understanding of needs was essential to a holistic approach. Stressing the emphasis on social sustainability, WSD became NBD.

IDEA method. The preliminary tool to apply WSD was the WSD Methodology. The IDEA method was inspired to better reflect the overall aim of the tool itself. Despite the change in name, only minor changes were made to the former in its evolution to the IDEA method, and are described below.

Shared understanding of needs and place. This phase initially read “Shared understanding of place”. Although needs were addressed within each phase of the preliminary “Guidance notes and questions” (see Appendix G), awareness of them was not especially emphasised within any given phase, nor was it central to understanding the system. Acquiring an understanding of needs became as crucial as developing an understanding of place to arrive at success.

Emphasis on Envisioning. WSD focused on the need to co-create a vision within the community. Feedback however suggested the authors further emphasise the importance of visioning, stressing the point that continually revisiting the project’s vision is mandatory to better enable success.
4 Discussion

The authors started this work with a seemingly simple aim – to suggest a new process to guide urban development projects in a strategic way towards sustainability – based on the premise that “sustainability is a design problem”. They focused on the ‘nuts and bolts’ of how projects operated today, and tried to fit those actions directly into the FSSD structure and ABCD process. But it didn’t really work out as planned, for two reasons.

First, the initial focus was misdirected. They were intent on studying and testing just the tools, techniques and guiding questions for a better design process. In the end, this paper did achieve its general aim by providing these things. But sustainability, and moving beyond it, is first dependant on changing our worldviews and mindsets, not just our tools and techniques. The understanding that is required to make such a shift is a long journey that the authors themselves are still just beginning. The frameworks, tools and processes in this paper are just the minimums for moving a community towards sustainability and must be supported by individual efforts to achieve change within us. Resonance, inspiration, desire – these are what truly motivate change (Reed 2008), not framework components and scientific rhetoric.

Secondly, sustainability is not just about the design of things in the built environment. It’s about people. Our focus can no longer be on the creation of better things, but on how we as individuals can best participate in the social and natural life-support systems that we depend on for survival. Sustainability is about how we choose to meet our needs as individuals and collectively as a society. Furthermore, when the discussion centres not on the ills of the entire planet, but on the needs of each individual, the conversation becomes far more satisfying and fruitful.

With all of this in mind, the authors maintain that NBD provides an important stepping-stone in the right direction and a strong and flexible platform for guiding efforts for sustainability and beyond. It provides a generic and widely applicable approach, a robust framework for structuring discussions and actions and a practical and a straightforward method for getting everyone focused on how to realise the highest potential of the project for the benefit of its participants. But like any other approach, the success of NBD will ultimately be defined by the aims, intents and desires of its users.
4.1 Addressing the shortfalls

Three main shortfalls were identified within the current approach to the urban design process:

1. Lack of holistic systems understanding
2. Deficient embrace of organising frameworks and clear process structures
3. Largely insufficient attention to social considerations

This section identifies considerations to moving beyond current approaches to holistic approaches found to have greater potential of successfully meeting the challenge of building and maintaining sustainable communities. The three points above were seen as the main ‘leverage points’ to focus on to instil the needed transition.

4.1.1 Seeing the world from a systems view

“By looking at just the project, and not the large whole, you are inherently promoting non-sustainability.” – O’Riordan 2008

The current ‘inside-out’ approach to green design and planning has a number of significant shortfalls.

First, it is informed by mechanistic studies of only the components of project site, providing an incomplete and insufficient foundation for the development of the project itself.

Second, green design considers the built environment in isolation from the whole of society and the biosphere. This worldview promotes the use of ‘check-list’ solutions that can promote progress in the creation of better parts within a project, but that still do not address the whole and its relationship with its surrounding community. The potential for these solutions to misinform sustainability is not unlikely, and may even lead to errors that could be more harmful in the long run. Long term strategic solutions are particularly important when designing long-life products such as buildings and infrastructure. Sustainability solutions must have the flexibility to adapt with new technologies and be able to incorporate planned resilience to potential threats in the future.
Third, green design still views human activity, especially the construction of the built environment, as inherently negative and something that must be made ‘less bad.’ Seeing humans as disconnected, separate, and dominant over natural systems does not encourage the option of pursuing solutions that would allow ongoing and sustainable participation with nature.

With these worldviews in place, failure will continue to occur. In contrast, systems understanding (Robèrt et al. 2004; Senge 1990a) promotes teams to view biological and social systems and their interrelationships from a holistic, birds-eye perspective.

A shift from a fragmented to whole systems model may be the significant cultural leap that our society needs to make through understanding interrelationships between living systems in an integrated way. Understanding the patterns that manifest themselves within the socio-cultural landscape of human communities requires an understanding of both what a place is – it’s physical and biological systems – and who a place is – the people who interact within its social networks. (Reed 2007)

### A ‘sustainable’ project?

No one thing, including a constructed project, can be ‘sustainable’. Actions taken to help achieve and maintain a sustainable system can be sustainable, but ‘things’ by themselves cannot.

Even trees are not ‘sustainable’ by themselves. While alive, they cannot survive without a constant supply of sunlight, air, water, and nutrients. They are fully dependent on the healthy functioning of the overall system. Conversely, the survival of the forest ecosystem depends on individual trees participating in the system in a way that does not degrade the system as a whole.

Without the support of the forest, a tree cannot ‘sustain’ itself, and, in turn, the forest depends on the positive participation of the individual trees within it. Furthermore, sustainable harvesting of the trees can be ‘sustainable’ as this describes an action that does not contribute to the degradation of the overall system.
Moreover, the way we define sustainability within the view of systems thinking is important. A project cannot actually be ‘sustainable’ on its own – no one ‘thing’ can ever be. Systems in their entirety can be, but ‘things’ cannot. The interconnection and interdependence of ‘things’ within systems must be understood.

The semantic difference is subtle, but important, as it helps to define the role that projects play in natural and social systems.

**4.1.2 Working with structure**

“The vision and principles on which the project is based are the guiding light, so that everyone is on the same page. They give reasons for why the decisions were made. Principles give us a root as to why we made this decision.” - Guenther

Once the system is properly defined and understood, structuring information to best inform how the project will come to fruition is paramount. Mayhew & Campbell (2008) suggest that sustainable development principles, strategic guidelines, actions and tools are often confused, leading to lack of clarity as to how they address one another and debate on how they are to be applied. Interviews showed that currently few projects embrace any strategy beyond numerous tools that are ineffective at moving projects towards sustainability.

Structuring project decisions within a framework will allow projects to be created in a strategic positive manner. An understanding of all five levels of the NBD framework (refer to Figure 3.7 above) and how they inform one another provides a structured and shared model that interviewees agreed would benefit any urban design project. The FSSD provides a successfully strategic way to approach sustainability (Ny et al. 2006; Broman et al. 2000), and became the basis for the NBD framework.

The largest strengths of the FSSD with respect to sustainability are its fundamentally based SPs and method of backcasting from principles of success. Although non-prescriptive and therefore potentially difficult to apply (Gooch 2008; Guenther 2008), the SPs were thought to have “tremendous worth and essential to arrive at sustainability” (Wilde 2008) by providing a basis that goes well beyond check-lists and matrices. Their fundamental nature was stated to provide the necessary rigour to do so.
The notion of backcasting is not new to designers and developers – basing decisions upon a future condition and then taking the steps to get there is common in urban design and planning (Guenther 2008). Three of the twelve designers and developers interviewed use backcasting from SPs (Holmberg & Robèrt 2000) in their work. All three were considered to come from firms known to be more ‘progressive’ among their peers, indicating that wider adoption of these techniques in the field is possible and probable.

Some however felt that the generic and somewhat-complex nature of the FSSD and NBD might be a slight hindrance to approaching urban design. One potential reason may be the impersonal manner in which both were introduced. The first impression of the FSSD for roughly half of the interviewees was based on a very theoretical yet summarised understanding through the Progress Package. Even sustainability practitioners and designers well familiarised with the FSSD agree that its most effective application results when delivered personally by someone well versed in its use (Purcell 2008; Wilde 2008). The same can be expected of the NBD approach. Effective facilitation is crucial to its successful implementation.

Supporting NBD as being part of the solution are its firm basis (the FSSD), its focus on the need for holistic application, and the emphasis that it places on the role of individual decision-making. Providing individuals with a shared understanding of sustainability and creating shared visions and mental models to get there will also help communities in a battle that is often perceived as unclear, difficult, and not realistic if pursued individually and not as a collective.

4.1.3 Considering social implications

A process of people & meaningful participation

“It’s a truism that people will support what they help create, and the converse is also true. People will often oppose that which is seen to be imposed upon them.” – Zimmerman

Results indicated little acknowledgement of complex social aspects during the design and planning of urban development, claiming it to be the least tangible aspect of sustainability and therefore easiest to consider minimally if at all. Numerous reasons for which the degree of participation is
constrained in current approaches were identified, a few of which are discussed below. Ample reason for broad community engagement is also presented.

First, ‘public participation’ or ‘consultation’ in some form is not at all foreign to urban design and development. Some level of political discussion and public involvement within projects in terms of consultation to achieve community ‘buy-in’ of concepts and ideas is quite common. Most processes however are undertaken only after most of the major design decisions have been made.

Second, the largest obstacles to participation were reportedly surrounding the notion of value. Many of those interviewed suggested that often people who attend public meetings do so with a hardline personal agenda where opposing interests are common and collective long term visioning is difficult. Some interviewees voiced concerns that participation can ‘open the flood-gates’ for complaints, bogging down the project and process with issues that are either seen to be external to the project or based on personal gain and agendas. A strong anti-development (or anti-developer) sentiment in the community can also be a major deterrent to inviting input from the public.

Furthermore, people generally love the idea of moving towards sustainability until it affects them in what they perceive to be adverse ways. Experience has shown practitioners that people are rarely happy with sustainability initiatives happening in ‘their back yard’ or in proximity to their places of living, regardless of the common good that the new development may bring. Many times, people attend project meetings out of a sense of fear for the impact the proposal will have on their quality of life. These feelings are valid, significant and based on a real history of undelivered promises from development to date, and must be considered and addressed within the project process. Inviting meaningful participation within the design process, however, seemed counterintuitive and unrealistic to many interviewees based on previous experiences that they have had with community engagement.

But based on research results, the authors believe that inviting meaningful participation from the community is not only essential but can also be vastly beneficial to the project. Within the IDEA method, all those who would like to be involved in the project are invited and encouraged to contribute early within the process. A project that understands needs
requires dialogue and thorough active listening. Community members’ unique understanding of place will contribute valuable insight to the project team. Involving people to co-create a vision of what their community will become is essential in making it a reality. Providing community members the opportunity to suggest design solutions affords them the opportunity to define how they will meet their own needs in years to come. NBD is founded and dependent on this kind of participation.

Participation can be divided into ‘involvement’ and ‘inclusiveness’ (Benaim et al. 2008), both needing to be understood and encouraged for better success. Involvement highlights the active role that all participants can take and indicates the importance of making a genuine, open and broad invitation to encourage their participation. Inclusiveness takes into account the needs of others, regardless of their presence or absence in the process. The understanding that basic human needs are universal allows those involved in the process to consider all other individuals in their decision-making. This understanding may in fact be one way to address the needs of unknown residents that will move into the community at a later date, a concern voiced by many interviewees. Numerous participatory approaches exist to help facilitate actions and thought (Condon 2008; James & Herr 2007; Ebeneku-Anim et al. 2006), encouraging the involvement and inclusiveness of all those that a project might affect.

A common trend found during the interviews was that professionals who have moved beyond simple consultation and have experienced the benefits of meaningful participation are more likely to continually incorporate it into their design and planning process. Many commented that benefits of participation such as the creation of community identity and belonging may even act to reduce potential adversity to the project by ironing out issues early on. Involving government early has also proven successful for many design professionals and developers.

Citizen engagement and the development of partnerships with key community leaders and organisations have been found to be integral to any successful process (James & Herr 2007; AUMA 2006, 14; James & Lahti 2004). Participation also encourages team learning, a discipline that begins with dialogue – the capacity of members of a team to suspend assumptions and enter into genuine thinking together (Senge 1990a). Case studies have identified team learning through partnership and engagement to be the
primary reason for the success of communities transitioning towards sustainability and restoration (Petts 2007; Gruden-Schuck 2000).

The importance of skilled and effective facilitation of the participatory process was noted as imperative. Beyond strong leadership, a successful process must be resourceful and encourage participative and interactive involvement (James & Lahti 2004), promoting unity and allowing the vast knowledge existing within the community to be accessed.

*Needs and behaviour*

Broad community engagement allows dialogue on sustainability and needs to dissipate into broad circles. It may even encourage the behaviour change necessary in residents to enable the community to function in a sustainable manner on a continual basis. This research cannot claim that the use of an effective, holistic, and well structured process will lead to this needed shift, but can claim to provide the space to begin the necessary dialogue and transition.

Among other points, interviewees stressed that:

- Addressing the values of participants at a fundamental level is important to get beyond the notion of personal values. Personal agendas often hamper dialogue on needs within any process where broad participation is the norm;

- Long-term perspectives discussing needs that reflect the greater sustainability intent of the community will largely support behaviour change, and

- Understanding the meaning behind and the way to use project features is important in encouraging sustainable behaviours within built spaces.

Furthermore,

- Processes that have proven to be most successful address the roles that behaviour and social implications play within the functioning of the community itself. Especially supportive is that diverse participation within those processes has been found to encourage the exhibition of continued sustainable behaviour. (Taylor & Allen 2007)
NBD encourages all the above, and acts to remove barriers to the fulfilment of human needs. Two points should be addressed here. By addressing social sustainability through the lens of Max-Neef’s (1991) fundamental universal needs, the difference between needs and satisfiers becomes more apparent. Also, personal values can be challenged to unearth the core purposes that underlie them. A deeper understanding of both may in turn inspire behavioural change. Current approaches most commonly address needs with respect to safety, health, governance and goods (Smith 2008b), rarely addressing behaviour or the fundamental needs of the complex social system that a project participates in as a whole.

A higher quality of life is often achieved when people have a stronger bond to their community. Unless benefits are obvious and direct, people are often hesitant to relinquish ideas, habits and belongings that they value. ‘Sustainability’ may become personally valued if residents are provided the background knowledge and space to connect with what sustainability actually means to them, their family and their community.

Using a good process that encourages behaviour change is only one part of the solution. Sustainable mindsets must also be promoted and supported by community governance infrastructure once the community becomes established. Continual education may encourage individual change at a community-wide level, promoting a shift in societal norms. A new culture fostering sustainable living may eventually establish.

### 4.2 Other considerations

Beyond the consideration of the three main gaps found in current approaches and highlighted above, results showed other significant issues to be essential for the successful implementation of NBD and the IDEA method: regional planning and sustainability efforts, government, governance and documentation, and return on capital.

#### 4.2.1 The role of regional sustainability efforts

A project’s connection to regional sustainability efforts is necessary and natural. Near consensus agreement suggests that it would be much easier to implement sustainability strategies in projects if supporting regional plans were already in place.
NBD can be implemented at the regional level in much the same way it is used at the project level. By aligning approaches and visions between projects and regional governing bodies, the chances of success increase significantly. As shown in Figure 4.1 to the right, efforts at the regional level can guide sound decision-making while an inclusive project-level process can help spur sustainability at the regional level. The positive feedback loop becomes apparent. Similar to project level NBD, all regional sectors and civic and public groups could also take part in an ABCD planning session to co-create the regional vision and the necessary actions that comply with it (Haraldsson 2008). As such, a regional master plan could be developed.

Figure 4.1 also recognises that a grassroots movement amongst developers in a region has potential to help advance the sustainability effort of a region by creating momentum from the bottom-up.

### 4.2.2 Government, governance and documentation

“Let us [the development community] solve the problem in a creative way. We will find ways to be creative.” – Sturtt 2008

Government. The role that local and regional government plays in the urban design and planning process is viewed as critical to the success of a project. The mandate and responsibility for setting and maintaining community plans and building standards is often held at the regional municipality level. These government officials have great sway over the approaches taken by project teams and the decision-making of those teams, in terms of strategy, scheduling and steps to be implemented. However because conventional practices and mindsets are insufficient – approaching sustainability from a fragmented perspective – the rules, processes and regulations governing projects must also change.

Government codes and regulations usually only focus on the minimums required by projects. By doing so, they often discourage innovation and creative measures that could help in society’s transition towards sustainability. Numerous interviewees provided examples of instances
where proposed measures were blocked by government rules and regulations. The opposite was just as true – regulations are seldom informed by progressive design solutions. These standards also often limit the ability of project teams to explore new technologies and innovative ideas.

The project approval process can be a long and cumbersome for both government and developers. Developers who ‘break the rules’ are currently treated in the same way regardless of if their intent is positive or negative. Calls for finding a way around these roadblocks are common – in his quote above, John Startt spoke directly of allowing progressive members of the development industry to take on the challenges of sustainable development in more creative ways.

**Governance.** Effective governance of projects is essential to their smooth operation and effective outcome. As mentioned previously, communication documents and ensuring the design process, in this case the IDEA method, is being undertaken as proposed is of the utmost importance.

Active public participation can also lead to a certain level of self-autonomy and decision-making responsibilities at the neighbourhood level, possibly removing some time and decision-making burdens off of local government. In the case of Chestnut Hill in Philadelphia, Pennsylvania, USA, the community association has developed strong community initiatives that include recycling and art projects. The local council requires that all developers wishing to complete a project in the area first get the consent of the neighbourhood association, reducing the political pressure on planning and political officials. (Smith 2008b)

**Documentation.** Effective information management – reporting and communication back to the participants – is imperative for the success of the project. At the project level, documentation and communication within an NBD project may be different than conventional projects. Each phase should produce a summary document that publicises all information relevant to public discourse and review. Results indicate that this is in the best interest of the project team – providing this information promotes a certain level of trust between all those involved in the project’s successes.
4.2.3 Business Case

Financial considerations often dictate final outcomes to decisions within the design and planning process. These decisions then constrain creativity and projects can veer away from their initial intent of ‘sustainable design’ to ‘time is money’. Most significantly, financial disconnects exist between those making the initial investment and those who would benefit from the long-term savings. For example, developers are understandably reluctant to make large investments in solar panels if they do not retain the ownership of the project and are therefore unable to reap the savings in energy costs.

Some interviewees perceived time and budgetary constraints to suppress the implementation of approaches that require extensive front-loading like NBD, regardless of both the short and long-term benefits that they might bring. A report to California’s Sustainable Building Task Force however, found that “savings resulting from investment in sustainable design and construction dramatically exceed any additional upfront costs” (Kats 2003).

Many interviewed also agreed with Kats (2003), understanding that when return on investment is considered from a more holistic perspective (addressed by the third prioritisation aspect of backcasting – refer to Table 2.2), approaches such as NBD are win-win. They highlight users as industry leaders, help minimise time and money spent on adhering to governmental policy, and result in fewer difficulties surfacing downstream. Furthermore, studies comparing green building projects in relation to conventional projects have suggested there to be “no significant difference in average cost” between the two (Matthiessen 2007). Many business sectors beyond urban design in fact have shown there to be financial benefits of moving towards sustainability (Willard 2005).

Money drives all development, and for good reason. Without it, the social pact that it represents – providing something of value to be recognised as work – collapses, and no work gets done. NBD considers money in this context – as a social tool to catalyse development and not as a goal in itself. We all require a relatively continual flow of money to make things happen, and therefore, we should not take steps that do not provide a reasonable return on investment. The show must, and will go on. The bigger issue is deciding which acts make up the performance.
4.3 Validity of the findings

Overall, results from our interviews indicate that NBD has theoretical strength and contains all the necessary components of a successful process. Structural integrity to the approach was noted as obvious, allowing a whole systems perspective on sustainable community development to be achieved.

Also acting to support NBD was that it was tested with a large number of professionals who, as a group, showed diverse sector representation. Developers and designers, government officials, social behaviour specialists, academics and sustainability practitioners all approved of the approach and suggested only minor considerations or adjustments to improve its applicability (refer to Appendix D, section 3.3).

The recent emergence of approaches based on less fragmented perspectives to design and planning supports NBD yet further. Measurements of sustainability (matrices and indexes) are increasingly being incorporated into current practices, public participation is moving beyond one-way consultation, and socio-cultural realities are slowly becoming more recognised. NBD provides an approach that most professionals claim has been lacking to date with respect to existing standards and frameworks by addressing sustainability as a whole. Its ability to provide a timely and specific way to address social implications was perceived as necessary.

Unfortunately, time constraints resulted in theoretical testing of NBD only. An opportunity to practically apply and test NBD in the field would provide more effective results and reveal a better understanding of strengths and weaknesses. Some professionals admit that although the approach looked ‘wonderful’, they were hesitant to use it until it was ‘tested and true’ in the field. Although delivered in a very thorough and complete package, some thought its actual and rational application to require a mindset that was beyond the persuasion powers of a theoretical and lifeless-until-proven document.

Although the Progress Package allowed for a thorough initial round of testing, a secondary round would have also been valuable. Feedback was incorporated into a second and final version of the approach but was not thoroughly tested for. As a result NBD, including its subtle changes from WSD highlighted in section 3.5, was not subject to a second round of expert scrutiny.
5 Conclusion

To survive and thrive as a sustainable society, we need to change the ways we think, plan and act.

The authors have found NBD to offer a timely, thorough and effective theoretical approach for guiding and implementing the design and planning of urban environments. NBD invites meaningful participation from individuals throughout the process and challenges them to find creative ways to meet their basic human needs within society. Some reluctance to the use of NBD has been identified due to its heavy focus on such a high level of participation as well as its dependence on complex theories and concepts. NBD does, however, fill some major shortcomings that exist within current practice. It offers a robust, holistic, structured, and people-centred approach that could help the movement towards, and maintenance of, a sustainable society.

5.1 Main findings

Below is a summary of the main findings of this work:

- Current urban design approaches, frameworks and tools are fundamentally inadequate for moving society towards the creation and maintenance of a sustainable society. They lack a systems understanding of problems and solutions; a structured way for working and communicating together; and lack recognition of social implications, including the role of basic human needs and participation in the design process.

- NBD provides a means to address the above insufficiencies by utilising an approach based on a systems understanding of human needs and place; the NBD framework, adapted from the FSSD, that structures dialogue and actions around a strategy of backcasting from a principled definition of the basic requirements of a sustainable society; and the IDEA method that encourages individuals to meaningfully participate in the process and in their community to meet their own needs.
• A systems understanding of the community in which a project participates is vital to achieving success in a way that allows the individuals to fully and consistently meet their basic human needs.

• Using a common language and structure for defining success and the strategies, actions and tools to achieve it, can help participants communicate and work together.

• There is understandable reluctance towards a process that utilises broad public participation and transparency, as the current methods for gathering community input and feedback for projects is inadequate and frustrating. Inviting inclusiveness and involvement from project participants provides the insights necessary to gain a complete understanding of needs and place; involves people in the achievement of a shared vision of success; and provides a way for people to decide how to shape the structures that will help or hinder their ability to meet their own needs. The invitation to participate in a project should be early, broad, and extended ‘every time’ for each design phase.

• While unable to say with any certainty whether or not the use of NBD is able to inspire behaviour change to reflect more sustainable actions, many believe that NBD provides a means to start the necessary dialogue. Early and continuous participation, the understanding of universal aspects to basic needs, and the opportunity to better understand sustainability are suggested to, at the very minimum, provide the space for transitions to begin. Further development and maintenance of sustainable communities will be dependant on education, the behaviour of residents, and community infrastructure that continually fosters sustainable actions and living.

5.2 Steps forward

To strengthen, support, and advance this study yet further, several recommendations can be made.

• First and foremost, its practical application to an urban design and planning project would provide tremendous insight into its inherent worth, and provide invaluable feedback on ways to overcome any shortcomings that it might assert.
Long term research to better understand if a NBD approach has a positive impact on the consumption habits, social participation, infrastructure, and other resources of the surrounding community is also recommended.

NBD could be a particularly helpful communication tool between various levels of society. By creating a shared language and common vision between different levels of governmental strategies, public-private partnerships could be improved greatly. There is potential for NBD to be tested through a vehicle for change such as The Natural Step’s Real Change research program.

And lastly, a comprehensive research on the opportunities that exist to fulfil basic human needs within communities is suggested. If these needs are in fact universal, can we not also find more satisfiers that are culturally similar, or ways to present satisfiers to residents, so that even the wishes of unknown residents could be incorporated into the design and planning of communities?

5.3 The change we wish to see

The greatest learning from this is the overwhelming recognition that a strategic approach to community co-creation does in fact require a shift in mindset and a “change in heart” (Hovey 2008). If the limiting factor preventing us from taking significant steps towards sustainability really is our difficulty in overcoming our ‘current way of doing business’ (Hugentöbler & Gysi 1999), ‘simply’ changing our mindsets is a substantial, but extremely difficult step to take.

But we have everything and everyone we need to do so. It’s time to BE the change we wish to see.

"The future belongs to those who believe in the beauty of their dreams." – Eleanor Roosevelt
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Appendix A: FSSD summary

Framework for Strategic Sustainable Development (FSSD)

Backcasting from Sustainability Principles to Achieve a Sustainable Society

In a sustainable society, nature is not subject to systematically increasing:
1. concentrations of substances extracted from the Earth’s crust;
2. concentrations of substances produced by society;
3. degradation by physical means;

and, in that society:
4. people are not subject to conditions that systematically undermine their capacity to meet their needs.

Strategic Guidelines for prioritizing actions
Actions are prioritized by searching for measures that:
1. proceed in the right direction with respect to all four sustainability principles;
2. function as a stepping-stone (i.e., flexible platform) for future improvements;
3. are likely to produce a sufficient return on investment to further catalyze the process.

Concrete steps taken that fit strategic guidelines
Each individual organization must draw its own conclusions in regards to problems, solutions, goals and sub-goals.

ABC Planning Methodology:
Awareness of FSSD and the motivation for pursuing sustainability
Baseline: An assessment listing all current assets and problems
Clear & Constructive Visioning: Solutions and visions for tomorrow
Down to Action: Actions evaluated using the strategic guidelines.

References

Appendix B: Green design survey questions

1. What is your name, and what company are you working with (optional)? What is your primary role in the urban design and/or development process?

2. What types of projects have you worked on during the last year? Please check all that apply (commercial; residential; institutional; civic; industrial; new community planning/development; regional planning; community revitalisation and redevelopment; other comment).

3. How do you define green design?

4. How do you define sustainability?

5. How much of your current work consists of green design? Please check one (I don’t work in green design; none; very little; about half; most; all).

6. How significant is the difference between the design PROCESS for a conventional project and a green project? Please check one (no real difference; slight difference; some difference; significant differences; completely different; other comment)

7. Do you think green design will help society achieve sustainability? Please check one (no; probably not; maybe; probably; yes; definitely; other comment).

8. What best describes what you currently use to define the VISION of a green design project? Please check all that apply (mission statement; core ideology – core values, core purpose; design themes/big ideas; envisioned future – project goals, vivid description of the future in which the project goals have been achieved; core ideology and envisioned future; other).

9. How many of your green design projects in the past year have had a common definition of sustainability that was SHARED by all project participants? Please check one (I don’t work in green design; none; very few; many; most; all).
10. Which project participants to you collaborate with and at which phases? Are there any other 'project participants' that you collaborate with? If so, at which phase(s) of the project? (Pre-project; Problem definition; Concept Design; Schematic Design; Design Development)

11. Which project actions are performed and when? Are there any other “actions” that you perform that we have omitted? If so, at which phase(s) of the project? (Pre-project; Problem definition; Concept Design; Schematic Design; Design Development)

12. What are some common frustrations you have experienced in the process of green design projects?

13. What are some common issues that the process of green design does not address?

14. Do you have any additional questions, comments or concerns regarding the current green design process?
**Appendix C: List of interviewees and their related professions**

A total of 29 experts took part in exploratory interviews, the survey of green design, and/or were part of the interview panel.

**Academics**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geoffrey Gooch</td>
<td>Professor of Political Science Linköping University, Sweden</td>
</tr>
<tr>
<td>Jack Sullivan</td>
<td>Associate Professor Landscape Architecture University of Maryland, USA</td>
</tr>
<tr>
<td>Robert Vale</td>
<td>Professor School of Architecture Victoria University, New Zealand</td>
</tr>
<tr>
<td>Tim O’Riordan</td>
<td>Consultant / Professor / Government Advisor UK Sustainable Development Commission / University of East Anglia, United Kingdom</td>
</tr>
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**Developers**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennis Wilde</td>
<td>Principal Gerding Edlen Development, USA</td>
</tr>
<tr>
<td>John Startt</td>
<td>President JST Builders, USA</td>
</tr>
<tr>
<td>Katja Lietz</td>
<td>Project Manager Hobsonville Land Company, New Zealand</td>
</tr>
<tr>
<td>Marco Sessa</td>
<td>Vice President Sudberry Properties, USA</td>
</tr>
<tr>
<td>Stephen Haase</td>
<td>Vice President Sudberry Properties, USA</td>
</tr>
<tr>
<td>Todd Galarneau</td>
<td>Vice President The Corky McMillan Companies, USA</td>
</tr>
<tr>
<td>Nick Lee</td>
<td>Project Engineer The Corky McMillan Companies, USA</td>
</tr>
</tbody>
</table>

**Government**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erland Ullstad</td>
<td>Växjö City Architect / Växjö University Professor Växjö Municipality, Sweden</td>
</tr>
<tr>
<td>Mina Hilsenrath</td>
<td>Division Chief Environmental &amp; Community Planning Howard County Planning and Zoning, USA</td>
</tr>
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</table>
### Design Professionals

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Affiliation</th>
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</thead>
<tbody>
<tr>
<td>Bill Reed</td>
<td>Architect / Consultant Integrative Design Collaborative / Regenesis / Natural Logic, USA</td>
</tr>
<tr>
<td>Deb Guenther</td>
<td>Principal Mithun, USA</td>
</tr>
<tr>
<td>Dennis Carmichael</td>
<td>Vice-President EDAW / AECOM, USA</td>
</tr>
<tr>
<td>Nando Micale</td>
<td>Principal Wallace, Roberts &amp; Todd, USA</td>
</tr>
<tr>
<td>Sim van der Ryn</td>
<td>President Ecological Design Institute, USA</td>
</tr>
<tr>
<td>Timothy Smith</td>
<td>Principal / Director of Urban Design and Planning SERA Architects, USA</td>
</tr>
</tbody>
</table>

### Sustainability Consultants

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Affiliation</th>
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<tbody>
<tr>
<td>Alex Zimmerman</td>
<td>President Applied Green Consulting Ltd., Canada</td>
</tr>
<tr>
<td>David Cook</td>
<td>Chief Executive The Natural Step International, Sweden</td>
</tr>
<tr>
<td>Duke Castle</td>
<td>Co-Founder / Consultant Oregon Natural Step Network, USA</td>
</tr>
<tr>
<td>Kay Saville-Smith</td>
<td>Research Director Centre for Research Evaluation and Social Analysis (CRESA), New Zealand</td>
</tr>
<tr>
<td>Mike Purcell</td>
<td>Senior Sustainability Advisor The Natural Step, Canada</td>
</tr>
<tr>
<td>Maggie Lawton</td>
<td>Sustainability Consultant / Water Management Braidwood Consulting / The Natural Step, New Zealand</td>
</tr>
<tr>
<td>Sarah James</td>
<td>Consultant Sarah James &amp; Associates / The Natural Step, USA</td>
</tr>
<tr>
<td>Stanley Nyoni</td>
<td>Senior Management Consultant The Natural Step International, Sweden</td>
</tr>
<tr>
<td>Wil Mayhew</td>
<td>Sustainability Coordinator Emerald Hills Urban Village, Howell-Mayhew Engineering, Canada</td>
</tr>
</tbody>
</table>
Appendix D: Interview results table

The following table reflects information from interviews on the Progress Package by professionals working or familiar with green urban design and planning. It is a combination of both commentary and suggestion for an improved process. The information gathered is more qualitative than quantitative in nature, and therefore the table below reflects general patterns within responses.

<table>
<thead>
<tr>
<th>1.0 Additional commentary on the current reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Current frameworks and standards</td>
</tr>
<tr>
<td>Overwhelming agreement on the need to move beyond LEED and other green rating systems exists, claiming that it as well as other standards and frameworks provide little possibility in actually moving towards sustainability</td>
</tr>
<tr>
<td>They are linear and mechanistic in approach, and do not embrace the holistic and whole systems overview necessary to achieve sustainability</td>
</tr>
<tr>
<td>Little alignment between green methodologies exists, making it difficult to apply green approaches</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2 Other commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green design is still trying to dominate over nature</td>
</tr>
<tr>
<td>Discussion with government officials is often difficult and rarely positive</td>
</tr>
<tr>
<td>Encouragement for innovation is rare</td>
</tr>
<tr>
<td>Processes are very compartmentalised (one person owns the land and sells it to a developer who sells it to many builders), making strides towards sustainability more difficult</td>
</tr>
<tr>
<td>Little communication between developers and the community exists, making poor relationships between developers and public common</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.0 Commentary on the FSSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most interviewees familiar with TNS framework (or the FSSD) feel that it is a robust enough model to base an urban design and planning process on</td>
</tr>
<tr>
<td>Many designers, planners and developers already use a form of backcasting, seeing it as beneficial to successful process</td>
</tr>
<tr>
<td>Three of the twelve designers, planners and developers interviewed specifically use backcasting from principles of success within their approaches</td>
</tr>
<tr>
<td>The SPs have tremendous worth and are essential to arrive at sustainability, but appear to be complex</td>
</tr>
<tr>
<td>More than half the interviewees unaffiliated with TNS but familiar with its framework feel</td>
</tr>
</tbody>
</table>
that the SPs are complicated and lack specificity, making them hard to apply

### 3.0 Commentary on NBD

#### 3.1 Usability of NBD

It is valuable and applicable

It is a wonderful approach, but scepticism exists as to its applicability

It may be difficult to engage people throughout the whole process – the process itself can extend over years

Its success is extremely dependant on good leadership and facilitation

It would be much easier to apply if there was a supporting regional plan already in place

#### 3.2 Benefits to NBD

##### 3.2.1 Benefits to the general approach of NBD

It helps develop sustainable regions

It is valuable especially for public projects

It helps people understand the bigger picture of sustainability

The design process may be a good place to provide a shared mental model of how to live in a sustainable way

##### 3.2.2 Benefits to NBD specifically

It is simple, clear and has flow

It is a good idea to ‘front load’ a project to get everyone on board

Benefits to wide participation are obvious

It addresses needs and personal values (important when discussing sustainability)

It is more likely to be used by the *innovators* and *early adopters* of the industry

It is a framework that:

- allows the community to be in control of their own destiny
- creates a sense of community
- supports partnerships and shared control between government and community
- enhances the overall wealth of a community
- recognises the need to move beyond linear models to more holistic ones

#### 3.3 Constraints of and improvement for NBD

##### 3.3.1 Constraints of the general approach of NBD

Time and money constraints exist, discouraging the use of such approaches

Participation can bring problems if people arrive with different visions and expectations

Many people simply dislike processes, not recognising their worth, and are impatient with
respect to their application
Government goals often differ from goals of the developer
Regardless of how good a process is, government bodies are still necessary to push sustainability-minded projects forward
Mindsets must shift from mechanistic to holistic for this type of approach to be successful
Currently there is still uncertainty with respect to what a sustainable community is; how then can it be planned for?

<table>
<thead>
<tr>
<th>3.3.2</th>
<th>Constraints of and improvements for NBD specifically</th>
</tr>
</thead>
<tbody>
<tr>
<td>It incorporates all the necessary steps, but only on a broad level</td>
<td></td>
</tr>
<tr>
<td>How does the process actually address sustainability?</td>
<td></td>
</tr>
<tr>
<td>How do those using the process weigh all the information gathered from the community participants?</td>
<td></td>
</tr>
<tr>
<td>It is idealistic and difficult to apply in reality</td>
<td></td>
</tr>
<tr>
<td>Provide examples of how the SPs apply to urban design and planning specifically</td>
<td></td>
</tr>
<tr>
<td>Consider using matrices to provide more specificity</td>
<td></td>
</tr>
<tr>
<td>Consider the regional plan and its potential limitations – developers and designers must work within the parameters of the larger existing infrastructure (water, transport systems for example), making it difficult to achieve true sustainability if the regional plan is not designed from a sustainable perspective</td>
<td></td>
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<table>
<thead>
<tr>
<th>3.4</th>
<th>NBD Process particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4.1</td>
<td>Pre-project</td>
</tr>
<tr>
<td>Recognise that you do not start with a blank piece of paper, but with</td>
<td></td>
</tr>
</tbody>
</table>
  - Parameters for the project |
  - Rules and regulations |
  - Guidance from a regional plan, if one is in place |
| Hire a facilitator who is familiar with all aspects of the process |
  - All interviewees familiar with FSSD felt that a facilitator with in-depth knowledge of the framework and good facilitation skills is essential to the successful outcome of such a process |
| Address that there are two necessary components to achieving sustainability: the design and planning, and the sustainable functioning of the community once the project is complete (the ‘living sustainability’) |
| Discuss the social needs of the participants and the community, and the way the community around the project actually functions |
| Discuss the need for having a means to ensure that the intent and purpose of the project, as well as the project itself, are being fulfilled, |
3.4.2 Shared understanding of place
Emphasise that this should be a ‘Public co-creation’ session
Highlight the role of the public
Consider ‘behaviour’ of place and its influence
  - Market behaviour
  - Regional and social behaviour
  - Social expectations
Creating this ‘place’ may be difficult – “we all exist in many places at once”
It is necessary to move beyond the current measurement of ‘Understanding of place’ (‘site constraints and opportunities’) to achieve sustainability

3.4.3 Project visioning
Emphasise that this should be a ‘Public co-creation’ session
Highlight the role of the public
Connect project vision with larger regional vision, so the planned sustainable community can support and heighten the larger sustainable region
More buy-in will be gained if the public is involved in co-creating the vision, and the developer comes in with only a partially formed idea and an open-mind
Public visioning can be very beneficial if everyone has a common vision and understanding of sustainability, otherwise it can be difficult

4.0 Addressing needs and positive behaviour change to reflect sustainable intent

4.1 Addressing needs within a process
4.1.1 ‘Needs’ in general
Sustainable development does not have a clear policy describing ‘needs’
‘Needs’ are generally defined with respect to governance, safety, health, etc., and by ‘who’ needs ‘what’, and not by Max-Neef’s definition of them
Some consideration to potentially include Max-Neef’s definition of ‘needs’ within processes was expressed
The question of how to meet the needs of unknown residents was recurring
‘Needs’ can differ for adjacent communities

4.1.2 ‘Needs’ and personal values
A general perception exists that people are driven by their personal values, and that they are unwilling to give things up unless benefits of doing so are direct and obvious
People need to move beyond personal values, recognising the needs of the region and of a sustainable society
Some interviewees provide ‘needs’ and negotiate ‘wants’ within their process
Individuals within the community are often not interested in the local plan unless it affects them directly. Everyone loves the idea of sustainability until it affects them in ways they perceive to be negative.

### 4.2 Encouraging behaviour change of community members within a process

Specific ways to address behaviour within the process are to:

- Purposefully train people in terms of the larger system in which they live.
- Provide people with a good understanding of what sustainability is.
- Provide examples of what sustainability looks like, how to promote and encourage it, and what it means with respect to the built environment.
- Create individual connections to the larger community through participation within the design and planning process.
- Address consumption habits – how can ‘needs’ be provided for to encourage reduced consumption habits?

The project must be approached with a long-term perspective, discussing *personally valued needs* in relation to *needs that reflect the greater sustainability intent of the community*, and how the project will contribute to the latter.

Using a good process that encourages behaviour change is only one part of the shift. Sustainable mindsets must also be promoted and supported by community infrastructure (social and physical) once the community becomes established.

Sustainable behaviour can be partially addressed through design.

People must be involved in the project’s purpose and intents and beyond its documentation process to work towards changing their behaviour.

### 4.3 Ways to affect behaviour change post-project within the community

Ensuring the continuation of community engagement with respect to sustainable mindset and behaviour is tough, however the better the facilitation and public involvement from the beginning of the process is, the greater the likelihood of creating this shift.

#### 4.3.1 Through enforced policy and regulation

While not all people respond well to it, it may have effects over a larger scale.

It encourages the community to act in a similar and congruent fashion.

Example: Seattle, Washington’s program to be a ‘Net Zero Waste’ city by 2020 will ideally result in behaviour change by residents.

People do not like to be told what to do, there may be backlash from developers.

#### 4.4.2 Voluntarily

By raising awareness on environmental issues – climate change and carbon emission issues become more mainstream and cause people to start to think more sustainably and holistically.

By personalising the need to act sustainably – once people become connected to a place...
and understand the consequences of continued unsustainable behaviour, their behaviour is more likely to change

By creating a connection to the larger community - people tend to follow suit

By applying Community Based Social Marketing – CBSM has numerous means for helping to raise awareness and change behaviour

### 4.4 Difficulties with addressing behaviour change

Behaviour change is often neglected - it is the least tangible aspect of project development, and one that is most struggled with

People do as well as they can, and as good as they can afford

It is difficult to incorporate social inequalities into a discussion on positive behaviour change

Starting the discussion on behavioural change is crucial, especially because it is not yet common place within the process

### 5.0 Case studies

**Brattleborough, VT, USA** – Systems perspective

**Chestnut Hill, Philadelphia, PA, USA** – Public/private partnership

**Dockside Green, Victoria, BC, Canada** – Co-learning through diverse stakeholder engagement

**Emerald Hills Urban Village, Strathcona County, AB, Canada** – Success at the process level

**Fanita Ranch Project, San Diego, CA, USA** – Community interaction and success

**Hobsonville, Auckland, NZ** – Success with sustainability framework

**Howard County, MD, USA** – Lack of shared vision

**Landcare Building, Auckland, NZ** – Lack of social engagement

**McAllen, TX, USA** – Shared understanding of place

**Playa Viva, Mexico** – Shared understanding of place

**South Waterfront, Portland, OR, USA** – Social infrastructure

### 6.0 Other significant commentary

#### 6.1 On participation

**6.1.1 Benefits to participation**

Provides positive results – ‘it is a necessity’

Provides the socio-cultural element of sustainability which is often omitted or under-publicised
6.1.2 Difficulties inherent to participation and sustainability

The public is not currently engaged because there is no existing framework to involve them from the beginning

How do you get value out of the process if:

- People do not attend with an open mind and a community-oriented mindset?

The process will be less positive if people are demanding self-gratification and satisfaction of short-term needs

Opposing interests could cause difficulties

People like sustainability until it affects them in ways they perceive to be adverse – NIMBY (‘Not In My Back Yard’) and NOTE (‘Not Over There Either’) attitudes are difficult to avoid

Governments are not currently leading by example

Most political community officials do not want to be involved from the beginning of any process

People generally feel disenfranchised by the political process

6.1.3 Participation and NBD

Be transparent, share everything

Identify all the stakeholders to avoid future ‘derailment’ of ideas; identify key people

Highlight the benefits of participation – what are they? To who?

NBD allows a shared mental model of sustainability to develop

People must first accept that sustainability is an issue, and then want to encourage it
6.1.4 Other commentary

The process must handle participation well – necessary for success is/are:

- Proper education of all aspects of the process – stressed by all interviewees
- Good, skilled facilitation – must be inclusive
- A good foundation to provide guidance to those participating
- The sharing of information between all participants

Experts in design and planning develop the options that function well, and the community decides how those options play out

Public provides insight to experts with respect to their needs and ‘Understanding of place’

6.2 On regional planning

6.2.1 Encouraging the support of regional planning in urban design

There is more potential for sustainable design and planning and a holistic, needs-based design process to be accepted and work if there is a legislative foundation supporting it

Local government and regulators provide great leverage points for change; it is important to have the support of those at the top of government, or in charge of the departments that can help you

If a solid sustainably-minded regional or master plan is in place, it should be used

6.2.2 Current difficulties between regional planning and urban design

Little dialogue and communication exists between design and planning and government officials; what does exist is often negative or contentious

Regulatory agencies must be creative and able to move beyond their rigid mindset if actual change is to occur

Departments within the government must be working well together for this process to work effectively
## Appendix E: Summary of frameworks and tools

### Sustainability Approaches

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Publisher/Access Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sun Living demonstrates a practical approach to creating liveable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neighbourhoods where people enjoy a high quality of life while living</td>
<td></td>
</tr>
<tr>
<td></td>
<td>within their fair share of the Earth’s resources.</td>
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<td>These principles focus on creating neighbourhoods and cities which</td>
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<td>enable One Planet Living. They recognise our impacts, as humans,</td>
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<td>arising from both our lifestyle choices such as our food, leisure</td>
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<td>and other consumer choices, as well as the infrastructures that we</td>
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<td></td>
<td>are ‘locked into’ such as energy from coal, oil, natural gas and our</td>
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<td>energy intensive transport systems.</td>
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### Sustainability Frameworks

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<td>This document is part of the Alberta Urban Municipalities Association’s (AUMA) overall support role for its municipal members. The purpose of this Guidebook is to provide guidance for communities to develop an Integrated Municipal Sustainability Plan (IMSP). Although there is no “one-size fits all” way to develop an IMSP, this document provides a broad overview of a process to develop one and the tools and resources necessary for each step of the process.</td>
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<td><a href="http://www.aia.org/ipdg">http://www.aia.org/ipdg</a></td>
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<td></td>
<td>Integrated Project Delivery leverages early contributions of knowledge and expertise through utilisation of new technologies, allowing all team members to better realise their highest potentials while expanding the value they provide throughout the project lifecycle.</td>
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This paper draws on case study findings and explains why neighbourhood sustainability cannot be reliably assessed by looking at the built form alone and that an assessment of resident perception and behaviour needs to be an integral part of any meaningful neighbourhood sustainability framework.


The Integrated Design Process (IDP) was used in the early 1990s, by Canada’s C-20001 program and IDEAS Challenge competition to describe a more holistic approach to building design. The IDP describes a different, intentional way of approaching sustainable building and community design that offers a much higher likelihood of success than any other approach.


The Living Building Challenge attempts to raise the bar and define a closer measure of true sustainability in the built environment given the best knowledge available today. Projects that achieve this level of performance can claim to be the “greenest” in North America and as close to true sustainability as currently possible.


Cradle to Cradle design models human industry on nature’s processes, in which materials are viewed as nutrients circulating in healthy, safe metabolisms. Industry must protect and enrich ecosystems — nature's biological metabolism — while also maintaining safe, productive technical metabolism for the high-quality use and circulation of mineral, synthetic, and other materials.

**Tools for moving communities towards sustainability**

**Life-Cycle Analysis (LCA)**

The goal of LCA is to compare the full range of environmental damages assignable to products and services, to be able to choose the least burdensome one. The term ‘life cycle’ refers to the notion that a fair, holistic assessment requires the assessment of raw material production, manufacture, distribution, use and disposal including all intervening transportation steps necessary or caused by the product’s existence. The sum of all those steps, or phases, is the life cycle of the product. The concept also can be used to optimise the environmental performance of a single product (also known as ‘ecodesign’) or to optimise the environmental performance of a company.


The Leadership in Energy and Environmental Design (LEED) Green Building Rating
System™ encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.


The BREEAM family of assessment methods and tools are all designed to help construction professionals understand and mitigate the environmental impacts of the developments they design and build.


NABERS is a performance-based rating system for existing buildings. NABERS rates a building on the basis of its measured operational impacts on the environment, and provides a simple indication of how well you are managing these environmental impacts compared with your peers and neighbours.


The Ecological Footprint analysis is a measure of human demand on the Earth’s ecosystems and natural resources. It compares human consumption of natural resources with planet Earth's ecological capacity to regenerate them. It is an estimate of the amount of biologically productive land and sea area needed to regenerate (if possible) the resources a human population consumes and to absorb and render harmless the corresponding waste, given prevailing technology and current understanding. Using this assessment, it is possible to estimate how many planet Earths it would take to support humanity if everybody lived a given lifestyle.


Natural capital refers to the natural resources and ecosystem services that make possible all economic activity, and indeed all life. These services are of immense economic value; some are literally priceless, since they have no known substitutes. Yet current business practices typically fail to take into account the value of these assets—which is rising with their scarcity. As a result, natural capital is being degraded and liquidated by the wasteful use of such resources as energy, materials, water, fiber, and topsoil.


The purpose of the matrices is to create a resource that would help guide teams through the early stages of project development, site analysis and design development. The current iteration is a question-based list that attempts to integrate many of the issues and opportunities surrounding sustainable development. It is not meant to be a prescriptive checklist, but a guide to help teams consider the many different, inter-related systems that
are integral to creating a successful project.

The Livable Place Index is a system of metrics developed for measuring performance. The theory is that communication and transparency of these metrics will achieve ever-increasing energy and other forms of saving. It will also encourage us to face up to our shortfalls so that we can strive for better results. The LPI is broken into three categories: Planet, People, and Profit.

Livability 101 offers communities the resources to develop a vision for the future and enables them to be engaged in a successful process with the expertise offered by the architectural profession. As designers of the built environment, architects play an important role in shaping our communities. Their design affects our safety, health, and the environment as well as the quality of life in our neighbourhoods, towns, cities, and regions. This publication seeks to strengthen the relationship of citizens and architects by sharing a common vocabulary to create a sustainable framework for building more liveable communities.

Community-based social marketing is an attractive alternative to information-based campaigns. Community-based social marketing is based upon research in the social sciences that demonstrates that behaviour change is most effectively achieved through initiatives delivered at the community level which focus on removing barriers to an activity while simultaneously enhancing the activity’s benefits.

“Energy flows, local food production systems, local-global economic webs, social networks, community governance, resource sharing networks, and integrated land use and transportation are just some of the community systems that, when synergized in a specific place, constitute a human ecosystem or “Civic Ecology.” Nurturing this web of relationships and flows affords communities the means to enhance their local wealth (environmental, economic, and cultural), resilience, and competitiveness, and to take control of designing and managing their future. Civic Ecology (“community software”) together with the green buildings, streets, and parks (“community hardware”) constitute a complete sustainable community.”

A sustainable community design charrette focuses on specific issues and details of a given site in relation to the surrounding community and ecosystem, using the broad concept and goals of sustainability to focus and guide directions. This Guide describes the four phases of planning a successful charrette.

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<td>Swamp Yankee focuses on processes, rather than on the community outcomes, which ‘should’ result from the given process. It deals instead with how to design and participate in a process allowing communities to decide about things in a way that is likely to result in well-informed action appropriate to that place at that time.</td>
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Appendix F: Urban design and the Sustainability Principles

| SP 4: In a sustainable society, people are not subject to conditions that systematically undermine their capacity to meet their needs, |
| How is this principle considered? |
| • Encompasses the basic human needs\(^1\) of people both now and in the future |
| • Recognises that in a sustainable society barriers have been removed to allow people the opportunity to meet their needs |

| How is this principle applied? |
| • An understanding of the concept of basic human needs and a willingness to remove barriers to their fulfilment exists |
| • Developers and consumers select and design satisfiers that provide the opportunity to fulfil multiple needs, potentially reducing the consumption of unneeded materials and goods. Behaviour patterns to reflect more sustainable actions are encouraged. |
| • Questions asked to apply SP4: Have the needs of the designers and participants within the process been recognised and designed for? Has the design of the project taken into consideration the needs of the residents, both known and unknown? Are the needs (specifically participation, understanding and identity) of the participants being met within the design and planning process? Have barriers to the fulfilment of these needs been removed? |

| Who should this principle be applied to? |
| • Process participants |
| • The living community |
| • The community at large |
| • Global residents |

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\(^1\) As described by Max-Neef (1991).
### SP 3: In a sustainable society, nature is not subject to *systematically increasing* degradation by physical means,

How is this principle considered?

- Encompasses degradation to landscapes via pollution or overexploitation of resources (forests, grasslands, water etc.)
- Recognises that continued degradation is not possible in a sustainable society

How is this principle applied?

- Questions asked to apply SP3: Is the project needed to fulfil its intended purpose? Are there ways to fulfil the needs of the project without development? Can density be increased within an existing development, reducing development on virgin lands? Is the project participating positively with ‘place’ within the biosphere, recognising its dependence on natural systems, and contributing to that place’s ecological, social, cultural and historical wealth? Where do our selected materials come from? Where does our waste go? Does waste resulting from our project encroach upon nature’s ability to process it? Does resource use by our project contribute to over-harvesting of non-renewable resources?

What functions should this principle be applied to?

- Site selection – Increasing density versus continued sprawl, recognising the project’s ability to positively participate within the selected site
- Resource sources – Water, wood, rock, other
- Material selection and disposal – Possibility of closed loop systems to re-use and minimise landfill disposal, effluents and emissions

### SP 2: In a sustainable society, nature is not subject to *systematically increasing* concentrations of substances produced by society

How is this principle considered?

- Encompasses all human-made substances (plastics, complex molecules…) that are foreign to nature and those naturally-occurring substances whose flows are altered through man-made intervention (methane from landfills)
- Recognises that their continual release and accumulation into natural systems is not possible in a sustainable society
- Recognises that human-made substances often emit pollutants during their production and use that are foreign to nature, and can persist as a result of their inability to breakdown readily in natural systems

What functions should this principle be applied to?

- Questions asked to apply SP2: Have options to re-use and recycle materials been considered? Are we using materials efficiently in products and processes where
substances can be recaptured and re-used rather than releasing them and allowing them to accumulate in nature? Are we supporting the ability to keep substances in closed loop systems, therefore minimising the need for continued production from virgin resources? Can alternative materials be used that pollute less or breakdown more readily in nature? Do sustainable options exist to dispose of these materials? How efficiently do the selected materials breakdown when disposed of if not kept in closed loops?

What functions should this principle be applied to?

- Material selection – Buildings, project or community infrastructure (roads, transit systems…)
- Options to procure organic, sustainable products by the developers and eventual residents of the community.

**SP 1: In a sustainable society, nature is not subject to systematically increasing concentrations of substances extracted from the Earth’s crust**

How is the principle considered?

- Encompasses all mined materials and substances (metals, coal, natural gas…)
- Recognises that their continual accumulation in the biosphere through continual extraction is not possible in a sustainable society
- Recognises that materials used from the earth's crust must be used in ways that prevents their accumulation in natural systems

How is this principle applied?

- Questions asked to apply SP1: Have options to re-use and recycle materials been considered? Are we using materials efficiently and in products and processes where they can be recaptured and re-used, rather than releasing them into the atmosphere, water and soil? Are we contributing to keeping materials in closed loop systems, therefore minimising the need for virgin extraction? Are there alternative substances that can be used that are less harmful to the biosphere? Can substances that are naturally more prolific be used, therefore allowing the biosphere to better assimilate them, for example aluminium instead of copper?

What functions should this principle be applied to?

- Material selection – Buildings, project or community infrastructure
- Energy selection (renewable versus non-renewable sources) – Energy harnessed for the development to occur, energy for the community once occupied (transportation, heating, electricity…)}
Appendix G: IDEA method guidance notes and questions

IDEA Guidance notes

The questions, inputs, outputs, tools and resources listed below are just the beginning and are meant as a starting point rather than an exhaustive list. We look forward to learning from you those things that you found to be helpful or hindering in your own practices. ...Now, let’s get to it!

The guidance notes for each IDEA phase consist of the following information:

Phase question
This offers a point of reference for each phase. The more thoroughly the question is answered, the better equipped the participants are to move onto subsequent phases.

Guide notes + questions:
These assist in the application of IDEA, helping participants explore the Phase question.

Inputs:
These are the necessary resources to successfully address the Phase question (e.g. participants, information, time).

Outputs:
Expected outcomes from each phase should reflect the best answer possible to the Phase question.

Tools + resources:
These consist of other inputs that may contribute to the completion of the phase. Their use and effectiveness will vary depending on the project, the team and the strengths of the facilitators. Tools and resources are not specific to just one phase and should be considered for use throughout as appropriate.

Guide notes + questions for all phases:
- Each person who joins the project team is made aware of the NBD approach and framework, the IDEA method and the motivation(s) for pursuing sustainability.
• Each phase builds on the prior phase and subsequent work is checked against the outcomes of earlier phases. Participants are encouraged to answer each question as thoroughly as possible.
• The intents, steps and goals for each phase should be discussed, detailed and documented prior to beginning work.
• There is no particular selection process to decide who should be involved in the project.
• The use of consensus agreements in all phases is encouraged. Consensus is NOT the same as unanimity, but a general agreement among the members of a given group or community on the way to move forward together. Each individual exercises discretion in decision-making and follow-up action.
• Within NBD, economic capital (money) is considered to be a tool for supporting the project rather than an end to be achieved.
• The time to complete each phase will fully depend on the size and scope of the project and the needs of the community.

• Have all individuals involved in the project had the opportunity to learn, discuss and understand the concepts of basic human needs and NBD? Do they have access to the resources they need to understand it?
• Have the concepts of backcasting from Sustainability Principles, meaningful participation and the use of the three prioritising guidelines been used throughout the process?
• How can we ensure, to our utmost ability, that the project has followed the guideline of 'meaningful participation'?
  • Has an open, appropriate, and general invitation to participate in the process been made when appropriate?
  • Have the ‘right’ key people been invited to the conversation? These are the people that provide valuable knowledge and insight, also referred to as the Firesouls of the community. They might also include those who have been connected to the project’s place for generations. Have at least ‘two degrees of separation’ have been used to identify these individuals? Have those already engaged in the process been asked if they are aware of any other individuals who might provide yet more insight to the process?
  • Have collaborations with government, business and/or NGOs emerged from the project?
  • Have the participants had a chance to discuss and explore the future of their community and their role within it?
  • Are the actions taken in each step contributing to efforts that allow individuals to positively participate in their communities?
Intend
What do we intend to create?

Guide questions:
- What purpose is your project trying to fulfil? Is this project even necessary? How can the needs that it is aiming to serve best be fulfilled?
- Who will be recruited to create the best team to support in the creation of this project?
- Have detailed governing and process documents been created for this project to structure and support the desired intents and outcomes?

Inputs:
Needs Based Design approach
Explore the intricacies of this and other theories and approaches to discover what will work well for you and the project team in order to pursue your community’s vision.

A desire to continuously learn together
NBD encourages a new way to think, work and act. Constant team learning and flexibility from its participants will allow the team to work best together.

A desire to move towards, and beyond, sustainability.
What are the ways we can support a healthy and vibrant society where people can continuously meet their own needs?

Participants
- Leadership team (owner’s, project manager, council...)
- Core team (core design teams, general contractor(s), government leaders and regulators)
- Facilitator(s) and/or consultants familiar with NBD

Understanding of the regional context:
- The region’s vision or master plan
- Building codes and regulations
- Key influential actors in government – those that can help to build momentum in support of the project
Outputs:

Statement of intent
This is a mission statement for the project based on the needs it is proposing to fulfil. It should be rigorous enough to withstand the test of time. Note that this is not a project program or list of design elements, but a statement of what the project team intends to create together.

Documentation of the Intend phase
• Governing and process documents – these address how the remainder of IDEA will unfold.
• Communication documents – the document should suggest how participants will communicate with one another to encourage the flourishing of all possibilities throughout IDEA.

Tools and Resources:
‘Big picture’ sustainability inspiration + systems thinking theory:
• The Natural Step (www.naturalstep.org)
• Ishmael (Daniel Quinn 1992)
• The Fifth Discipline (Peter Senge 1990)
• Barth’s Moral Theology: Human Action in Barth’s Thought (John Webster 2004)
• Natural Capitalism (Paul Hawken, Amory & Hunter Lovins 1999)
• Biomimicry (Janine Benyus 1997)
• Permaculture (Bill Mollison 1988)

Basic human needs theory:
• Human Scale Development (Manfred Max-Neef 1991)
• The Alexander Principle (Wilfred Barlow 1973)

Progressive design and planning theory:
• Regenerative development (www.regenesis.com)
• Cradle to Cradle (Michael Braungart & William McDonough 2002)
• The Natural Step for Communities (Sarah James & Torbjörn Lahti 2004)
• SuN Living (Wil Mayhew & Elisa Campbell 2008)
• Ecological Design (Sim van der Ryn & Stuart Cowan 1995)
• The Nature of Design: Ecology, Culture, and Human Intention (David Orr 2002)
• Design with Nature (Ian McHarg 1971)

Dialogue and team learning:
• Team roles and Team learning workshops
• Myers-Briggs Type Indicator (MBTI)
• The Fifth Discipline Fieldbook: Chapters 52 to 67 – Team Learning (pages 351 to 441) (Peter Senge 1994)
Discover needs + place
What allows life to flourish within us and within this community?

Guide notes + questions:

- Very little attention is paid to the actual project itself at this stage. Focus is given to the place in which the project will participate, and the needs of the participants and the wider community. Current satisfiers to those needs can also be discussed.

- Has an open invitation for participation been made to the community?
- Have key community members been approached with an invitation to participate, particularly those who may not come forward on their own accord?
- How diverse are the backgrounds of the individuals helping to inform an understanding of needs and place? Which groups are currently under-represented in the community? How can they become more involved?
- Which community groups and individuals could help to collect information about the place? (E.g. residents from neighbouring communities, dog walkers club etc.)
- What are the unique qualities of this place that resonate with people historically, now and potentially in the future?
- Have all historical, environmental, cultural, social, economic and governance contexts been considered?
- How broad and multi-faceted is the information complied to inform the project, process, site inventory and survey?
- How is all of this information best presented to the community?
- What community activities can be initiated to highlight ‘the place’ and gather momentum behind the project?

Inputs:
All information gained from the Intend phase
Participants
All who would like to be involved in the project.
Community leaders and firesouls are actively sought
out. Broad community engagement is invited, including participation from NGOs, businesses and government.

**Personal reflection and mastery and time to explore self.**
By continually clarifying and deepening personal visions, focusing energies, developing patience and seeing reality objectively, all participants can develop the personal mastery that will enrich the process and the foundation of their community.

**Data**
Lots and lots of information about the community at large to gain a pattern understanding of how life thrives there. Data includes as much information as possible collected from numerous sources (e.g. environmental groups, regional parks, museums etc.), and covers all relevant contexts (ecological, cultural and historical, social, economical, community governance, other).

**Outputs:**

**A story of place and meaning**
A thorough understanding of needs and place based on all input from all participants – The ‘what’ and ‘who’ or essence of the place is understood and communicated to all interested.

**Sense of community and trust**
This should be fostered throughout IDEA encouraging engagement and success.

**Documentation of the Discover phase**

**Tools and Resources:**

**Understanding place:**
- A Pattern Language: Towns, Buildings, Construction (Christopher Alexander 1977)
- Patterning as Process (Tim Murphy and Vicki Marvick 1998)
- The Experience of Place (Tony Hiss 1990)

**Dialogue and team learning tools:**
- Participation Works: 21 techniques of community participation for the 21st century (The New Economics Foundation with members of the UK Community Participation Network 1998)

**Strategies:**
- Kitchen table conversations and one-to-one interviews
- Story telling
- A methodology to understand Basic Human Needs: Human Scale Development (pages 39 to 42) (Manfred Max-Neef 1991)
- Visit to the project site by phase participants
- Strengths, Weaknesses, Opportunities
  + Threats (SWOT) analysis
Envision

What will we create to contribute to the flourishing of life in this place?

Guide notes + questions:

- **A vision** is co-created based on the intent of the project, a thorough understanding of ‘needs’ and ‘place’, and is framed within the minimal constraints of the Sustainability Principles.

- **Has an open invitation for participation** been made to the community?
- **Have key community members been approached** with an invitation to participate, particularly those who may not come forward on their own accord?
- **What is the regional vision, if one exists?** Has it been taken into consideration and built upon for this specific project?
- **How does the project vision relate to the understanding of ‘needs’ and ‘place’?**
- **Is it broad in both space and time?**
- **Do participants relate to the vision? Is there consensus?**
- **What is the project’s vision, core purpose, core values and strategic goals?**
- **Does the vision reflect the long-term interests of the community?**
- **How can the shared vision best be communicated?**

Inputs:

**All information gained from the Intend and Discover phases**

**Participants**

All who would like to be involved in the project. Community leaders and fire souls are actively sought out. Broad community engagement is invited, including participation from NGOs, businesses and government.

**Regional vision**

The regional vision or master plan is something to consider as necessary. Where master plans don’t yet push into the realm of sustainability, creative project innovation
is encouraged. Including government officials into the process might encourage easier adoption of innovative thought into existing policies and regulations.

**Outputs:**

A vision for the project based on a consensus agreement

- Informed and constrained by the Sustainability Principles
- Consists of a core ideology, an envisioned future, and strategic goals

Documentation of the Envision phase

**Tools and resources:**

Co-creating a vision:

- The Fifth Discipline Fieldbook: Chapters 44 to 51 – Shared Vision (pages 297 to 347) (Peter Senge 1994)
- Future search (www.futuresearch.net)
- Building Your Company’s Vision (James Collins & Jerry Porras 1996)
- Natural Step ABCD process (www.naturalstep.org)

Strategies:

- Open Space for Dialogue and Enquiry (www.osdemethodology.org.uk)
- World café (Juanita Brown & David Isaacs 2005)
- Visit to the project site by phase participants to re-emphasise the importance of ‘place.’
- Storytelling
- One-to-one conversation
- Personal reflection
Act
How can we fulfil the project’s vision to allow people the opportunity to meet their needs both now and in the future?

Guide notes + questions:
The design of the project itself now becomes the team’s focus. The number of Design Phases (DPs) within the Act phase dictate the number of Community co-creation sessions that will be held.

- Has an open invitation for participation been made to the community?
- Have key community members been approached with an invitation to participate, particularly those who may not come forward on their own accord?
- Have teams from different participant groups exchanged meaningful dialogue about the project?
- How best can we make the expertise of the design teams available to support the co-creation of design solutions?
- Has cross-disciplinary collaboration allowed for dialogue concerning suggestions and major decisions?
- How will the participants' insights and discussions from the Community co-creation sessions be effectively recorded and distributed to the project teams?
- Are the actions chosen in each DP strategically based on backcasting from the Sustainability Principles and the three prioritisation guidelines of the NBD framework?
- How can we best support the design team in their efforts to fully integrate their work with that of other design teams?
- How can we best foster communication between the design teams and all other participants?
- Have the intent and goals of the each DP been fulfilled in accordance with the project’s vision, before moving onto the next DP?
- Has a final public review, after all DPs have been completed, been held to demonstrate the project’s compliance with the intent, understanding of needs and place and vision?
Inputs:
All information gained from the Intend, Discover and Envision phases
An anticipated number of DPs
The Act phase consists of numerous DPs, the number of which are dependant on the size and complexity of the project. A best-estimate of the number of DPs necessary to satisfy the requirements of the project are decided upon by the core team.
All information gained from the previous DP(s)
Participants
All who would like to be involved in the project. Community leaders and firesouls are actively sought out. Broad community engagement is invited, including participation from NGOs, businesses and government.

Outputs:
Documentation of the DP
• A summary document of ideas and efforts, project plans and themes from the DP
• Documentation of the entire Act phase
IDEA Documentation
• A final IDEA document and plan
• A document with all information from the IDEA method. It will be referred back to for all future steps of the project, and acts as the reference manual upon which all future decisions are made.

Tools + Resources:
The Integrated Design Process and charrettes:
• Integrated Project Delivery: A Guide (AIA 2007)
• ABCD Co-creation Session – Planning for Sustainability: A Natural Step by Step Guide by The Natural Step (unpublished)
• Design Charrettes for Sustainable Communities (Patrick Condon 2008)
• SuN Living. Developing Neighbourhoods with a One Planet Footprint (Wil Mayhew & Elisa Campbell 2008)
Community outreach and action:
• Resources on sustainable living: Community Based Social Marketing Manual (Doug McKenzie-Mohr 1999)