Putting Regenerative Development into Action: Understanding the Decision Making Process of a 680 Hectare Regenerative Project

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ABSTRACT

The built environment is responsible for significant environmental impacts. It is therefore a central research area to balance ecological and built systems and allow them both to thrive. While the majority of previous and existing attempts have targeted minimising environmental impacts, regenerative development goes beyond reduction and aims to restore and support environmental, social and economic flows. Yet, very few projects to date have been able to demonstrate a regenerative outcome. This is because few consulting firms currently offer regenerative design thinking, which is in turn linked to a lack of understanding of processes that support decision making in regenerative development projects. This paper uses a 680 hectares regenerative development project in Gippsland, South East Australia as a case study to investigate how implementing a regenerative development approach from the onset affects the decision-making process. A series of workshops were facilitated by the authors with the local community, indigenous elders, design experts, academics, scientists, government and industry partners and other stakeholders. An online survey consisting of 10 questions was sent to the 40 actors involved and 28 responses were collected (N = 28 and a response rate of 70%). This study provides a contribution to the understanding of both the processes that can support the implementation of innovative regenerative concepts in the built environment and their benefits. It covers aspects ranging from the personal motivation of participants, to the performance of the workshops in facilitating a regenerative design. The knowledge gained from this study will inform the future use of regenerative development and associated facilitation tools.

Keywords: regenerative development, design process, sustainable neighbourhood

1. INTRODUCTION

The built environment is responsible for a significant portion of the environmental impacts humans are having on the planet. Yet the built environment is critical to human development. How do we reconcile this when past practice has always privileged human progress above ecological (Steffen et al., 2007). The solution to this is to understand the interconnected nature of our planets systems (Pretty, 2011). In the long term humanity will only thrive if the systems on which it depends thrive. As such our built environment should be designed to support the viability and vitality of social and ecological systems and enhance the ability to adapt constructively to change. That is, cities designed to provide net ecological and social benefits; no longer minimising environmental impacts but actually aiming to heal, connect and strengthen them. An approach to doing this is termed Regenerative Development, which aims to restore and support environmental, social and economic flows.

This contributive approach to designing the built environment is relatively new with very little long term research underpinning it. It has been practiced by a few consultants internationally (Mang and Reed, 2012) and case studies found on practitioner pages from Regenesis and Institute for the Built Environment (IBE), Colorado State University) but rarely as part of a research led process. While regenerative practices provide insights into the outputs of regenerative development projects; there is a need to better understand the process that supports regenerative thinking by contrasting it to business as usual.

The aim of this paper is to evaluate the experience of stakeholders during a regenerative design charrette facilitated using LENSES and applied to a large scale regenerative development proposal: Seacombe West, Gippsland, Victoria, Australia. This contributes to our understanding of the process of regenerative design and the effectiveness of facilitation tools such as LENSES. LENSES is a framework which supports design thinking towards regenerative goals. There are other tools or frameworks used by Regenesis, and it could be argued that any consultation process could incorporate regenerative outcomes, if the underpinning ecological thinking is present. That is, thinking that determines the potential of place, looks that the flows that bring a place to life, enables design

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to enhance the relationships between flows and the place and therefore the ability for a place to be more resilience and to constructively adapt to change (Hes and du Plessis 2015). The LENSES framework was chosen as it nicely support this approach to regenerative development.

1.1 Site

Seacombe West is a proposed 680 hectares (6.8 km²) development on Lake Wellington (or Murla in the Gunai aboriginal language), the largest of the Gippsland lakes in Victoria, Australia which cover 340 km² (Roberts et al., 2012). Some areas along the lakes are protected under the Ramsar convention (Ramsar, 2016) and other wetland and birds protection agreements. The Gippsland lakes are therefore a significant natural feature and generate a large economic activity, mainly in terms of agriculture and tourism. However, these lakes were artificially connected to the sea at Lakes Entrance in 1889 and since then the salinity of their waters has steadily increased. While Lake Wellington is the least saline of the three lakes, its salinity is increasing and its biodiversity has simultaneously declined over the last decades. Salty flood waters have also blighted the Seacombe West site which can no longer fulfil its past ecological or farming functions. The owners of the site decided to regenerate the site through a development that would provide stable habitats while also regenerating its ecological functions and enhancing its socio economic activity.

2. METHOD

This section presents the LENSES regenerative development framework assessed. The overall research strategy and the project timeline are also described before detailing the survey used to assess the facilitation process.

2.1 Case study and LENSES description

LENSES stands for Living Environments in Natural, Social and Economic Systems. Plaut et al. (2012) state that LENSES aims 'to facilitate tangible, actionable and contextually based solutions that support and create healthy, natural, social and economic systems'. Error! Reference source not found. shows that LENSES is represented by three overlaid lenses. The outermost lens (the Foundation Lens) outlines the guiding principles of the project. The intermediate lens (in blue) is the Flow Lens and represents the flows across the project. These can be physical or abstract. Both the flows and the guiding principles of the project have been defined by the stakeholders during Workshops 1 - 3 (see Figure 1). In the centre of the framework lays the Vitality Lens which includes the two spheres of degenerative and regenerative design and incites a workshop participant to focus on regenerative outcomes for each flow. Artefacts of this model are generally printed or made for workshops. This visual representation is a tool that helps structure the thinking during the workshops and allows the stakeholders to have all the key flows and principles in an organised manner.

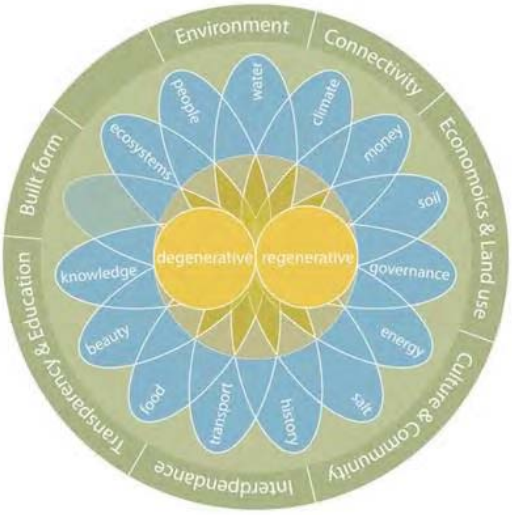

Figure 1: Visual representation of the LENSES framework

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Beyond its visual representation and ability to organise thoughts and information, LENSES focuses on systems thinking, allowing regenerative outcomes to emerge. Stakeholders develop their own lens during the initial workshops and then use the resulting model to guide the design charrette. LENSES has been used to drive regenerative outcomes in multiple projects (including for town planning, building design, education, personal growth, organisational development and others). However, there is limited information about how participating stakeholders perceive LENSES and judge its effectiveness. The next section describes the research method used to evaluate this aspect.

2.2 Overall research strategy

The authors have led and organised a series of workshops with key stakeholders of the project in order to facilitate regenerative thinking from the early stages of design. The results of the each workshop were carried forward to the next as depicted in Figure 2. The workshops are described in more detail in Section 2.3.

As shown in Figure 2, this paper focuses on the evaluation of the workshops facilitated using the LENSES framework. This evaluation was conducted through an online survey (described in Section 2.4) and additional interviews with stakeholders. The survey and interviews are designed to extract as much information as possible on the effectiveness of the LENSES framework and how different it is from business as usual. Only the survey results are analysed in this paper due to a lack of space.

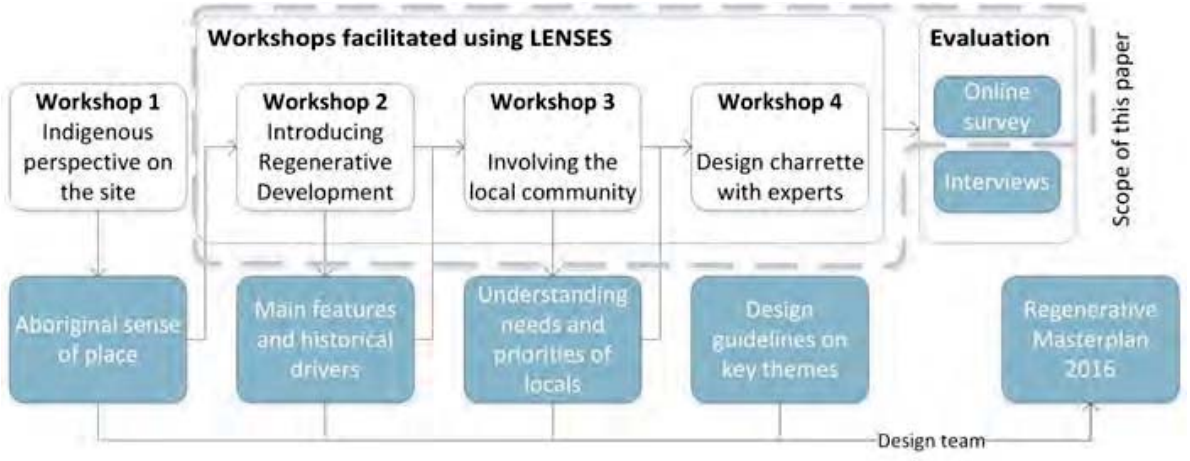

Figure 2: Overall process of the project and scope of this paper

2.3 Project timeline and workshops description

Table 1 is a summary of the process used to integrate regenerative development principles in the design process. Based on the LENSES framework it was critical to first understand the story of place and the context of the project in order to identify the principles that the project would be designed to. This context included a timeline of the site with inputs from the local community, government, and Indigenous participants. The following step was to determine the flows that brought this site to life, and identify potential flows that can create resilience and adaptive capacities for social and ecological systems. The resulting LENSES artefact was then used to inform the two days charrette workshop. The outcomes of all of these were fed into the final design process, the resulting master plan and details for implementation.

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WS/ event	Aim	Stakeholders	Activities	Outputs
2015 – Prework – at the site around the room table	Identify the principles of the project	land owners	Used the Vitality lens Discuss shift from degenerative to regenerative design; and foundation lens develop an initial understanding of regen. development principles	Key principles: Interdependence Stewardship Respecting limits Partnership Transparency and education
2016 Jan –	Team formation	group of researchers	Shares the potential of the project for a research grant from Carlton Connect.	Received grant
2016 Feb WS1 – at the UoX	Cultural Awareness Training	The initial design team	Team taken through Indigenous history and design; and, the way to be sensitive and effective communicators to the Indigenous community.	Deeper understanding of inclusion and potential, we also started using the Indigenous timeline as basis for the history of place activities.
2016 Feb WS2 at the UoX	LENSES and Regen training	The initial design team	Three hours introduction to regeneration (Vitality) and the LENSES process, and started the Flows Analysis through a history timeline activity (Flows)	Shared understanding of the potential of the site and the regenerative design process
2016 Feb site visit	Site familiarisation	design team and researchers	A whole day visit of the site – visited 4 areas of the site and collected drone footage	Ability to connect to the issues of the site, input into the flows lens
2016 March WS3 onsite	Community input and site visit	Community – with wine and cheese – around 20 participants	site visit, followed by a two-and-a-half-hour workshop around: "What is important to the community?"	Ability to connect to the issues of the site, input into the flows lens
2016 March WS3 at the local council	Community and government input	Community, government and design team – 12 participants	Repetition of the above with an additional three hours workshop: "What are the critical flows and relationships we need to develop to ensure the place has the potential to thrive?	Ability to connect to the issues of the site, input into the flows lens – this finalised the principles, and flows lenses
2016 April/May – design several	Integrate regen thinking into the design	Design team	Develop design concepts and finalizing principles and flows	Initial design ideas
2016 April WS4 at UoX - 2 days	Design concepts for the project	40 industry and research experts	Developed regen. ideas integrated across building, infrastructure, ecosystem, water, land, governance, community & innovation.	Participants identified opportunities and gaps in the knowledge to further inform the research agenda

Table 1: Description of the workshops' aims, participants, activities and final outputs. Note: WS: Workshop, UoM: University of xxxx

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2.4 Survey description

In order to evaluate LENSES an online survey was conducted with the stakeholders that attended the workshops. The survey consisted of ten questions (see Appendix A for the entire survey):

- 2 questions regarding the role of the stakeholders and their attendance;
- 3 Likert-scale (7 options) questions on personal gain from the workshops, the project's benefit from the workshops and the stakeholder's understanding of regenerative development;
- 4 open-ended questions that cover personal gain, defining regenerative development, the benefits of LENSES and the potential improvement to the facilitation process with LENSES: and
- 1 Likert-scale (5 options) with 9 sub-questions evaluating the performance of LENSES on a range of indicators.

The survey was opened to participants from the end of Workshop 4 (12/04/2016) and closed on the 31/05/2016. Participants were encouraged to participate and were reminded twice by email. Although, participation in the survey was facultative, 28 responses were collected out of 40 stakeholders involved in the workshops (most of whom were present during the design charrette or workshop 4). The resulting response rate of 28/40 = 70% is relatively high. However, the sample size is not statistically significant and this is further discussed in Section 4. All survey questions were approved by an Ethics committee and all participants were informed of the project, data collection and survey participation through a plain language statement distributed during the workshops as well as face-to-face explanations.

3. RESULTS

The 28 responses received for the survey included 3 architects (11%), 7 engineers (25%), 6 scientists (21%), 2 community members (7%) and 10 other (36%), which mostly included consultants (4/10) and academics (3/10). The large majority of respondents participated in Workshop 4 (86%) and some participated in Workshop 2. Regarding personal gains (Q3 and Q4), 61% responded that the workshop was useful (5/7 on the Likert scale) followed by 25% responding that it was essential (6/7 on the Likert scale). The average was 5.1/7 with a standard deviation of 0.96, revealing that respondents felt they benefited personally from attending the workshop(s).

The free comments revolved mostly around the interdisciplinary nature of Workshop 4 and the positive exposure to LENSES. The respondents felt that the project gained useful (5/7 on the Likert scale) to essential (6/7 on the Likert scale) value from the workshops (Q5). On average, they rated the added value 5.5/7 with a standard deviation of 0.79. This shows that most participants valued the inputs of LENSES.

Most respondents felt that they understood regenerative development in Q6 (14% a little (4/7), 39% enough (5/7) and ~46% a lot (6/7)). When asked about defining regenerative development (Q7), some of the most recurring words used included environment (11 responses), positive (8 responses), system (7 responses) and human (5 responses). Overall, respondents were seemingly satisfied with the performance of LENSES.

Answers to Q8 (see Figure 3) present averages ranging from 3 to 4 (over 5) across the different aspects evaluated. The lowest average score was attributed to the capacity of future proofing the development while the highest score was linked to its support for cross disciplinary collaboration. When asked about the benefits of using LENSES (Q9), a strong focus was made on its ability to discuss the topic broadly, providing a more "holistic approach" (Respondents 10 and 22). The most used words by the respondents included, different (7), flows (5), thinking (5), understanding (4) and relationships (4), highlighting some of the key features of regenerative development (see Section 1). The major limitation of the process and what could be improved in the view of most respondents (Q10) was the amount of time provided to better understand the LENSES framework. This is highlighted by the word time appearing in 10 different responses.

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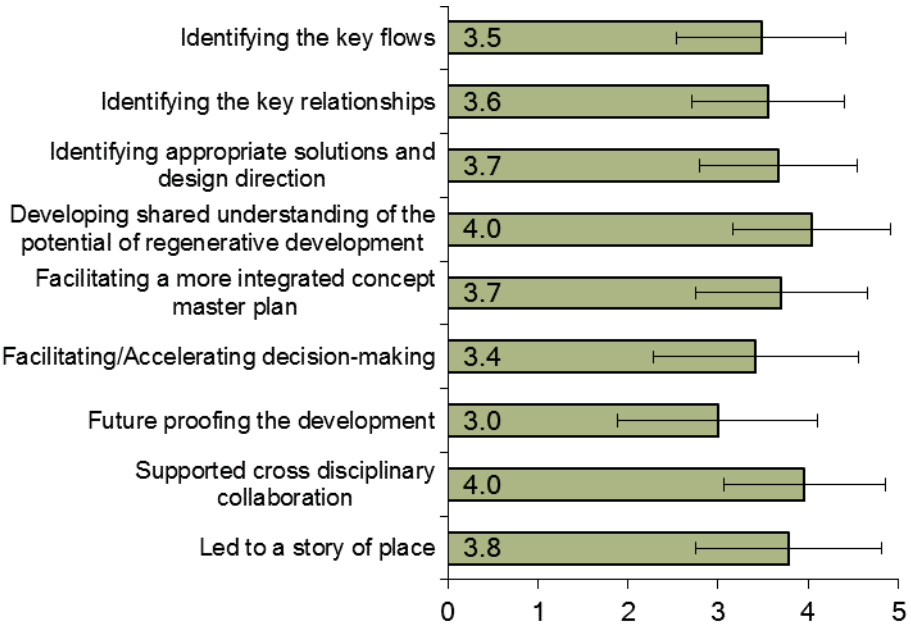

Figure 1: Answers to question 8 of the survey on a scale from 1 to 5, can you score how well you felt the following parts of the workshop, including the LENSES framework worked?

4. DISCUSSION AND CONCLUSION

Designing a community such as Seacombe West regeneratively requires systems thinking and designing with the express intention of creating benefit for those systems. The results shown above illustrate the ability of those in the project to think beyond their disciplinary silos, as it was noted by one of the stakeholders in the interviews: "The lenses process I believe is probably quite an interesting way of trying to focus people who have specific expertise … onto [common] topics, and … breaking down communication barriers…". One of the reasons this was achieved was the ability to have a shared understanding of the project. This ability to have a common story, a common purpose to a project has been shown to be critical in the success of complex projects where the aim is to produce results beyond common practice (Mang and Haggard, 2016, Hes and du Plessis, 2015).

Interestingly the survey results show that participants wanted more time, to resolve and refine ideas and create concrete opportunities. Yet for most projects the time spent on this activity would not be seen as productive. This is where looking at projects across their design, development, construction and handover is critical. The work of Reed and the 7 group (2009), has shown that integrated project design, where more emphasis is put on the initial holistic concept design, and includes all stakeholders, results in projects that are completed faster with less cost than comparative projects.

It is interesting that the participants score the LENSES framework lowest on its ability to future proof the project. This may be a reflection of the project being at such a preliminary stage and/or the low lying nature of the project and therefore uncertainty around its ability to thrive through sea level rise. It may also be related to the lack of time spent debriefing the project around next steps and how the guidelines would feed into the design, development and construction aspects. Theoretically the process the project went through should help improve the resilience of the site to future changes as an interdisciplinary body of experts was present. Further assessment of the built project is required to evaluate the effectiveness of LENSES in resulting in adaptive design outcomes.

To conclude this research shows that the LENSES framework seems to be assessed favourably by workshop participants and that it strongly supports interdisciplinary systems thinking. Whether this project will indeed lead to increased vitality, viability and ability to adapt will need to be seen over time. The results of the design stage and the comparison of the resulting master plan to that of the original master plan of 2003, discussed in a previous paper suggest that the potential is there (Hes, Stephan, Moosavi, 2016; Plaut et al. 2016) and highlighted by stakeholder comments such as: "So it [LENSES] really helps us look at not only just the building of the development, but all the other aspects such as the environment and the social outcomes and how the whole development will operate into the future. And so it gives a much deeper and fuller understanding of the project".

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APPENDIX A: Online survey questions

This appendix presents the questions of the online survey. A description of the three Likert-scales used is given first in Table A.1.

Likert Scale 5		Likert Scale 7a		Likert Scale 7b	
1.	Not at all	1.	Waste of time	1.	Totally confused
2.	A little	2.	None	2.	A little confused
3.	Fairly	3.	A little	3.	Barely
4.	Significantly	4.	Some interest	4.	A little
5.	Very much	5.	Useful	5.	Enough
		6.	Essential	6.	A lot
		7.	This changes everything	7.	Everything I need to know

Table A.1: Likert scales used in the online survey

The questions are given below in bold and the answer format between hyphens afterwards. Not that LS refers to Likert Scale and FA refers to Free Answer.

- What is your role? (select from: Architect, Engineer, Scientist, Commnunity Member, Indigenous Representative, Government Member, Other (specify)
- Which workshops did you participate in? (select one or more from workshops 2-4)
- How much value do you feel YOU gained personally from attending this/these workshop(s)? (LS 7a)
- What did you gain from attending? (Free answer)
- How much value do you feel the PROJECT gained from this/these workshop(s)? (LS 7a)
- How well do you think you understand regenerative development? (LS 7b)
- In your own words what do you think regenerative development is? (FA)
- On a scale from 1 to 5, can you score how well you felt the following parts of the workshop, including the LENSES framework worked? (LS 5)
  - Identifying the key flows
  - Identifying the key relationships
  - Identifying appropriate solutions and design directions
  - Developing shared understanding of the potential of regenerative development
  - Facilitating a more integrated concept master plan
  - Facilitating/Accelerating decision-making
  - Future proofing the development

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  - Supported cross disciplinary collaboration
  - Led to a story of place
- What do you feel were the key benefits to using the LENSES Process? (FA)
- What do you feel were the key areas for improvement in using the workshop, including the LENSES Process? (FA)

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