SUSTAINABLE PATHWAYS II

Auckland Region Mediated Modelling

Pre-report supporting Action Research and Integrated Assessment

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TABLE OF CONTENTS

Figures

Tables

1. INTRODUCTION

The Sustainable Pathways 2 (SP2) project (MAUX0906) is funded by the New Zealand Ministry for Science and Innovation (MSI). It is a six-year, NZ$3.9m action research programme (2009 – 2015). The project aims to develop processes and tools to support dynamic, integrated, spatially explicit, strategic decision-making.

This report is a pre-assessment for Objective 1 of the SP2 project. It covers an analysis of the situation prior to the Mediated Modelling (MM) workshops in the Auckland Region and was developed during the preparation phase. The pre- and post assessments include participant questionnaire which are part of the action research component of the project and provide a way to promote a more reflective evaluation of the MM process. It is envisioned that national and international advisors will provide independent evaluations of the SP2 project based on the pre- and post assessments. The post-assessment is anticipated to be completed in April 2012.

1.1 SPATIAL PLANNING AS THE EMERGING PARADIGM IN NEW ZEALAND

The Local Government (Auckland Council) Amendment Act 2010 requires Auckland to produce a Spatial Plan. The requirement indicates a conceptual move from the effects-based planning of the Resource Management Act (RMA) towards an integrated form of planning. "The purpose of the spatial plan is to contribute to Auckland's social, economic, environmental, and cultural well-being through a comprehensive and effective long-term (20- to 30-year) strategy for Auckland's growth and development" (Part 6, 79(2)) Local Government (Auckland Council) Amendment Act 2010 (Part 6). Spatial Planning is used extensively in other developed countries to prepare for rapid change, population growth and urban development.

1.2 SYSTEMS DYNAMICS AND INTEGRATED DECISION-MAKING

The four well-beings have interrelationships that influence and impact each other, with significant time-lags, and with feedback loops that may produce unintended or unexpected outcomes. Understanding these 'dynamics' within and among systems is an important part of making effective integrated strategic decisions. A wide range of stakeholders in the public, private and NGO sectors are involved in delivering economic, social, cultural and environmental

outcomes. The decision-making processes for each are shaped by legislative and regulatory frameworks, institutional settings, and even organisational cultures. This poses significant challenges for developing an integrated strategic plan that involves multiple stakeholders. The SP2 project aims to research the inter-linkages between the 4 aspects of well-being and how they change over time. Therefore, we proposed to use systems thinking and system dynamics to push the boundary of this research.

1.3 THE SUSTAINABLE PATHWAYS 2 (SP2) PROJECT (WWW.SP2.ORG.NZ)

The SP2 project focuses on developing processes and tools to support integrated, spatially explicit, strategic decision-making. It is currently listed as a key tool in the Auckland spatial planning process (Clelland, 2009). A key output of SP2 will be the development of Spatial Decision Support System (SDSS) for Auckland and Wellington. This is a data intensive computer simulation model, used to develop future scenarios and show the spatial impacts on land and resources. Such a model has already been developed for Environment Waikato, as part of the Creating Futures project (www.creatingfutures.org.nz) and provides visual outputs for future scenarios. SP2 has three objectives which are interdependent: (1) Mediated Modelling – which refers to model building WITH stakeholders rather than FOR stakeholders. This participatory form of model building results in a non-spatial system dynamics model emphasizing the linkages between the 4 aspects of well-being. (2) A Spatially Dynamic Support System (SDSS) – which is a data intense form of spatially explicit modelling interlinking multiple models and databases. (3) Council involvement to ensure the developing tools are both usable and used.

1.4 MEDIATED MODELLING

The Mediated Modelling (MM) component of SP2 will provide a process for multiple stakeholders to combine their expertise, experience, and even intuition to inform the development of SDSS models in Auckland and Wellington. In the MM workshops representative stakeholders are brought together for several workshops to interactively build a conceptual model for a particular topic. This is a scoping model aimed at understanding the interlinkages between the 4 aspects of well-being as well as developing an understanding of how

stakeholders think aspects of well-being can be measured and monitored. Stakeholders identify and build their understanding and mutual appreciation of the key model attributes (such as population density and relevant characteristics of land use changes) and the dynamic interaction between these variables. The model with linkages and feedbacks can then be run over-time to illustrate and explore long-term intended and unintended consequences of decisions. The participatory process, and the collaborative learning that takes place, are intended to facilitate buy-in for the development of and guide the more complex and data-intensive SDSS models and support a stakeholder dialogue toward identifying and understanding solutions that make a long term difference. MM is a tool that offers a consensus building process in a short timeframe, and a transparent way to identify strategic opportunities and constraints (van den Belt, 2004). The MM methodology is highlighted as an integrative tool by the European Union Water Framework Directive (http://ec.europa.eu/environment/water/water-framework/index_en.html) and by the US Environmental Protection Agency (http://www.epa.gov).

1.5 National Advisory Group

As part of the SP2 project a National Advisory Group for Integrated Planning (NAGIP) has been established to provide input and guidance for the development of models to support integrated planning in New Zealand. NAGIP aims to achieve coordination and consistency in tools and approaches, build capability and capacity, as well as coordinate and disseminate information about modelling tools. The advisory group role is also to keep the SP2 project in step with changes to resource management regulations and processes. These changes are required to meet future needs and enable New Zealand cities to be internationally competitive (Ministry for the Environment, 2010). Spatial planning holds opportunities for other cities, towns and regions in New Zealand and the SP2 programme aims to deliver a blueprint describing the support tool development. A sub-set of the NAGIP will be requested to evaluate and critique the MM process based on pre- and post assessments. The NAGIP meets twice a year and presentations, minutes and other information can be found on the SP2 website (www.sp2.org.nz).

1.6 NEXT STEPS AUCKLAND

Three workshops are planned for Auckland (8 September 2011, 24 November 2011 and 15 March 2012) with the option to expand to a full MM process (10 workshops), if participants value the MM process. Stakeholders from a range of organizations are involved (see participant list appendix 1). Participants during the workshops will: (i) jointly create a computer-based simulation model to scope for broad inter-linkages between social, cultural, economic and environment considerations, (ii) determine how interlinkages change the overall system over time, and (iii) identify strategic opportunities and constraints for the region's future development (see appendix 5 project information). The specific topic of interest was derived from the interviews before the workshops and can be characterized in short as "Population Growth". The topic will be expanded on by the participants during the MM workshops. It is anticipated that organisations involved will benefit from participating through learning, understanding, integration, developing systems and long term thinking, and exposure to a new integrative process. SP2 through MSI funding provides international and national expertise in a process new to New Zealand. MM provides a tool to effectively utilize Auckland stakeholder expertise to identify strategic opportunities and constraints in Spatial Planning. The extent to which the MM process adds value and how, is part of the SP2 research objective.

2. COMPONENTS OF ACTION RESEARCH: CONTEXT, CONTENT AND PROCESS

2.1 CONTEXT

The context, in which the mediated modelling workshops operate, is analyzed and documented from a governance perspective; what laws, rules, drivers, changes, issues of scale, history and political/strategic decision-makers/players are at work? A contextual assessment ideally relates elements of built, natural, human and social capital relevant to the specific topic of choice and makes issues and choices for process and scale transparent.

2.2 CONTEXT ANALYSIS REPORT FOR AUCKLAND REGION

The context within which the SP2 project will be operating over the next year in Auckland is dynamic and evolving rapidly. The following contextual information has been assembled from

various strategy and discussion documents, in circulation over the preceding months. The current period is particularly characterised by an evolving operational environment. Section 2.2.1 briefly describes the process behind the establishment of the Auckland Council. Section 2.2.2 describes the setup of governance in Auckland, including the governing body, local boards and council controlled organisations. Section 2.2.3 focuses on the Auckland (Spatial) Plan, providing information on the scope and timeline of its development.

2.2.1 ESTABLISHING THE AUCKLAND COUNCIL

In March 2009, the Royal Commission on Auckland governance delivered recommendations after a two year inquiry into the functionality of local government arrangements in Auckland. In April 2009, the Government responded to the report and agreed with the recommendation that there should be bold changes to streamline governance. Seven existing city and district councils and the Auckland Regional Council were disestablished and replaced with a new unitary council, the Auckland Council.[1].

On the 1st November 2010, the Auckland region integrated core local government functions across different localities into one organisation. The seven territorial authorities (Rodney District Council, North Shore City Council, Auckland City Council, Waitakere City Council, Manukau City Council, Papakura District Council and Franklin District Council) and one regional council (Auckland Regional Council) were dissolved and replaced by the Auckland Council. An interim body, the Auckland Transition Agency (ATA), established in 2009 and tasked with organising and managing the processes required to establish the Auckland Council, was disestablished on November 1st 2010.

Of significance for the SP2 project, is the explicit requirement of a 'Spatial Plan' in the Local Government (Auckland Council) Amendment Act 2010. The Act states that the Auckland Council must prepare and adopt a spatial plan for Auckland, with its purpose to contribute to Auckland's social, economic, environmental and cultural well-being through a comprehensive

[1] Auckland Council was established by the following three interlinked Acts of parliament: the Local Government (Tamaki Makaurau Reorganisation) Act 2009, the Local Government (Auckland Council) Act 2009 and the Local Government (Auckland Transitional Provisions) Act 2010.

and effective long-term (20 to 30 year) strategy for Auckland's growth and development. The spatial plan has since been termed the Auckland (Spatial) Plan. The components of this plan are discussed at greater length in the next section.

2.2.2 The Auckland Council Structure

The Auckland governance legislation provided the structure, powers and roles for Auckland Council. It defined the decision-making structures that will determine how policy and planning decisions are made and implemented (see Figure 1). The key elements of the new governance arrangements are:

- Establishment of one unitary authority the Auckland Council, with the powers of both a territorial authority and a regional council,
- A two tier governance structure with a governing body and local boards[2],
- One Mayor for Auckland with enhanced governance powers, and elected at large by the region's residents and ratepayers,
- Creation of seven new Council Controlled Organisations,
- Provisions towards a statutory board to represent the interests of Māori, with specific recognition of the rights of the mana whenua of Auckland. This board has since been given voting rights on relevant council committees.

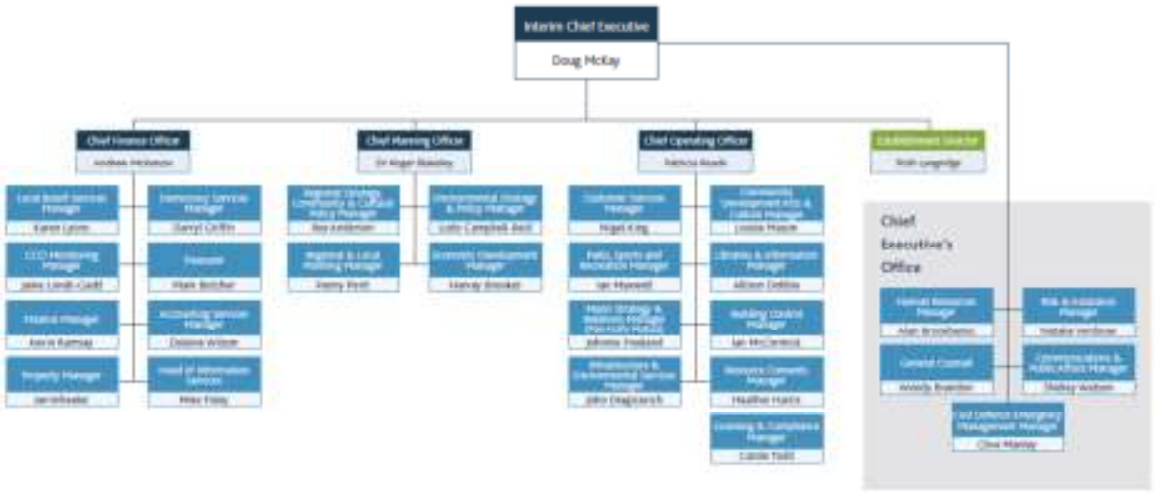
FIGURE 1: **THE AUCKLAND COUNCIL STRUCTURE**

[2] The Local Government Commission announced on 11th March 2010 the structure for governance in the Auckland region, comprising of thirteen wards (electing 20 councillors) and twenty one local boards (electing 149 Board members). At the local body elections in October 2010, twenty councilors' and a mayor for the new Auckland Council were elected.

2.2.3 THE GOVERNING BODY

The structure of the governing body, as developed by the Auckland Transition Agency, is split into three major organisational groupings, operations (including the delivery of customer and community services), strategy and planning (covering all aspects of council regional and local planning), and finance (including support functions and local board services). The Chief Executive holds a two year contract, as does the establishment director. The structure of the governing body is shown in figure 2.

FIGURE 2: **GOVERNING BODY STRUCTURE**



2.2.4 COUNCIL CONTROLLED ORGANISATIONS

Council-controlled organisations (CCOs) deliver a wide range of services and manage some facilities on Auckland Council's behalf. CCOs are organisations, trusts or companies in which a council controls 50 per cent or more of the votes or has the right to appoint 50 per cent (or more) of directors or trustees. The CCOs are independent of the council's operations and, in the case of companies, are set up under company law and have their own boards of directors. However, they are accountable to Auckland Council in that the governing body must agree to a statement of intent (SOI) with each of the CCOs, which includes relevant performance measures. The

CCOs will also have a role in helping achieve the objectives in the council's long-term plan and other strategic plans, including the Auckland (Spatial) plan.

Auckland Council has seven associated council controlled organizations. These are listed below:

- Auckland tourism, events and economic development
- Auckland Transport
- Waterfront Development Agency
- Regional Facilities
- Watercare Services
- Auckland Council Property Limited
- Auckland Council Investments Limited

2.2.5 Wards and Local Boards

Auckland has 13 wards with 21 local boards, comprising 149 local board members. Local boards have a significant and wide-ranging role; they make decisions on local matters, provide local leadership and build strong local communities. The local boards provide local input into region-wide strategies and plans including those of the council-controlled organisations (CCOs). The planning process for the local boards involves a triennial local board plan and an annually agreed local board agreement. The annual agreement specifies the funding arrangement between the local board and the governing body. The makeup of wards and local boards is shown in Figure 3.

FIGURE 3: **WARD AND LOCAL BOARD BOUNDARIES**

2.2.6 TOWARD THE AUCKLAND (SPATIAL) PLAN

The Auckland (Spatial) Plan has been designed to overcome previous shortfalls in the planning framework, which were characterized by an inability to make big decisions, an inability to implement and deliver on plans, and difficulty in achieving integration.

The Auckland (Spatial) Plan will guide the future growth and development of the new Auckland region over 30 years and help achieve the Mayor's vision of Auckland as the world's most liveable city. Auckland is expected to grow from 1.4 million today to 2.2 million people by

2051. Auckland's planning process is therefore one of describing how to accommodate future growth. The Auckland Plan will have a major influence on how and where people live and work in Auckland in the future, aimed at improving the economic and social well being of people and enhancing their quality of life. It will guide important decisions on issues that affect people every day like housing availability, job opportunities and transport connections across the city which enable people to travel to work, access services and visit family and friends. The Auckland Plan presents an unprecedented opportunity to simplify the planning system to enable integrated and cost effective decision making by the Auckland Council, central government, other agencies and the private sector. It is expected that SP2 will input into this planning process following its completion.

The Auckland (Spatial) Plan presents an opportunity to integrate the planning process to include the four well-beings (economic, social, cultural, environmental). Spatial planning has had a renaissance in many cities (London, New York City, Paris and Hong Kong). The approach to spatial planning differs markedly in each city, reflecting the institutional diversity and specific cultural context. In general, plans typically take three to five years to develop, and often require significant effort to reach bi-partisan agreement. This ensures plans extend beyond electoral cycles. However, the timeline for the development of the Auckland (Spatial) Plan is considerably less than in other places, with little over a year to complete the plan from start to finish. The process of conceptualising and designing the spatial plan is currently underway in Auckland. The first stage of the development of the Auckland Plan focused on gathering evidence about the current and future state of Auckland in order to inform initial Auckland Plan proposals. Auckland Unleashed was released in March 2011 for this purpose. Auckland Council has compiled the feedback on this document and used it to write the first draft of the Auckland Plan, which was completed in July 2011. A further draft of the Auckland Plan will be released for a formal public consultation process in August 2011 (as required by the Local Government (Auckland Council) Act). During this time, the people of Auckland will be able to make submissions on the Auckland Plan and present their views at a hearing.

It is expected that the Auckland (Spatial) Plan will be finalised by December 2011. The design of the Auckland (Spatial) Plan is being led by the Chief Planning Officer (Roger Blakely) and the Regional Strategy, Community & Cultural Manager (Ree Anderson).

2.2.7 AUCKLAND (SPATIAL) PLAN DIMENSIONS

The Local Government (Auckland Council) Amendment Act 2010, details the development of the Auckland Spatial Plan. The intention is to have a well articulated strategic direction set out for the Auckland Council. Contents of Part 6 of the Local Government (Auckland Council) Amendment Act 2010, as they pertain to the spatial plan, are set out in box 1.

The functions of the Auckland (Spatial) Plan, as outlined in the Local Government (Auckland Law Reform) Bill are:[3]

1. Set out the long-term (20–30 year) strategic direction (including broad objectives) for Auckland and its communities.
2. State policies, priorities, programmes, and land allocations that will implement the strategic direction and to specify resources that will be provided to implement the strategic direction.
3. Set out Auckland's role in New Zealand.
4. Visually illustrate how Auckland may develop in the future, including how growth may be sequenced and how infrastructure may be provided.
5. Provide an evidential base to support decision-making for Auckland, including evidence of trends, opportunities, and constraints in Auckland.
6. Set out a development strategy on how to achieve broad policy objectives for land use, transport, other infrastructure, and environmental management in Auckland.
7. Identify the existing, and guide the future, location of critical infrastructure services and any associated investment in Auckland (for example, open space, transport, and water supply and wastewater services).
8. Identify the existing, and guide the future, location and mix of residential, business, and industrial activities within specific geographic areas in Auckland.
9. Identify significant ecological areas in Auckland that should be protected from development.
10. Give direction to, and align, implementation plans, regulatory plans, and funding plans of the Auckland Council.

[3] Auckland Regional Council (2010) New Auckland Planning Framework Background Briefing Paper. Auckland Regional Council. Strategy Development Team: Regional Strategy. February 2010

11. Integrate otherwise competing policy goals and provide opportunities for coherent and combined decision making about investment and regulation in Auckland.
12. Act as an information and co-ordination mechanism enabling the Auckland Council (as the spatial planning agency) and parties that provide services, infrastructure, and other investment to discuss, and agree on, the timing and outcome of providing those things and the location of the things.

Box 1. Excerpt from Local Government (Auckland Council) Amendment Act 2010

Part 6 Spatial planning for Auckland

(79) Spatial plan for Auckland

(1) The Auckland Council must prepare and adopt a spatial plan for Auckland.

(2) The purpose of the spatial plan is to contribute to Auckland's social, economic, environmental, and cultural well-being through a comprehensive and effective long-term (20- to 30-year) strategy for Auckland's growth and development.

(3) For the purposes of subsection (2), the spatial plan will—

(a) set a strategic direction for Auckland and its communities that integrates social, economic, environmental, and cultural objectives; and

(b) outline a high-level development strategy that will achieve that direction and those objectives; and

(c) enable coherent and co-ordinated decision making by the Auckland Council (as the spatial planning agency) and other parties to determine the future location and timing of critical infrastructure, services, and investment within Auckland in accordance with the strategy; and

(d) provide a basis for aligning the implementation plans, regulatory plans, and funding programmes of the Auckland Council.

(4) The spatial plan must—

(a) recognise and describe Auckland's role in New Zealand; and

(b) visually illustrate how Auckland may develop in the future, including how growth may be sequenced and how infrastructure may be provided; and

(c) provide an evidential base to support decision making for Auckland, including evidence of trends, opportunities, and constraints within Auckland; and

(d) identify the existing and future location and mix of "(i) residential, business, rural production, and industrial activities within specific geographic areas within Auckland; and

(ii) critical infrastructure, services, and investment within Auckland (including, for example, services relating to cultural and social infrastructure, transport, open space, water supply, wastewater, and stormwater, and services managed by network utility operators); and

(e) identify nationally and regionally significant—

(i) recreational areas and open-space areas within Auckland; and

(ii) ecological areas within Auckland that should be protected from development; and

(iii) environmental constraints on development within Auckland (for example, flood-prone or unstable land); and

(iv) landscapes, areas of historic heritage value, and natural features within Auckland; and

(f) identify policies, priorities, land allocations, and programmes and investments to implement the strategic direction and specify how resources will be provided to implement the strategic direction.

80 Development, adoption, and implementation of spatial plan

(1) The Auckland Council must involve central government, infrastructure providers (including network utility operators), the communities of Auckland, the private sector, the rural sector, and other parties (as appropriate) throughout the preparation and development of the spatial plan.

(2) The Auckland Council must adopt the spatial plan in accordance with the special consultative procedure.

(3) The Auckland Council may amend the spatial plan, at any time, in accordance with subsections (1) and (2).

(4) The Auckland Council must—

(a) make the spatial plan (including any amendments) available for inspection during working hours, free of charge, at "(i) the office of the Auckland Council; and

(ii) any other places in Auckland that the Auckland Council, at its discretion, decides are appropriate; and

(b) make copies of the plan available, free of charge or for purchase at a reasonable price, from

(i) the office of the Auckland Council; and

(ii) any other places in Auckland that the Auckland Council, at its discretion, decides are appropriate; and

(c) make copies of the plan available, free of charge, on an Internet site maintained by or on behalf of the Auckland Council.

(5) The Auckland Council must endeavour to secure and maintain the support and co-

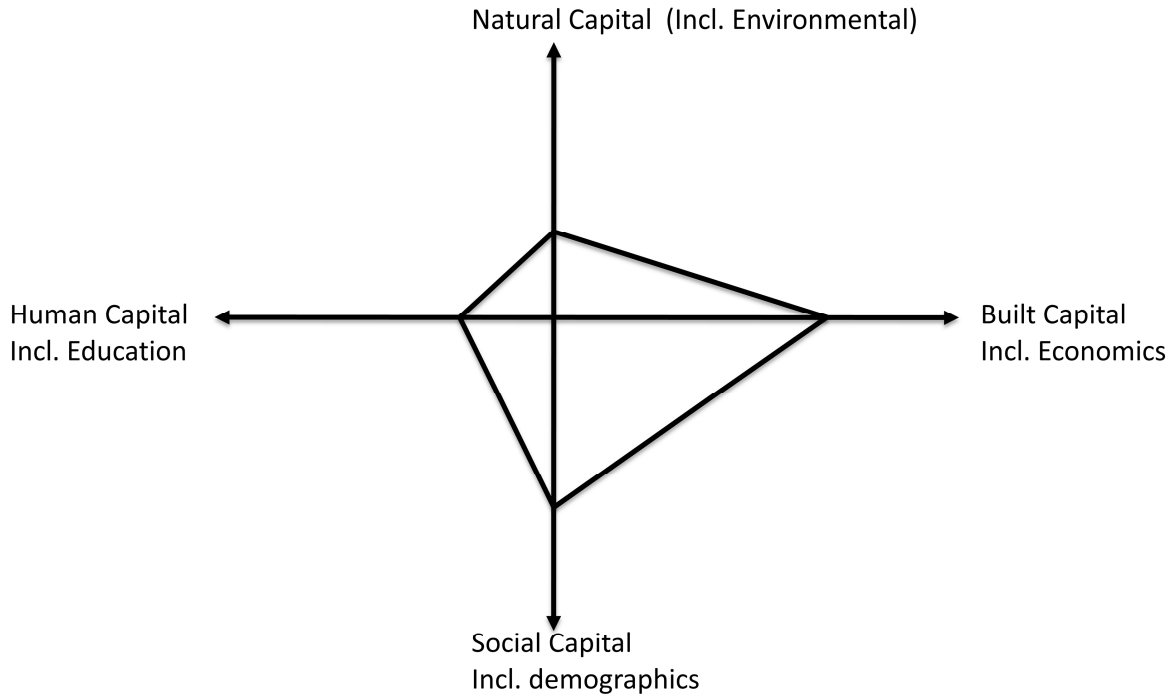
operation of central government, infrastructure providers (including network utility operators), the communities of Auckland, the private sector, the rural sector,
and other parties (as appropriate) in the implementation of the spatial plan.

2.3 CONTENT ANALYSIS

The content is analyzed from a data, information and modelling perspective; what is available, who holds the data and how easy it is to use? What is missing? Under Objective 2, relevant models and databases have been identified and considered for inclusion in the SDSS model. The project team has also evaluated available models and databases from an ecological economics perspective, i.e. whether the elements of built, natural, human and social capital relevant to the specific topic of choice or policy questions are adequately covered.

Natural capital is one of the production factors; a production factor that provides us with services, i.e. ecosystem services. Feedback loops of sink and source functions are important in this view. *Built capital* refers to infrastructure and technology. *Social capital* refers to social structures and institutions. *Human capital* gives a sense of the capability of people to deal with complex situations and changes. From an Ecological Economics (EE) perspective there is limited substitutability between the four capitals. For example, a levee is not a perfect substitute for a functioning flood plain, coastal wetland or mangrove forest. An informal reflection on the databases and models gathered to date for the Auckland Region by the SP2 project team is summarized in Figure 4. It is clearly shown that most data available relates to Built Capital and economics, followed by Social Capital and demographics. Less data was available for Natural and Human Capital. A full description of models and databases available is provided in appendix 2.

FIGURE 4: OVERVIEW OF DATA AVAILABILITY ON FOUR "CAPITALS" FROM AN EE PERSPECTIVE



See Appendix 2 for a list of database and models collated for use by the SDSS.

2.4 MEDIATED MODELLING (PROCESS)

An information document was produced to communicate the value of participation and the stakeholder analysis required for the for the MM workshops (appendix 5). The structure of the MM workshops and stakeholder analysis process were discussed at several meetings between the AC and the SP2 project team The following decisions were made:

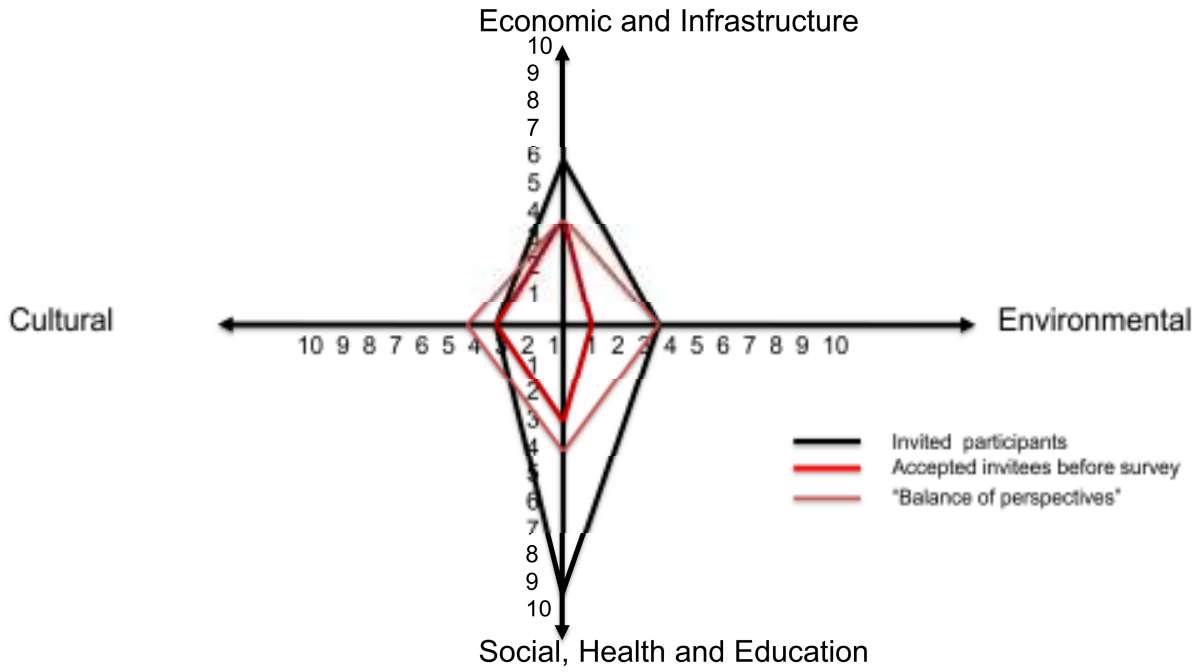
- The topic was left open (rather than being pre-determined by AC).
- AC advised to limit the number of workshops to 3 in order to give the participants a chance to find out for themselves whether the MM approach was useful for them and if so, provide the opportunity to continue. This is consistent with the MM project in Wellington.
- A letter of invitation was sent out by Dr Roger Blakely the Chief Planning Officer at the Auckland Council to 24 organisations identified as likely to be interested (appendix 4). Seventeen organizations / participants accepted and confirmed attendance (appendix 1)

- An information pamphlet on SP2 was provided (appendix 5).
- In order to keep the MM process concrete and connected to the SDSS modelling and due to the limited number of workshops, the project team decided to develop a preliminary model based on the existing linkages between Land Use, Economics and Demographics in the SDSS model. The MM process will continue to explore other linkages this participant group deems relevant.
- The project team leader declined a request from a potential participating organization to provide payment for attendance beyond travel costs.
- EERNZ followed up with a confirmation letter and questionnaire (appendix 6)

2.4.1 Stakeholder Analysis

The stakeholder selection was done by AC based on a general guideline provided by EERNZ for stakeholder selection for participatory processes (appendix 3). With no commitment to a distinct topic prior to participant interviews stakeholder selection was inspired by broadness of cover with participants sought from social, economic, environmental and cultural areas. Figure 5 shows the progression from the ideal "balanced" participant list with equal numbers from each area to the "invited participants" and the "accepted invitees".

FIGURE 5: BALANCING THE PARTICIPANT LIST

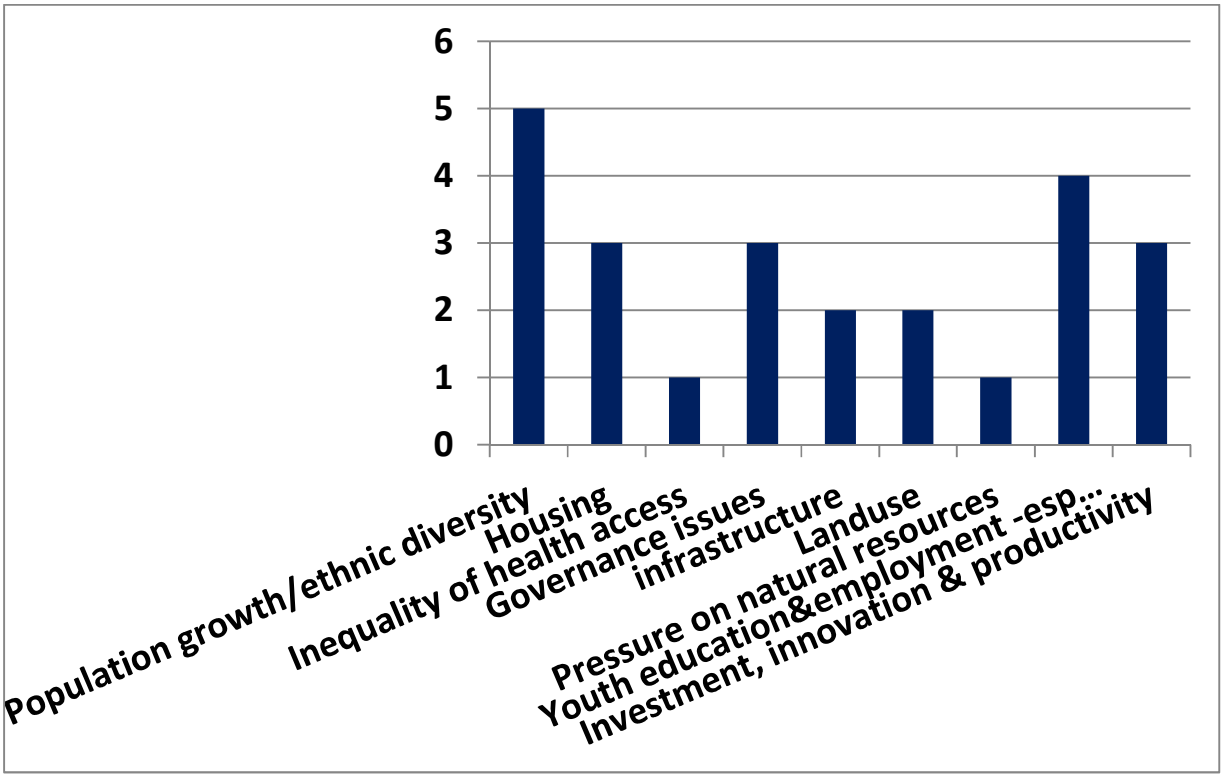


2.4.3 PARTICIPANT PRE- SURVEYS

As part of the action research all participants were interviewed and questionnaires completed prior to the first workshop. The questionnaire can be found in appendix 6. The following section presents the questionnaire results.

In answer to question 1a "What is the predominant mid to long term issue (i.e. next 10-40 years) for the Auckland Region with regard to integrating the four aspects of well-being?" participants replies are set out in figure 6.

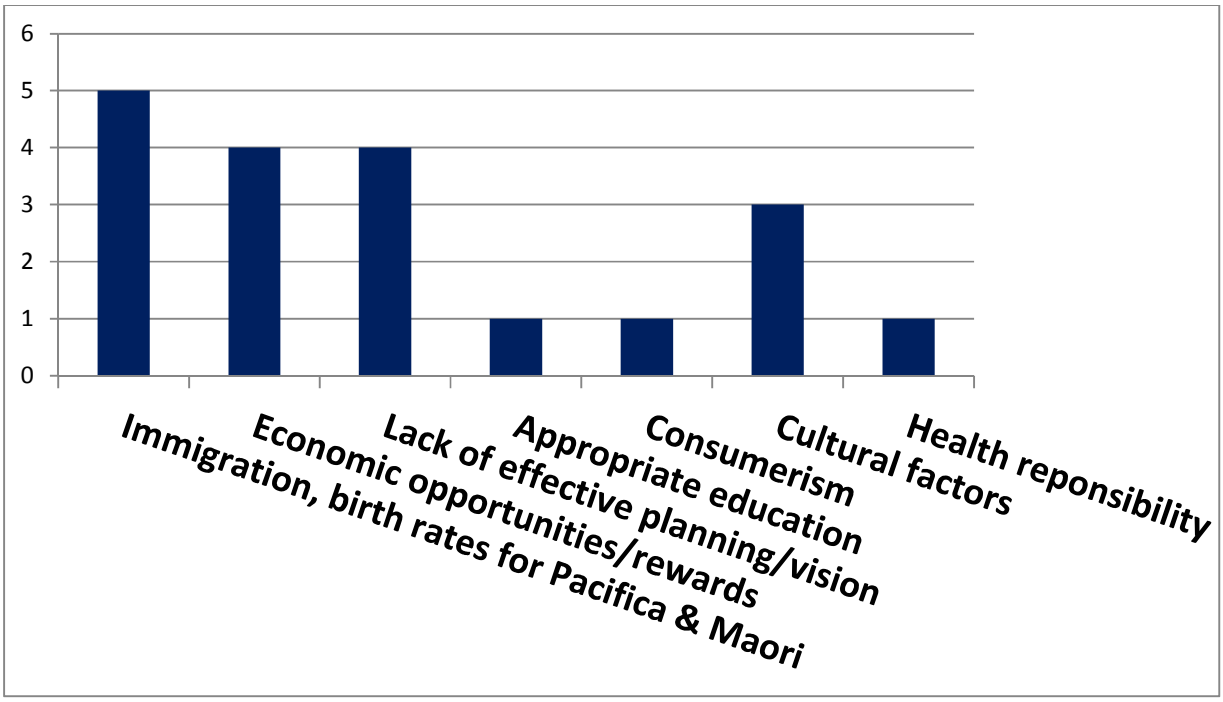
FIGURE 6: PREDOMINANT MID TO LONG TERM ISSUES FOR THE AUCKLAND REGION



The interviewer managed to extract a causal loop diagram with all of the participants.

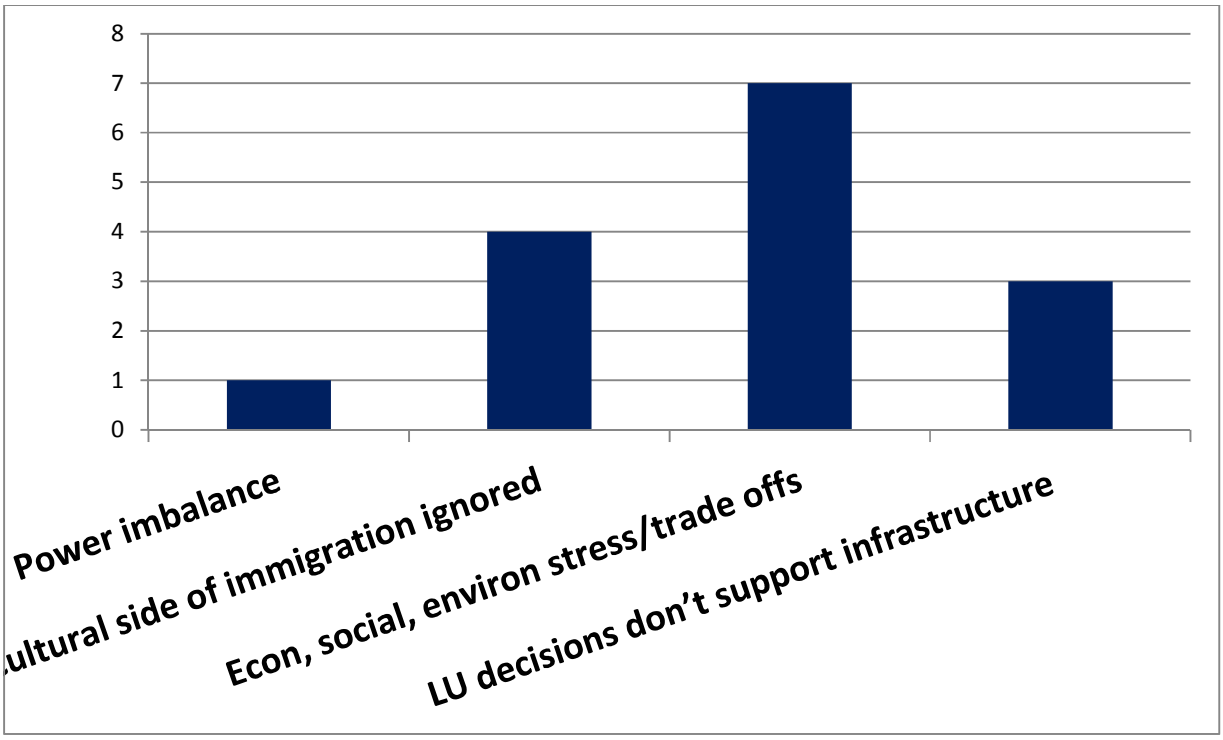
The key issues causing these “problem issue” identified are reflected in figure 7, in answer to question 1b.

FIGURE 7: KEY ISSUES CAUSING THE PROBLEM IDENTIFIED



The key implications over the next 10-40 years of the problem issues from the participants viewpoints are given in figure 8 (in answer to question 1c)

FIGURE 8:KEY IMPLICATIONS OF IDENTIFIED ISSUE



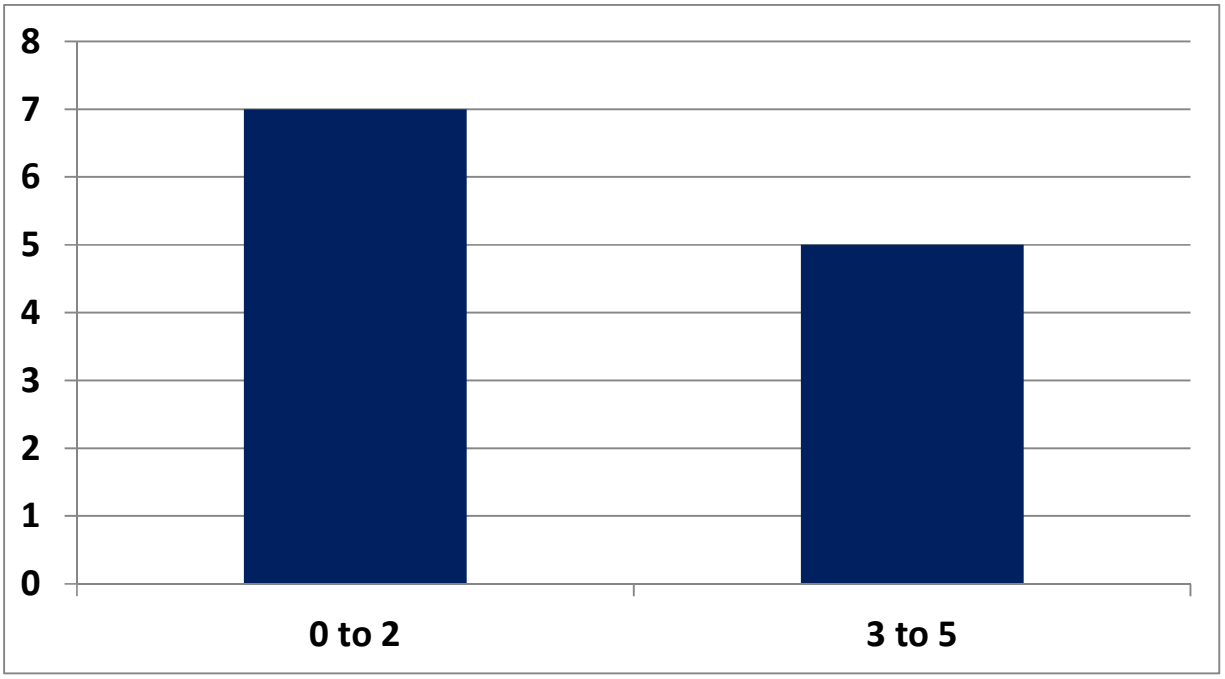
When asked for more detail, most people considered *their* issue to be neutral to bad at present (2.3). Most people considered *their* issue under Business as Usual taking into account any new initiatives proposed would by 2050 move towards neutral (2.8) and that the actions underway were not considered sufficient to make an overall improvement. Under Business as Usual excluding new initiatives most people considered *their* issue by 2050 would deteriorate to bad to very bad (1.6). It was generally felt that the wider community shared the concerns raised (2.2) and were aware of these issues (2.3) on a scale of 1-3. Interviewees felt an integrated approach "may make a positive difference" or "convinced it would make a positive difference", averaged at 4.2 on a scale of 1 to 5.

When asked about the attributes of the other participants in the MM workshops the group was on average relatively neutral with respect to:

- Inclusiveness of different perspectives = neutral (3.0)
- Ability to show leadership and implement ideas generated = low to neutral (2.8)

Ability of group to generate innovative ideas = slightly better than neutral (3.1)The neutrality was in part dictated by the fact that the group was predominantly made up of people who didn't know each other well. Seven people knew between 0-2 participants and five people knew between 3-5 participants and (Figure 9).

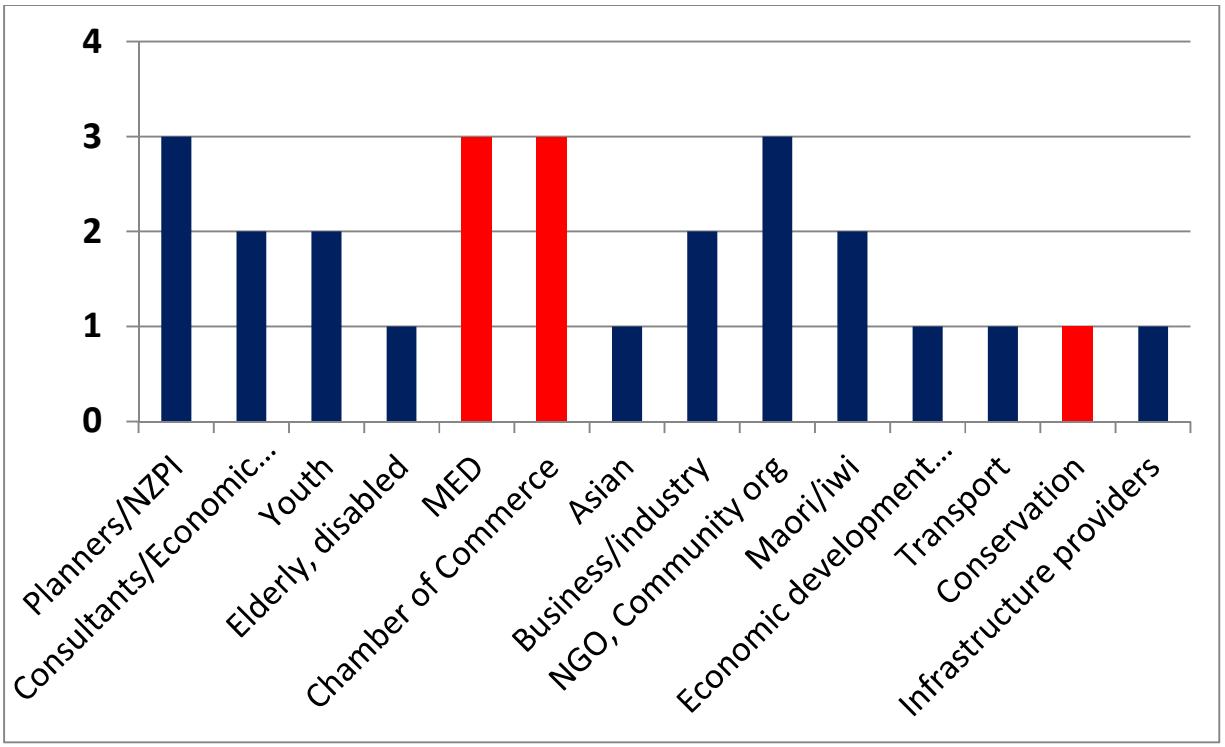
FIGURE 9:PARTICIPANTS REGULARLY INTERACTING WITH PARTICIPANTS ON THE LIST



Taking into account that not many participants know others on the participant list, the expectations for this group with regard to "Consensus on topic" was rated as neutral to good (3.2). Consensus on long term goal/visions for the Auckland Region was expected to be neutral to low (2.8). Consensus on implementation towards goals/vision for Auckland Region was also expected to be on the low side (2.5).

Participants were asked what organizations were missing from the MM workshops for a balanced perspective across the four well-beings. Those identified are shown in figure 10. Participants could mention multiple gaps.

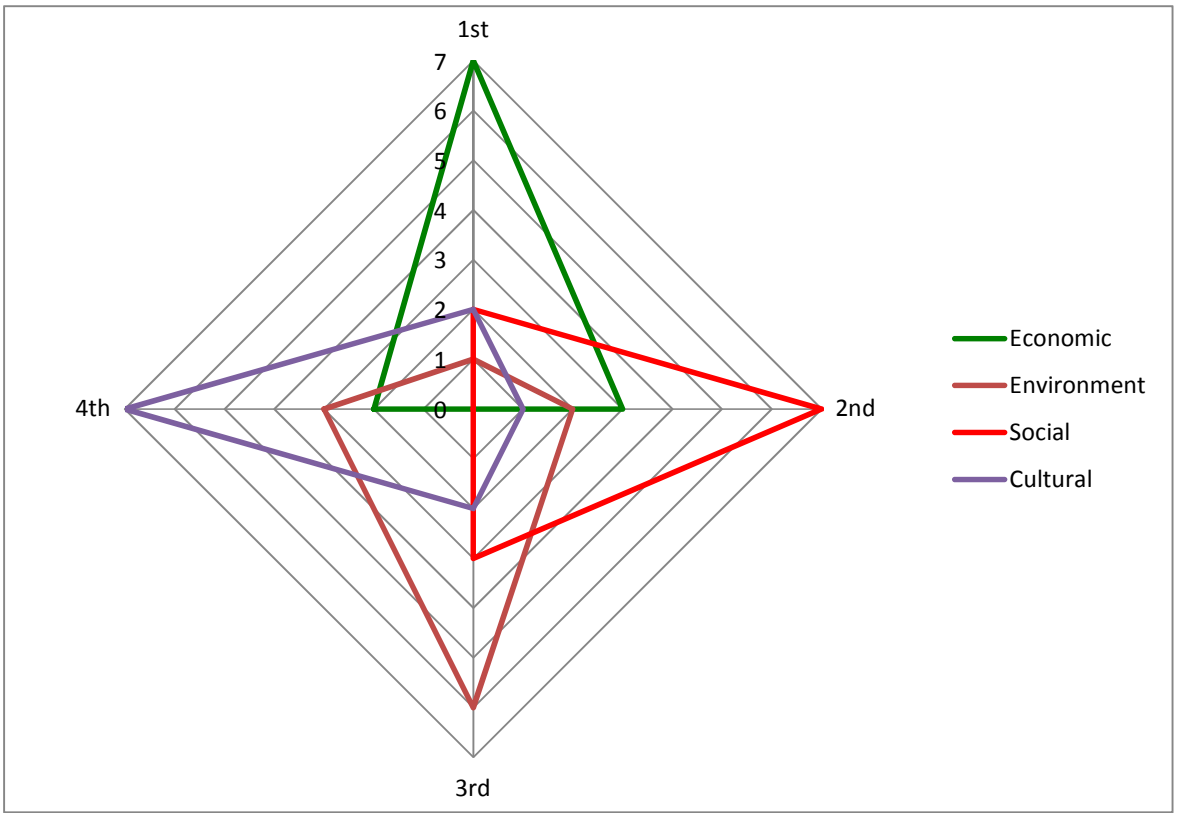
FIGURE 10:IDENTIFIED GAPS IN THE PARTICIPANT LIST



Based on the identified gaps, the project team invited the Chamber of Commerce, Ministry for Economic Development and Forest and Bird.

Figure 11 shows how participants ranked each of the 4 aspects of well-being in terms of importance to them and their organisations.

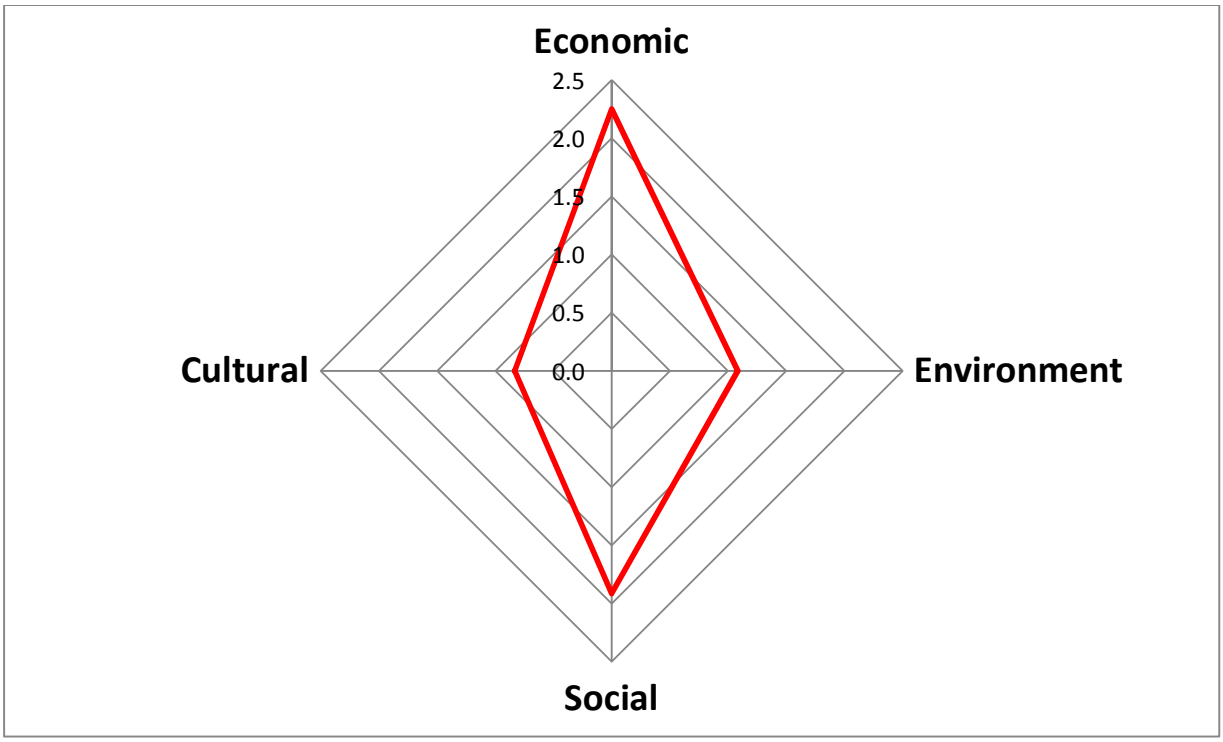
FIGURE 11:HOW PARTICIPANTS RANKED EACH OF THE 4 ASPECTS OF WELL BEING IN TERMS OF IMPORTANCE



Taking the "Economic" response as an example 7 people rated this as the most important of the well-beings, 3 placed this in second position, no one ranked it third and 2 people regarded it as the least important (fourth placed).

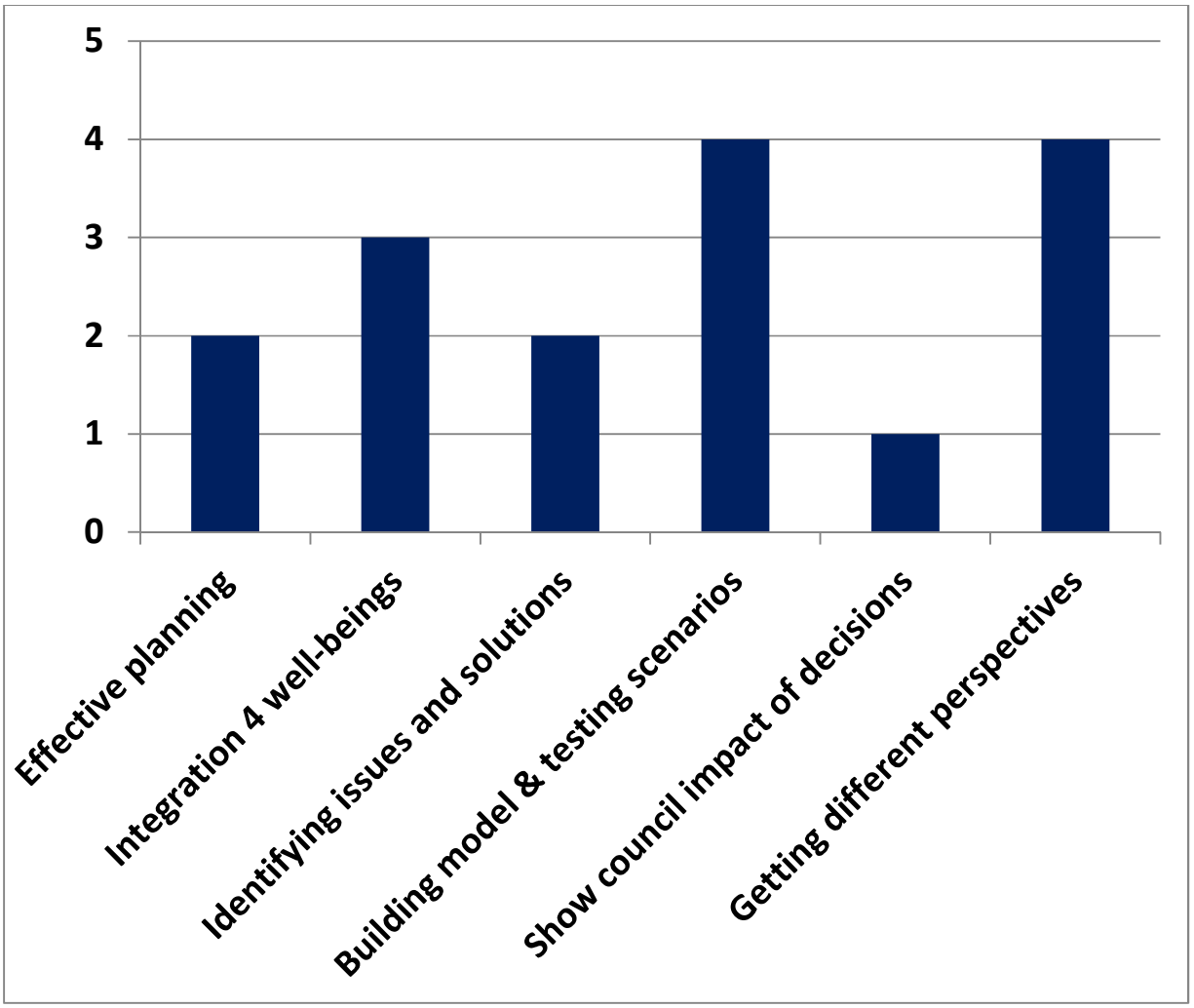
Figure 12 ranks the 4 aspects of well-being when the overall rankings were averaged for each participant. It shows a predominant economics and environment interest, followed by social aspects with cultural aspects lagging.

FIGURE 12:HOW THE 4 ASPECTS OF WELL-BEING WERE RANKED WHEN RESPONSES WERE AVERAGED FOR ALL PARTICIPANTS



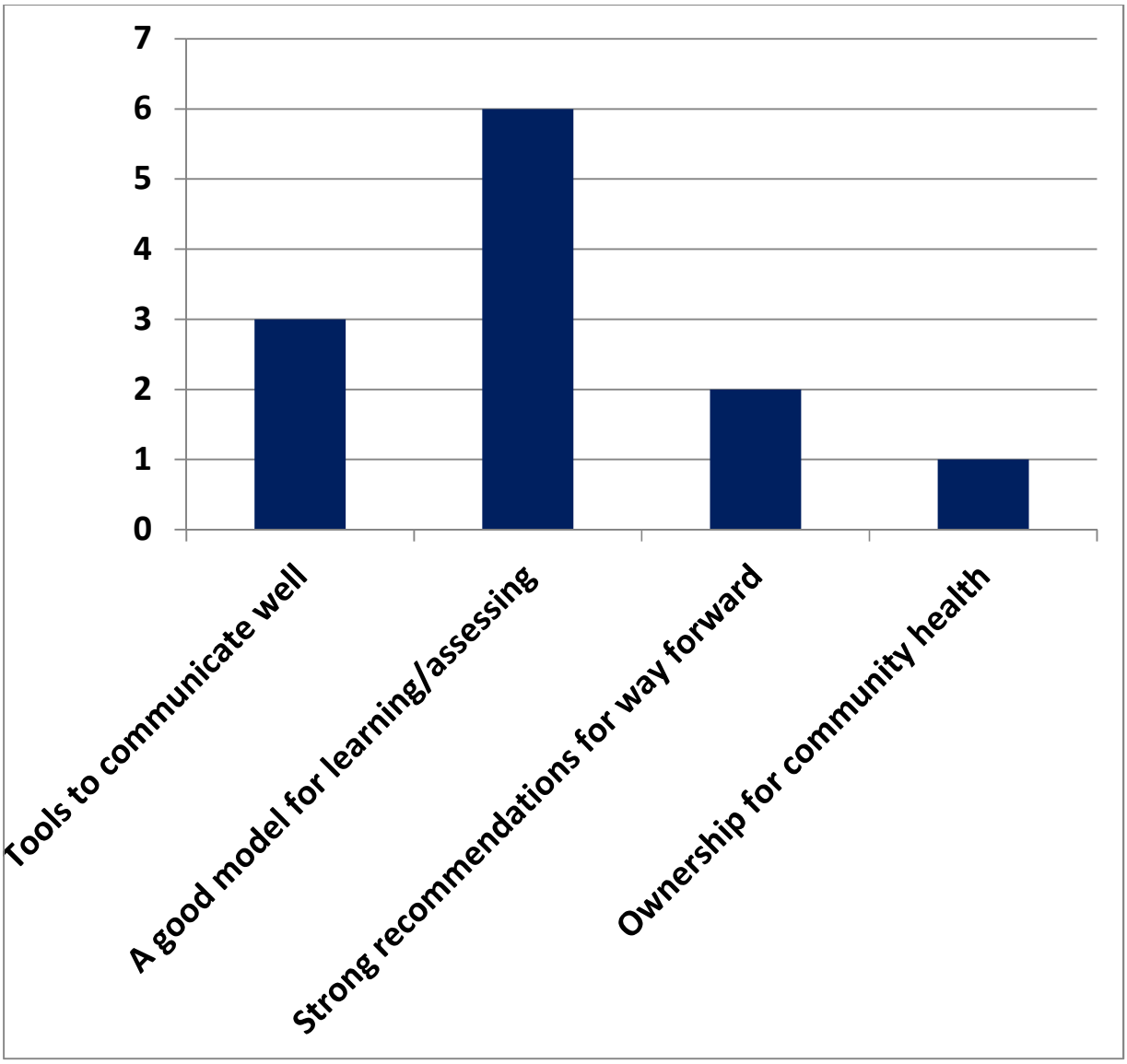
The participants were asked to reflect back what they thought the purpose of the MM workshops was (figure 13).

FIGURE 13: EXPECTED PURPOSE OF THE WORKSHOPS



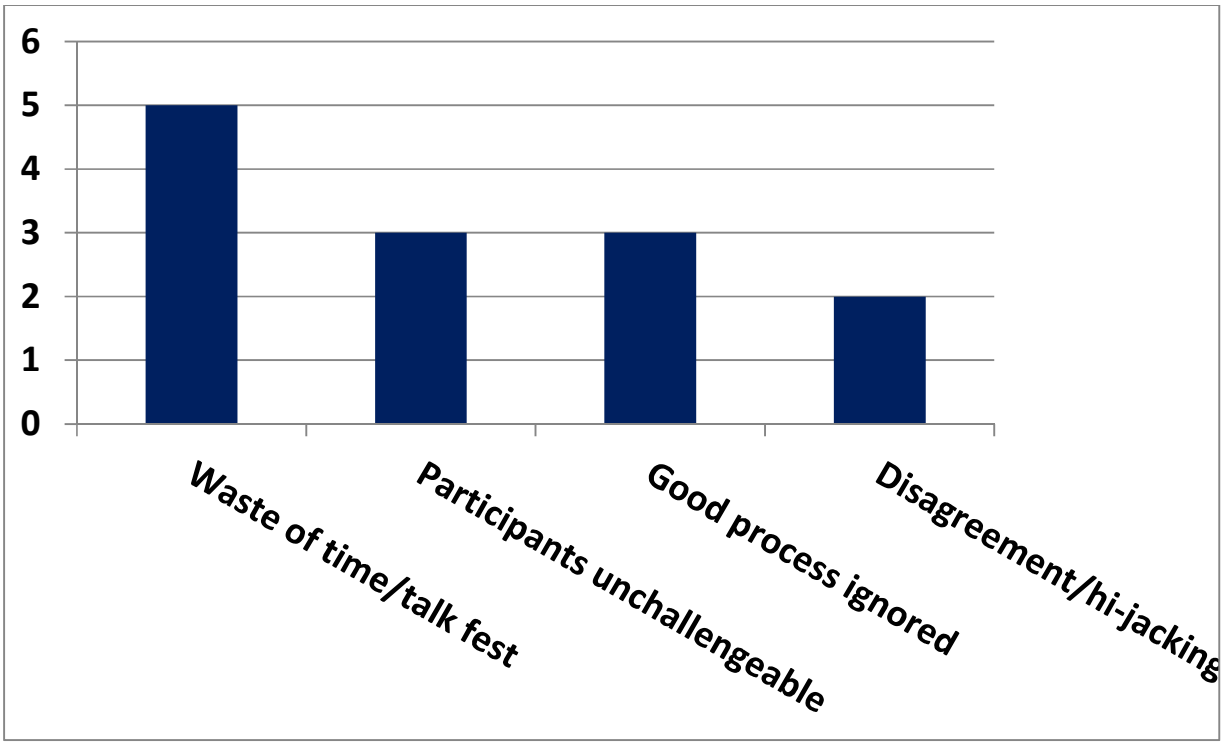
Participants were asked what would be a good outcome from the MM process for them. The responses are shown in figure 14.

FIGURE 14: DESIRED OUTCOMES FROM THE MM WORKSHOPS



Participants were also asked were also asked what the worst possible outcome of the MM workshops was for them. The responses are shown in figure 15.

FIGURE 15: WORST POSSIBLE OUTCOMES OF MM WORKSHOPS



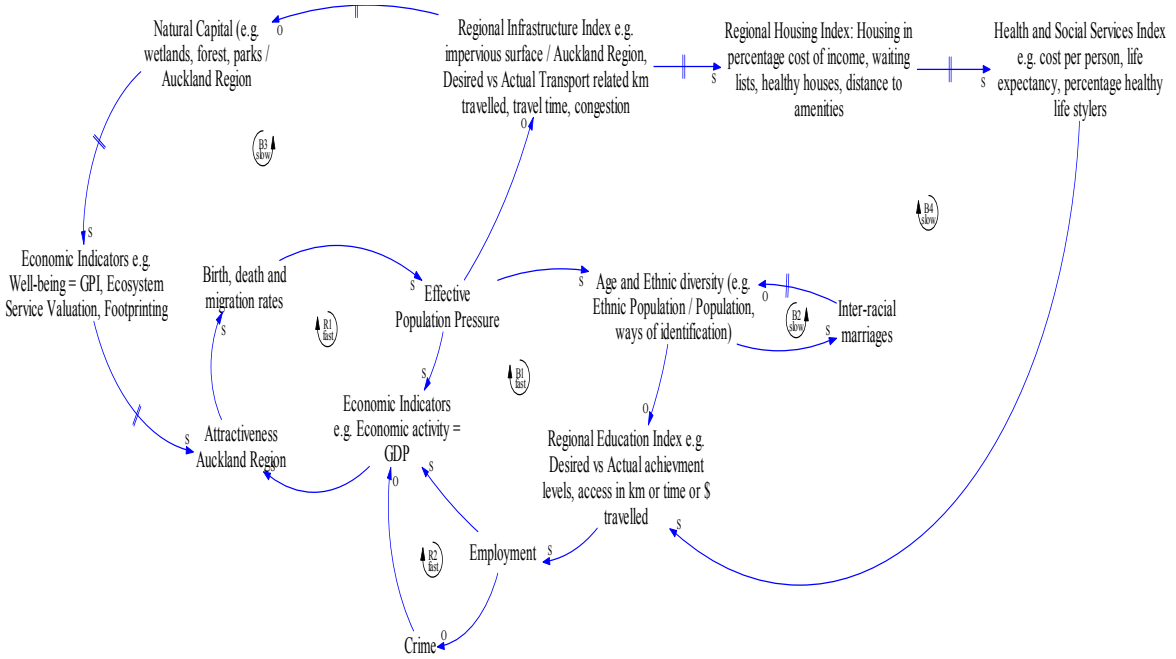
With respect to other questions asked: No one has used Stella before. Five people have previously used computer modelling tools; eight participants have not. Everyone agreed the survey outputs could be used for research purposes. Five people had visited the website; eight had not. Two people requested more information in preparation for the first workshop.

2.4.4 PRELIMINARY MODEL

A preliminary model can function as a starting point for dialogue in MM workshops. In the Auckland case, we chose to show a sub-module of the evolving MM Wellington model to illustrate the "story telling" capacity of STELLA models.

An introduction to system thinking was provided with a Causal Loop Diagram (CLD) of the Auckland Region's issues based on interviews with the participants (Figure 12).

FIGURE 16: CASUAL LOOP DIAGRAM FOR AUCKLAND REGION



2.4.5 MEDIATED MODELLING WORKSHOPS

Based on the participants that are committed (14), the limited number of workshops (3) and a critical connection with the SDSS model, we are making the assumption that the agenda for the workshops needs to be more concise than when a more free-flowing dialogue about "uncertainty and long term systemic changes" is programmed for. The agenda for the three workshops is:

Workshop 1 – 8 September 2011: Participants will learn about System Dynamics as a tool to explore integrated trends.

Workshop 2 – 24 November 2011: Participants will develop some basic scenarios to simulate the model at a scoping level and inform the SDSS spatial model.

Workshop 3 –15 March 2012: The workshops as part of a continuous loop of improving understanding of decision support tool development.

The agendas for workshops 2 and 3 may change to build on the learning in preceding workshops. This will be reflected upon in the post-documentation of this project.

2.4.6 PARTICIPANT POST-SURVEYS

The following questions have been prepare for a post-workshop questionnaire which will be developed in order to test the team's anticipated outcome and compare it with what took place.

Questions:

1. Was the model used sufficiently in supporting the dialogue (compare the perception of the participants with the perception of the mediated modeller and the workshop agenda/script)?
2. What is the significance of data availability and/or data translation?
3. Was the model the appropriate vehicle to reach the conclusions or address the concerns of the participants?
4. Did the reflection on the group's make-up change consistently?
5. Did we lose or gain participants? Are the observed gaps in the stakeholder list persistent or changing?
6. Are participants (including those who were unfamiliar with STELLA) willing and able to demonstrate the model to others?
7. Does a significant portion (>50%) of the group want to continue the MM effort?
8. Is the website serving well as a communication tool?

2.4.7 Model description and anticipated model evaluation criteria

A model description will be documented after the 3rd workshop and compared with the CLD shown in Figure 16. We anticipate the final model description will help inform the linkages workshop for the spatial modelling efforts in March 2012. Questions we aim to reflect on are:

1. Did the model progress significantly from the preliminary model to the "final" scoping model after 3 workshops?
2. What areas of the four well-beings were consistently included?
3. Did the dominant areas correspond with the areas identified in the questionnaire as priorities?
4. What linkages are strongest and weakest?

5. What was the role of data support/gathering? Is the scoping model predominantly qualitative or does it have merits as a quantitative simulation model?

Generally speaking, current practices of model assessments include validation, verification, confirmation, calibration and sensitivity analysis, among others. The model evaluation will relate to the goal the modelling effort sets out to address as well as the decision making context.

3. DISCUSSION

The following discussion aims to clarify some underlying concepts and assumptions the project team members implicitly work with. We make these explicit because our assumptions guide our hypothesis and design of the research. It is well possible that the decisions we make as a research team are influenced by our assumptions, or that participants have different assumptions, understandings and concepts on issues such as (1) Adaptive Management, (2) Normative goal of Sustainability, (3) Scale and (4) Integration. Furthermore, some questions are raised for contemplation in the anticipation that asking (and making explicit) such questions will improve the adaptive capacity of the research project.

3.1 ADAPTIVE MANAGEMENT (AM)

It is our assumption that Action Research works well in conjunction with AM. The SP2 project will follow the AM format and develop ways to assess *vision*, *integrated assessments tools*, *planning*, *implementation* and *monitoring*. An overview and framework on integrated assessment tools is available (van den Belt et al, 2009). A survey of Regional Councils was undertaken to provide a base line for the integrated assessment tools that the SP2 programme is commissioned to design and the extent to which such tools are being used; and if so why or why not (van den Belt et al, 2011). Since this approach resonated with some Regional Councils, a Directory to guide end-users towards case studies and information with regard to Integrated Decision Support tools was recently funded by Envirolink / MSI (Sept 2011 – Feb 2013).

The Post-Integrated Assessment of the MM workshops will follow as much as possible the developing framework to synthesize and evaluate its strengths and weaknesses

The framework used for the SP2 project is set out in ”Integrated Assessments and Adaptive Management” (van den Belt, 2010; van den Belt, in preparation 2011) and the outline for a book on Multi-scale Integrated Assessments for Sustainable and Adaptive Systems (van den Belt & McDonald, in preparation 2014).

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3.2 NORMATIVE GOAL OF SUSTAINABILITY

The normative goal of “sustainability” is integral to the SP2 programme. “Sustainability” is also considered the normative goal for the trans-disciplinary field of Ecological Economics. As the Ecological Economics field moves from concept to implementation, the question of “what is to be sustained” and “how tradeoffs are made from a systemic perspective” become increasingly relevant. We are moving away from a win-win assumption in the short term toward a tradeoff situation because sub-principles of sustainable development are often in conflict with each other. Is “sustainability” confused with “staying the same?” and is the concept standing up to the rigor of implementation? If not, what emerges in its place to answer the fundamental needs? See also (van den Belt, 2011). Following the “zeitgeist”, *sustainability* as a concept in the SP2 programme seems to be enhanced or perhaps replaced by *spatial planning*. At this stage, the concept of “sustainability” seems to be in flux.

3.3 SCALE

Scale will be discussed for purposes of vertical and horizontal integration and relevance for geographic, temporal, social and complexity issues. It is our assumption that scale and the manner in which scale presents itself is important to both understanding how decision making can be supported as well as how data is presented as scenarios of interrelated time series. It is our subjective assessment that participants in the Auckland case study of SP2 seem to consistently operate at regional level, rather than at local level. Therefore, a focus on regional dynamics is expected to emerge.

3.4 INTEGRATION

For SP2 the working definition of what we mean by "integration" needs to be both suited to an urban context and embedded in an awareness of ecosystems and the services they provide. At the outset of the SP2 project "integration" refers at a minimum to the three meanings articulated by Brown (2009). These are:

1. How linkages between social and ecological systems are understood and different types of knowledge brought together.
2. How different actors are brought into governance processes to address concerns. There needs to be mutual consideration of multiple factors such as ecosystem services, property rights, human well-being, laws and the organization of government, incentives for the private sector, and so on.
3. How policies and decisions are implemented at multiple scales.

There are a number of key factors that influence when integration is appropriate and likely to be successful. According to Brown et al. (2005b cited Brown 2009, 39) these are:

- "The full costs are taken into account
- Capacity exists in government and civil society institutions
- A feasible timescale to achieve objectives is possible
- There is compatibility and no obvious conflict between objectives
- The legal and institutional frameworks supporting the response are already in place
- Relevant and timely information is at hand and extensive new data and research is not necessary"

Brown (2009) goes on to make the point that successful integration is more likely to be achieved when key stakeholders drive the process and have a sense of ownership rather than when imposed by external agencies.

An integrated planning process is central to the idea of one Auckland (Spatial) Plan. However, the existence of the Auckland Plan does not guarantee integration across the planning process. Several strategies are being developed alongside the Auckland Plan including the City Centre Masterplan and the Economic Development Strategy. At the same time, each of the 21 local

boards have developed a local board plan and associated local board agreements commit Auckland Council funding. The Long Term Plan (a three year funding plan) is also being developed. While the Auckland Plan helps to provide an overall prioritization of activities and projects for the organisation, it remains critical for integration to remain a guiding principle at all levels of the organisation.

3.5 Mediated Model and the Spatial Model (SDSS)

It is perhaps noteworthy to observe that the data gathering for SDSS modelling reveals a dominancy in data availability on Built (including economic) and Social capital. The pre-workshop questionnaire showed participant's interests score high on economics but very close or equally important seems to be the environmental component (Natural capital), followed by Social capital (see Figure 4). A relevant question is does this have consequences for the way the connection for the participants is made between MM and SDSS?

3.6 Mediated Modelling as a Neutral Space

The MM workshops provide the opportunity to combine different perspectives and interests in a model that will ideally be used by all the workshop participants.

Questions the research team would like to answer include:

- How useful is it to capture the dialogue in a model for the different organisations that participate? This question links to Objective 3.
- As a tool could MM be used in the organisations the participants represent?
- Is the model produced for the Auckland region "transferable" or would another model need to be built?

4. Conclusion

This report is a pre-assessment outlining the context in which the MM project operates. It also documents the data content that has been gathered and available pre-workshops. The preparation of the MM process is described, including the pre-survey, preliminary model building and collaboration with AC to select and invite the participants. The discussion lays out some assumptions the project team holds. As part of the pre-assessment, we aim to be transparent about the choices we have made in the design of the MM process in order to allow a more in-

depth reflection after the MM workshops. The overall purpose is to enhance the team's ability to supply a blue print for development and dissemination of spatial and dynamic decision support tools to regions beyond Auckland (and Wellington) based on a rich, well-documented research process, which we believe enhances the research outcome.

APPENDIX 1 WORKSHOP PARTICIPANT LIST

Confirmed Participant list for Mediated Modelling Auckland

	Organization	**Participant**
1.	NZCID	Hamish Glenn
2.	Auckland International Airport	Peter Alexander
3.	Auckland Transport	John Davies
4.	Ministry of Transport	Hamish Bunn
5.	Auckland Council, Economic Development	Geoff Cooper
6.	Ministry of Education	John Karl Maria Wood
7.	City of Manukau Education Trust	Bernadine Vester
8.	Auckland Council, Environment	Megan Carbine
9.	Auckland Public Health Service	Marianne Scott
10.	Office of Ethnic Affairs	Berlinda Chin
11.	Ministry of Pacific Island Affairs	Vui Mark Gosche
12.	Employers & Manufacturers Association (Nth) Inc	Peter Atkinson
13.	Ministry of Health	Chris Wong, Roz Sorensen
14.	Market Economics	Garry McDonald

APPENDIX 2 DATABASES AND MODELS GATHERED FOR "CONTENT"

GIS Layers

Land Use and Land Cover

This is a map of the major/dominant land use in each meshblock[4] (or higher resolution polygons) in the Auckland and Wellington Regions. The maps will be generated through the use of the following datasets:

Regional Digital Boundaries

- *Description*: These vector-based GIS layers provide digital boundaries for the SP2 study regions i.e. Auckland Region (and when available the Auckland Council spatial boundary area) and Greater Wellington.
- *Status*: ARC and GW boundaries are available.
- *Availability*: 2006 Census-based GW and ARC boundaries are available.

Urban Area Boundaries

- *Description*: These vector-based GIS layers provide digital boundaries for the urban areas contained within the SP study regions i.e. metropolitan Auckland and Wellington.
- *Status*: ARC and GW boundaries are available.
- *Availability*: 2006 GW boundaries are available, 2001 ARC MUL boundaries are available – as previously provided by the ARC. 2006 ARC boundaries are yet to be obtained.

Business Directory

- *Description*: Employment Counts[5] (ECs), Modified Employment Counts (MECs[6]), Full-Time Equivalents (FTEs), Geographic Units/Business Counts (GUs) by 6 digit ANZSIC codes by meshbock.
- *Status*: BD purchased annually by MEL.
- *Availability*: 1998 to 2004 (FTEs, Opt_FTEs, GUs), 2000 to 2008 (ECs, MECs, GUs).

LCDB1 and LCDB2

[4] There are approximately 9,846 meshblocks covering the Auckland Council area (9,853 in Auckland Region), and 4,680 meshblocks covering Wellington Region.
[5] Employment counts are head counts of workers. It is important to note that a person may work in several jobs and, thus, counted several times.
[6] Modified employment counts include working proprietors.

- *Description*: Land cover database of New Zealand. LCDB1 has 18 land cover types; while the LCDB2, which uses better land cover recognition techniques but for the same satellite imagery as the LCDB1, covers 61 land cover types.
- *Status*: LCDB1 previously purchased by MEL, LCDB2 downloaded from koordinates.com.
- *Availability*: 2000.

Agribase Database

- *Description*: This dataset covers all land parcels used for agricultural purposes. Each land parcel is coded by 6D ANZSIC, with multiple codes for each land use parcel possible.
- Status: Too expensive to purchase from Asure Quality, but available via ARC and GW.
- *Availability*: ARC - 2009 and all previous releases, GW – 2009 not sure on all previous releases.

ARC Rural Land Uses

- *Description*: Mathew Hick's 1 ha sample of rural land uses.
- *Status*: Available from the ARC, Garry to follow up with Amy Taylor.
- *Availability*: Unknown.

LUCAS Land use map

- *Description*: Vector-based GIS layers providing land use classified using Kyoto-compliant land use definitions for GW only. It is currently an interim map (focused on rural rather than urban land uses) and it is generally accepted that it contains numerous errors, but will be continuously updated over the next three years. The objective of LUCAS mapping programme is to ensure data is available on four key land use classes i.e. Natural forest, Pre-1990 Planted Forest, Post-1989 Forest, and Grassland with woody biomass. All other land uses are derived from pre-existing datasets such as the New Zealand Land Cover Database versions 1 & 2 (LCDB) and New Zealand Land Resource Inventory (NZLRI). Also, includes a 1990 and 2008 land use change layer which has undergone considerable quality control to ensure conformity with IPCC Good Practice Guidance (IPCC, 2003). However, no accuracy assessment has been undertaken to date.
- *Status*: Access to this data is provided on the understanding that the dataset held by LUCAS remains the authoritative master copy. Where the Ministry release data to stakeholders with no quality control, assurance and accuracy assessment has not beenundertaken, datasets should not to be used for any published research or otherwise, and are not to enter the public domain.

- *Availability*: The LUM data layer includes land use classifications for both 1990 and 2008. The layer can therefore be used to create either a 1990 or a 2008 land use map depending which attribute is symbolised.

Public Infrastructure and Networks

- Road centrelines: 2007 LINZ digital topographic data V14 via koordinates.com and council-obtained proprietary layers for both ARC, GW. GW also has DCDB[7]-based detailed road centreline.
- Rail centrelines: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC, GW. GW also has DCDB based detailed rail centreline.
- Power transmission lines: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Schools points: Zenbu via koordinates.com for both ARC and GW.
- Airports: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Runways and airstrips: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Cemeteries: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Golf courses: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Landfills: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Racetracks: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Open space: 2009 GW regional open spaces matrix.

Socio-Economic

1996, 2001 and 2006 Census of Population and Dwellings

- *Description*: All census variables by meshblock, area unit, territorial local authority, and region. Please see attached spreadsheet which gives details of all of the datasets (by type) available.
- *Status*: Available from MEL.

[7] Digital Cadastral Database (DCDB).

- *Availability*: 1996, 2001 and 2006. We also have the 1981 and 1991 census data, but significant time costs would be involved to extract time series data.

Resource Consents

- *Description*: Resource consent eastings, northings and IDs.
- *Status*: Available only for GW.
- *Availability*: The data is available for all resource consents (current and historic).

Physical Suitability

- Height map: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Contours: 20m contours via NZ topographic maps on GIS machine for both ARC and GW.
- Slope, Soil, and others: LENZ Levels 1, 2 and 4 polygons and grids (six downloads) via koordinates.com for both ARC and GW.
- River centrelines: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- River polygons: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Lakes: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Reservoirs: 2007 LINZ digital topographic data V14 via koordinates.com for both ARC and GW.
- Hillshade relief: 200? 20m digital elevation model at 20m resolution for GW.
- Elevation: 200? digital elevation model at 20m resolution for GW.
- Slope angles: 200? Slope map for GW.
- Key native ecosystems: 2008-09 layer that includes all of the key native ecosystem sites that have been assessed by the GW Biosecurity staff.

Zoning

- *Auckland Region*: MEL has previously developed in liaison with ARC staff a concordance that that takes 2006 detailed zoning information for Auckland City Council (ACC), North Shore City Council (NSCC), Waitakere City Council (WCC), Manukau City Council (MCC), Rodney District Council (RDC), Papakura District Council (PDC) and Franklin District Council (FDC) to 11 land use classes. My initial investigation into ARC databases was undertaken prior the new Auckland Council spatial boundaries being

determined. Further investigations are required to determine what GIS zoning data is available from the ARC for the Auckland Council spatial boundaries once (which may be now) they have been determined.

- *Wellington Region*: 2007 zoning layers have been made available from GW for Wellington City Council (WCC), Hutt City Council (HCC), Porirua City Council (PCC), Upper Hutt City Council (UHCC), Kapiti Coast District Council (KCDC), and for the draft Wairarapa district plan zones.

Models

Population and demographic

Wellington Population, Household and Labour Force Model

- *Description*: Provides demographic projections for the region by Census Area Units (CAU). Used as an input into the GW transport model. Current population land required coded by suburb-types (high density residential, high growth greenfield, low growth greenfield, shrinking, developed and normal) with future demand allocated based on historic market preferences. Suburb capacity (vacant, residential, infill, greenfield) with future capacity determined by analysis of land parcel data.
- *Status*: Proprietary model developed by James Newell at Monitoring and Evaluation Research Associated (MERA) in conjunction with Business and Economic Research Ltd (BERL).
- *Availability*: Unknown at this stage.

Economic, Environment-Economy Interface

Economic Futures Model

- *Description*: A multi-regional input-output scenario projection model for GW and ARC. Covers the study region, rest of North Island and the South Island. Covers 48 economic sectors, population by 5 yearly age-sex cohorts, numerous socio-economic variables (GRP, value added, employment, occupations, skills, imports, exports, multi-factor productivity), numerous environmental resources (land use, energy use by 11 delivered energy types (aviation fuel, diesel, coal, petrol, fuel oil, geothermal, etc), ecosystem service appropriation (measured in $ terms) and numerous residuals (energy, industrial and biogenic CO_2, NO_2, CH_4, Nitrates, Phosphates and so on). Produces projections under various scenarios out to 2031 for the years 2006, 2007, 2011, 2016, 2021, 2026 and 2031. Includes a BAU scenario with low, medium and high projections, but can (as per ARC Horizon's 2031 project) incorporate other scenarios.
- *Status*: Proprietary model developed by Market Economics Ltd.
- *Availability*: 2007 base year.

Transport

Both GW and the ARC have standard four-stage transport optimisation models developed in EMME. The ARC model, known as ART model, has just over 500 zones, while the GW model has just over 200 zones. In both cases the zones may be matched spatially to Area Units (CAUs, amalgams of several meshblocks). The ART model, however, is more complicated as it incorporates important feedbacks between land use change and transportation via a link between ART and Auckland Strategic Planning Model (ASP or "Delta[8]"). When used together these models are known as the ATM2 (Auckland Transport Models 2).

Hydrology

Wellington Sustainable Yield Model

- *Description*: Planning tool for assessing bulk water supply system reliability to compare against our one in fifty year shortfall. Linear programming optimisation model, uses monte carlo analysis to determine the annual shortfall probability. Uses 115 year dataset of demand and river flows derived from climate records. Based on WATHNET software.
- *Status*: Proprietary model developed by NIWA.
- *Availability*: Unknown, yet to determine.

Wellington Demand Model

- *Description*: Used in conjunction with the Sustainable Yield Model to predict daily per capita water demand using climate variables. Uses climate data based to 1890 or 1980???. Output is per capita demand, calculated using statistical relationships (regressions) between climate and water demand variables.
- *Status*: Proprietary model developed by NIWA.
- *Availability*: Unknown, yet to determine.

Databases

Resource Consents Databases

- *Description*: These databases are available for both Regional Councils. Given the confidential nature of these databases it is unlikely that the data contained with these databases (the most useful of which is information of maximum water use allocations by volumetric unit per time period) will be incorporated into the SDSS. These databases may however provide valuable data for context setting.
- *Status*: Unknown.
- *Availability*: Continuously updated.

[8] It is sometimes known by Delta – the software package which it is programmed in.

ARC Air Emissions Inventory

- *Description*: Covers transport (vehicles, ships, rail, off-road, pleasure crafts, bitumen laying and road dust), industry (consented industry, solvent use, surface coating and thinners, dry cleaning, service stations, small combustion, commercial gas combustion), biogenic (based on LCDB III land cover and standard value emissions factors of NZ), and miscellaneous sources (domestic fires, outdoor burning, gas leakage, LPG use, natural gas use, lawn mowing). Where possible data is made available, or modelled, at either a meshblock level or at relevant spatial units for the variable being considered.
- *Status*: Available, but many variables are still under construction.
- *Availability*: 2006 base year, updated annually – some seasonal based data is however available.

ARC Energy Database

- ARC Energy database peer review.

APPENDIX 3 - MEDIATED MODELLING (MM) - STAKEHOLDER ANALYSIS (SA)

Stakeholder Analysis (SA) is the process used to identify the key people/organisations that should participate in the MM exercise. SA is the basis for Stakeholder Management and helps us think about which people we need to be involved in the MM for it to be successful, and how to go about managing the process of recruiting people to be involved in a MM project.

Stakeholder Identification:

Working definition of a "stakeholder":

A stakeholder is any organisation or person that will affect or be affected by the "spatial planning".

Narrow perspective: Limited to stakeholders who have legal and presumed stakes.

Broad perspective: With attention to networks and wider community well-being.

Process:

1. Identification of stakeholders by the AC a starting point.
2. Agree on criteria of what makes a balanced, fair and productive stakeholder group.
3. Prepare material to request input on the evolving stakeholder list from external organisations.
4. Request input for stakeholder list from a wide variety of perspectives.
5. Check for self-referencing and make sure that the stakeholder participant group reaches beyond "business-as-usual".
6. Build a substantial database before selecting stakeholders.
7. Potentially a network analysis, mapping how the people and organization involved are inter-connected and how information flows. This can be done qualitatively or with computer support.

Number of stakeholders:

A number is set between 10-20, based on the agreement of the research team and input from iwi/hapu reps. The team suggests to initially aim for 10-15 stakeholders. When the final participant list needs to be decided, there are often "non-negotiables" that need a place at the table. It is easier to add participants then to come back on raised expectations. Several stakeholders will be polled during stakeholder identification, but may not be invited.

If the interest is high, a mechanism may be designed to observe the workshops and/or additional communication venues such as website or blog.

Stakeholder Interests:

Balancing perspective:

The narrow perspective of stakeholders dictates at a minimum inclusion of certain key stakeholders. Enough space should be left to include a broader perspective to ensure creativity. Think about management solutions to branch out the stakeholder group, such as coalitions, shared participation or the option to observe workshops.

Process (Outline and review stakeholder list):

1. Review the list and identify the specific interests these stakeholders have for the topic.
2. Consider the benefit(s) or drawback to the stakeholder of stakeholder participation.
3. Decide if you aim for organisations or individuals. Make sure your follow your own policy.
4. Consider inclusion of a question about the quality of the final stakeholder group at the pre-interview with final participants for research and evaluation purposes.

Key questions that can help understand your stakeholders are:

* What financial or emotional interest do they have in the outcome of this project? Is it positive or negative?

* What motivates them most of all?

* What information do they want from you?

* How do they want to receive information from you? What is the best way of communicating your message to them?

* What is their current opinion of your work? Is it based on good information?

* Who influences their opinions generally, and who influences their opinion of you? Do some of these influencers therefore become important stakeholders in their own right?

* If they are not likely to be positive, what will win them around to support your project?

* If you don't think you will be able to win them around, how will you manage their opposition?

* Who else might be influenced by their opinions? Do these people become stakeholders in their own right?

Selection criteria for a FAIR, BALANCED and WORKABLE group:

1. Main branches of interest
    a. Maori Representatives
    b. Government: Local and Regional
    c. Regional elected officials
    d. Utilities and semi-governmental service providers
    e. Industry and business
    f. Environmental and other NGO's
    g. Other
2. Balance between supply and demand
3. Politically balanced
4. Gender balance
5. Subjective criteria beyond an attempt to develop a balanced participant group: knowledge of the sector/topic, out-of-the-box thinking capacity, communication skills and implementation and networking capacity.

Proposed process:

1. Determine number of seats
2. Identify the basic, non-negotiable direct stakeholders organisations.
3. Identify knowledgeable person with authority to speak for these organisation.
4. Identify the gaps of knowledge in terms of obvious subjects.
5. Identify knowledge and out-of-the-box-thinking capacity
6. Use spider chart for final balancing

Check outcome against selection criteria list

Outcome:

Final participant list, with:

1. Direct stakeholder participant represents one organisation.
2. Stakeholder representative, representing several organisations.

Prepare letter of invitation:

1. What kind of information will participants need?
2. What commitment do you need from participants?
3. What is the next step participants may expect?

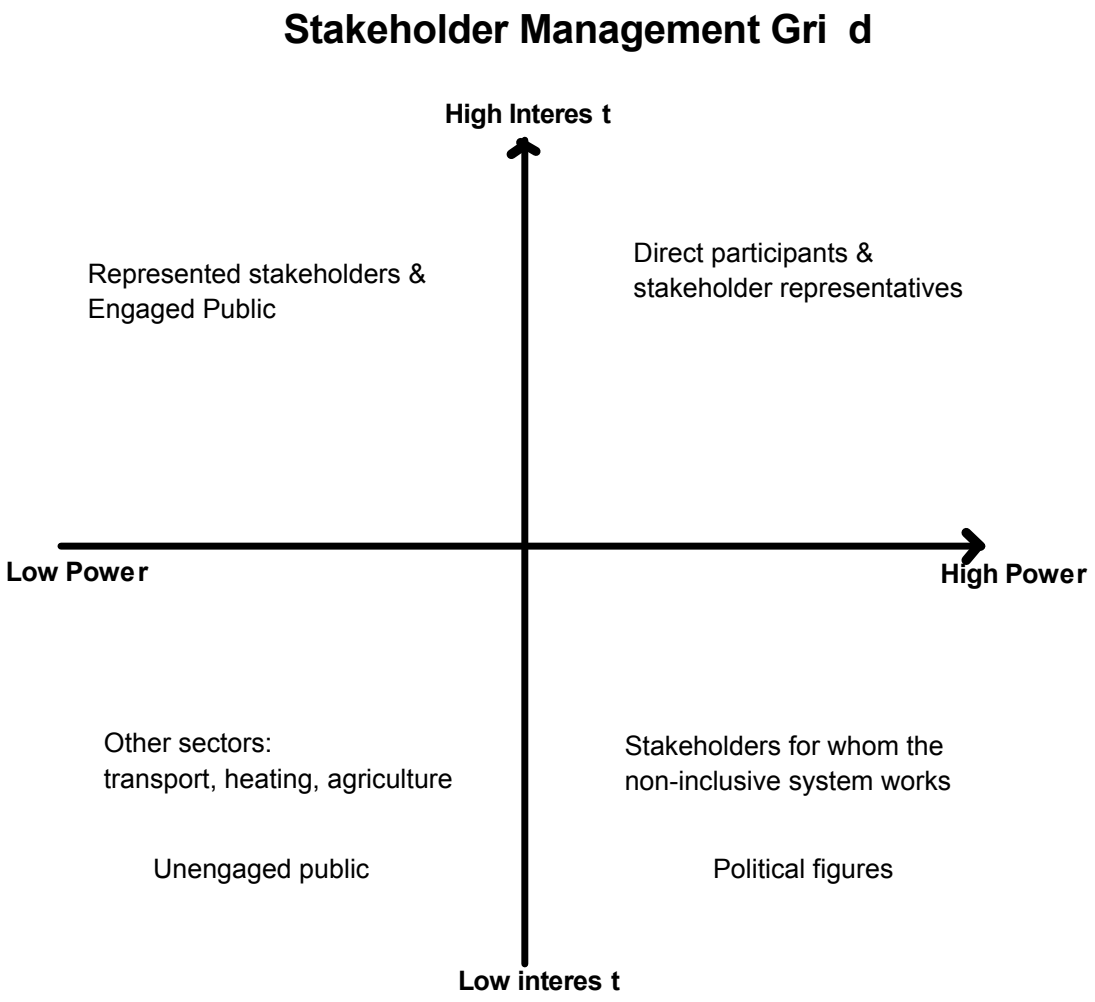
Stakeholder Strategies

Plan strategies for approaching and involving each person or group:

Formal invitation, initial contact, encourage coalitions, keep informed, involvement as informant, consulted, directly involved in decision-making, involved as co-researchers and co-actors. Consider a website and media contacts.

Stakeholder Management

Positioning potential stakeholders in a management grid helps with stakeholder selection and consequently stakeholder management to support a MM project beyond the approximately 10-20 participants.



High power, interested people: these are the people you must fully engage and make the greatest efforts to satisfy. These are the MM participants.

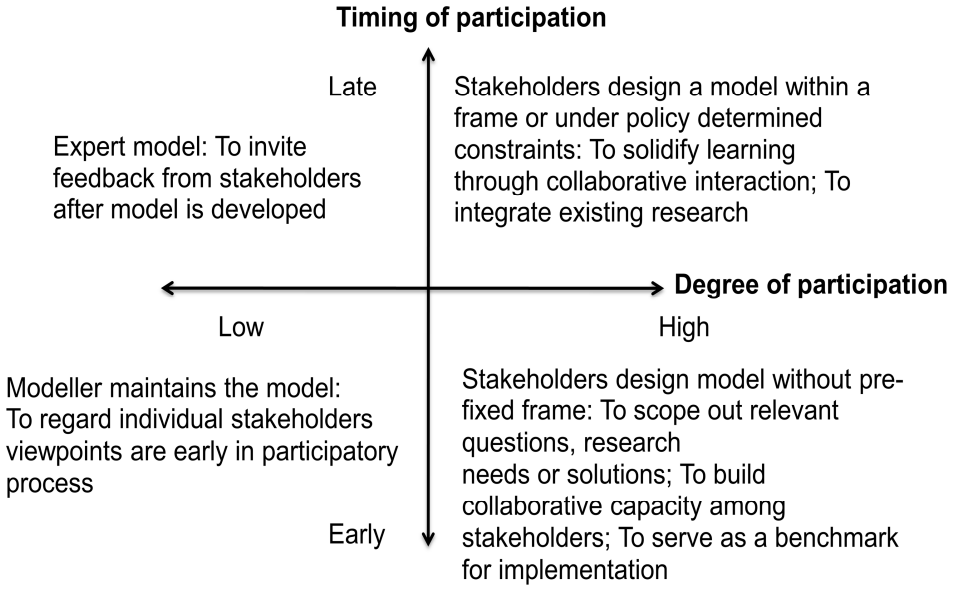
High power, less interested people: put enough work in with these people to keep them satisfied, but not so much that they become bored with your message. Often politicians and those with power who monitor the project without contributing. These forces will become active when the issue starts to affect them.

Low power, interested people: keep these people adequately informed, and talk to them to ensure that no major issues are arising. These people can often be very helpful with the details of the project and/or data gathering. Universities, research organisations and indirect stakeholders often

fall in this category. A high level of shared understanding and a positive attitude among this group potentially serves an implementation phase, due to esteemed peer relationships. If the possibility of meetings in a public space is feasible, this group tends to show up to observe the workshops.

Low power, less interested people: monitor these people, but do not bore them with excessive communication. This is often the general citizenry. Radio coverage has been appreciated in the past.

Timing versus Participation – when to use MM



APPENDIX 4 INTRODUCTORY LETTER TO PARTICIPANTS

DATE

PO Box
Auckland
1 Mayoral Drive
New Zealand
www.aucklandcouncil.govt.nz

Dear ……

Invitation to participate in national research project to develop spatial planning tools for the Auckland region

Auckland Council is part of a Ministry for Science and Innovation-funded project to develop decision support systems for planners and decision-makers in both Auckland and Wellington. The tools developed by the Sustainable Pathways II (SP2) project will assist Auckland Council in exploring the trade-offs in the economic, environmental, social and cultural areas, that are associated with alternative policy options. The project is seen as important for developing and enhancing the Auckland (Spatial) plan in the future.

The SP2 project involves the development of a computer-based model, which simulates projected spatial changes over a 30-year time frame. The progress of this model is guided by a process known as "mediated modelling", where key elements and drivers are captured based on the perceptions of participants. This work will be led by Marjan van den Belt, who is one of the world's leading exponents of mediated modelling.

I would like to invite you or a senior analyst in your organisation, to participate in this project. As one of the collaborators in SP2, we would greatly value your organisation's involvement in a series of workshops where computer-based modelling is used as a mediation tool. This allows for learning, consensus building and participation in scoping for the linkages between social, cultural, economic and environmental considerations pertinent to the Auckland region. Three full day workshops are planned with tentative dates being: **8 September 2011, 24 November 2011,** and **15 March 2012** with the option of additional workshops if participants are interested.

I have attached a document that provides further information on the project. About 25 stakeholders will be directly involved. Please let us know before the 29th July if your organisation is able to be involved in the project, by contacting Auckland Council's Chief Economist, Geoff Cooper on 354 2012 or geoff.cooper@aucklandcouncil.govt.nz.

Yours sincerely,

Roger Blakeley

Chief Planning Officer

APPENDIX 5 SP2 PROJECT INFORMATION

Sustainable Pathways 2 (SP2)

The SP2 project is a government funded ($3.9m) research project that focuses on developing processes and tools to support integrated, spatially explicit, strategic decision-making. It is listed as a key tool for future Auckland spatial planning processes.[i] A key output of SP2 will be the development of a Spatial Decision Support System (SDSS) for Auckland and Wellington. This is a data intensive computer model able to simulate future scenarios and show visual impacts on land and resources. Such a model has already been developed for the Waikato region, as part of the Creating Futures project (www.creatingfutures.org.nz). There are three linked components of the SP2 research:

1. Mediated modelling

Mediated modelling (MM) combines participatory and consensus-based decision making with system dynamics modelling. This part of SP2 will provide a process for multiple participants to combine their expertise, experience, and even intuition to inform the development of spatial dynamic modelling in both Auckland and Wellington. In the MM workshops, representative stakeholders are brought together to interactively build a conceptual model for a selected topic. The interconnectedness of most planning problems makes the model developed suited for use across a wide range of issues. Key aspects of mediated modelling are:

- A professionally facilitated process to develop a consensus-built model *with* rather than *for* participants.
- Requires approximately 20 participants from various organisations around Auckland representing environment, cultural, economic and social interests
- Builds a shared understanding of the wide range of social, economic and cultural values and ecological properties associated with urban sustainability
- Enhances the ability of stakeholders to work together
- Identifies the key elements (drivers) that need to be incorporated into the spatial dynamic model
- Provides an understanding of which relationships/linkages to incorporate into the SDSS
- Provides a unique tool and process to develop and assess 'what if' future scenarios
- Measures if there has been a shift in participant understanding of complex issues involved in spatial urban planning

The participants for Mediated Modelling

There is a wide range of stakeholders in the public, private and NGO sectors involved in delivering economic, social, cultural and environmental outcomes. This poses significant challenges for developing an integrated strategic plan that involves all the right participants. An Auckland stakeholder network

analysis identified 25 potential participants and the attached letter of invitation is being sent to those people.

Time commitment:

• Prior to the first workshop an individual meeting/phone call of one hour to answer any questions with regard to the project or workshops and complete a short questionnaire.

• A similar questionnaire will be undertaken after the last workshop.

• Full day workshops on 8 September, 24 November and 15 March, from 9am – 5pm.

• Assistance with data gathering as needed.

Participants will:

• Contribute to a model designed to support on-going adaptive management into the future for the Auckland region

• Learn about the model so that they can demonstrate the model to their networks and more effectively communicate complex issues and uncertainties around potential policies, relevant indicators and future scenarios.

2. Spatial Dynamic Model

A spatially-explicit model, with a strong focus on the relationships between different components is being developed by Garry McDonald from Market Economics in collaboration with the Netherlands based Research Institute for Knowledge Systems.

The *spatial dynamic modelling* puts the current economy-environment regional models into a spatial framework. Other critical models will be integrated and a process of continuous improvements to existing models, maintenance and up dating of key datasets undertaken. The output from this objective is a 'spatial decision support system' (SDSS) with a strong emphasis on the linkage and feedback loops between different components (as identified in the Mediated Modelling workshops). It will be an important advance in New Zealand urban planning, as planners will be able to explore spatial patterns of development.

3. Embedding scenario modelling into urban planning practice

The *embedding scenario modelling into urban planning practice* is a Council led objective to facilitate the uptake of the state-of-the-art modelling tools produced by the SP2 research. Three councils are involved – Auckland Council and Greater Wellington Regional Council where the integrated spatial decision support systems will be developed through mediated modelling; and Waikato Regional Council transferring knowledge from experience in leading the 'Creating Futures' research project.

[i] Clelland, D (2009) Auckland Transition Authority. New Planning Framework Project. Defining the preferred approach to spatial planning for Auckland. p.8, and pp 30-32.

APPENDIX 6 PRE-QUESTIONNAIRE

PRE- QUESTIONNAIRE TO GUIDE INTRODUCTORY INTERVIEWS (SEPTEMBER 2011)
SUSTAINABLE PATHWAYS 2 – MEDIATED MODELLING AUCKLAND

Marjan van den Belt, PhD
Science Leader SP2 and Objective Leader Mediated Modelling
Email: m.vandenbelt@massey.ac.nz
Phone 06 – 356 9099 Ext. 81512

Introduction:

The following questions will help us with the preparation for the three Mediated Modelling workshops that will run in Auckland from September 2011 to March 2012. The information requested is required to establish a baseline, which will be used to prepare for the workshops and also evaluate change after the workshops. We will use some of the answers for research purposes, but we assure you that no respondent will be identifiable in any research publication[9].

1. Name: _____

2. Affiliation: _____

3. What is your role within your stakeholder group/organisation?

_____

Background:

The purpose of the Mediated Modelling workshops is to inform the spatially explicit dynamic model (SDSS) designed to support planning in the Auckland region. It will achieve this by illustrating and exploring the interlinkages between the four aspects of well-being (social, cultural, ecology and economics) in the Auckland Region. The proto-type of the SDSS currently interlinks aspects of Economics, Land Use and Population. A causal diagram of the linkages in the SDSS will be presented at the first workshop. The Mediated Modelling (MM) workshops will be used to expand and scope for additional interlinkages and contribute critical thinking about

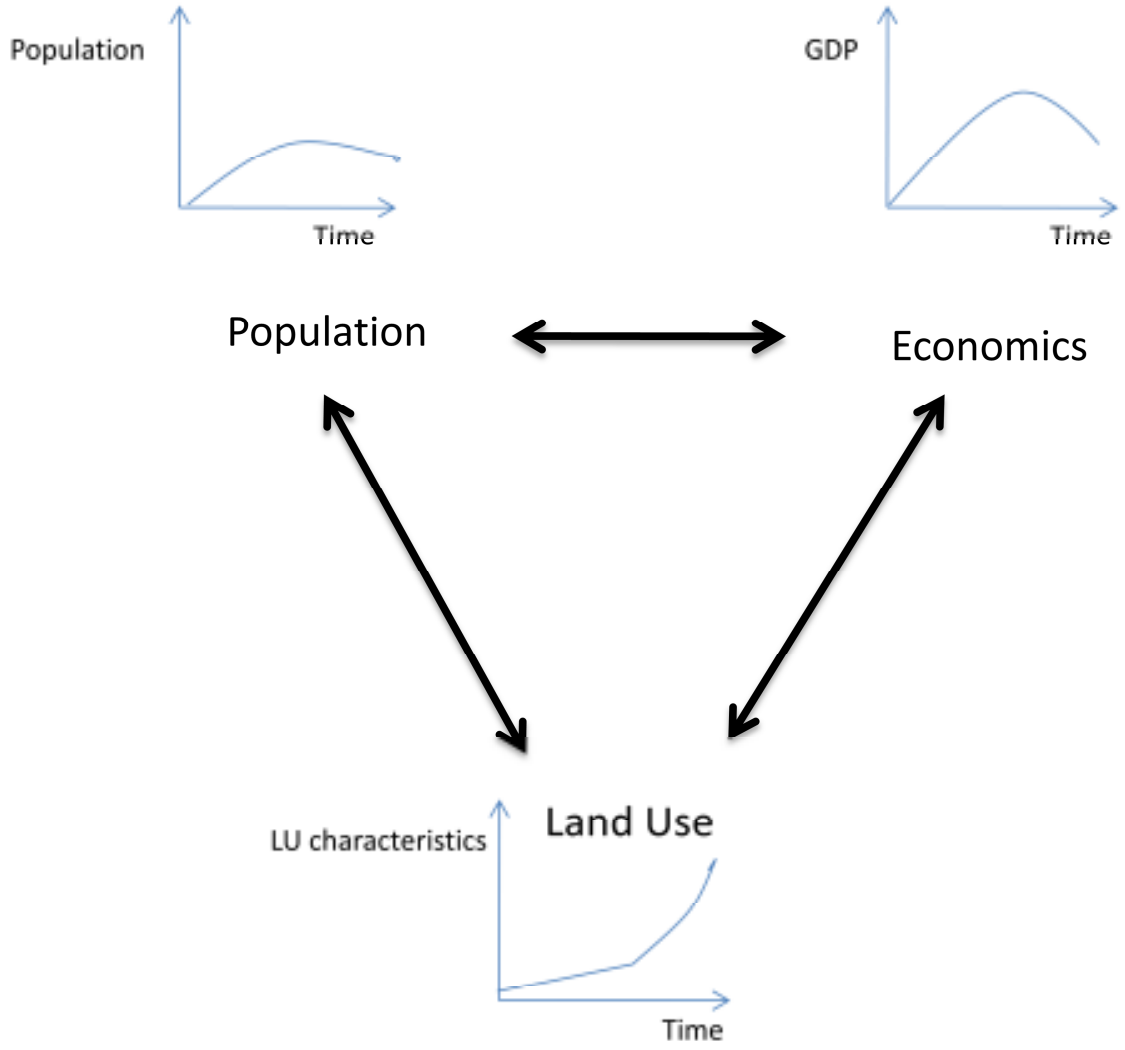
[9] "This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

the system that interlinks the four aspects of well-being. We also hope to hear the type of questions you would like to address using the models in the future and what type of scenarios these two models (MM and SDSS) should ideally run.

To be clear: The integrated spatially explicit model (SDSS) works with existing models and data sets. The mediated modelling (MM) is used to scope for trends and interlinkages with end-users and stakeholders and identify key areas not covered by existing models. The long-term goal is to foster adaptive capacity among end-users in using and improving these tools in tandem.

A simple schematic overview of interlinking underlying trends could (example only) look as follows:



The dialogue, in this example, would focus on how the Land Use, Population and GDP trends are interconnected and developing a joint understanding of the characteristics of such trends when they are combined.

In order to advance toward a better defined topic for the workshops please, consider the following questions:

1. The MM workshops aim to identify key linkages among the four aspects of well-being and associated trends. To make this relevant we would like your input on a specific topic to work with during the workshops. From your point of view:

    a. What is the predominant mid to long term issue (i.e. next 10-40 years) for the Auckland Region with regard to integrating the four aspects of well-being?

    b. What are the key factors causing this issue?

    c. What are the key implications of this issue?

With the assistance of the interviewer (per phone), please create a causal diagram.

2. Please answer the following questions on the state of the issue you identified under question 1. From your point of view:

   a. How is this situation you identified under Q1 now?

      1 = Very bad

      2 = Bad

      3 = Neutral

      4 = Good

      5 = Very good

   b. Where do you think this issue might rate by 2050 under Business as Usual, **including** new initiatives currently proposed?

      1 = Very bad

      2 = Bad

      3 = Neutral

      4 = Good

      5 = Very good

   c. Where do you think this issue might rate by 2050 under Business as Usual, **excluding** new initiatives currently proposed?

      1 = Very bad
      2 = Bad
      3 = Neutral
      4 = Good
      5 = Very good

3. Do you think your issue would benefit from a more integrated approach (interlinking social, economic, environmental and cultural aspects) beyond currently proposed initiatives?

1	=	Convinced it will make situation worse
2	=	May have a negative impact
3	=	Neutral – no impact or no opinion
4	=	May make a positive difference
5	=	Convinced it will make a substantial positive difference

4. Even though we realise that the 4 aspects of well-being are inter-linked, please rank the relative importance of the following aspects for the stakeholder group you represent. Rank in order of priority for your stakeholder group from 1(most important) to 4 (least important):

Economic outcome	
Environmental sustainability	
Social impact on the community	
Integrity of cultural values	

5. How **aware** do you perceive the wider community to be (i.e. the people living in the Auckland Region) about the issue you identified in Q1?

   1 = Very aware

   2 = Somewhat aware

   3 = Not aware

6. How **concerned** do you perceive the wider community to be (i.e. the people living in the Auckland Region) about the issue you identified in Q1?

   1 = Very concerned

   2 = Somewhat concerned

   3 = Not concerned

7. You have been provided with a **list of confirmed participants** for the workshops. Considering the goal of the MM workshops as described in the introduction and supporting letter, please reflect on the participant list.

   How do you rate this group on the following criteria?

   a. **Inclusiveness:** i.e. the level of inclusiveness of different perspectives

      1 = Very low

      2 = Low

      3 = Neutral

      4 = Good

      5 = Excellent

   b. **Leadership**: i.e. the prospect that ideas developed in this group will be implemented

      1 = Very low

      2 = Low

3 = Neutral

4 = Good

5 = Excellent

c. **Creativity**: i.e. the prospect of this group developing innovative ideas

1 = Very low

2 = low

3 = Neutral

4 = Good

5 = Excellent

8. With how many of the participants do you interact on a regular basis?

0 – 2 participants _____

3 – 5 participants _____

5 – 10 participants _____

10 – 15 participants _____

All participants _____

9. Does this list miss any critical stakeholders for the goal the MM workshops are aiming to achieve? You may gear this toward the specific topic you identified under Q1. If so, please indicate omissions:

_____

_____

_____

10. Based on the participants list do you expect that **within this group:** :

a. There is currently **consensus** on the topic for the Auckland Region as you identified under Q1; i.e. you expect multiple participants to identify a similar topic.

1 = Very low

2 = low

3 = Neutral

4 = Good

5 = Excellent

b. There is currently **consensus** on a long term goal/vision for the Auckland Region among the identified participants.

1 = Very low

2 = low

3 = Neutral

4 = Good

5 = Excellent

c. There is currently **consensus** on the implementation toward future goals/vision for the Auckland Region:

1 = Very low

2 = low

3 = Neutral

4 = Good

5 = Excellent

11. Please describe the purpose of the 3 workshops in your own words.

_____

_____

_____

_____

12. What would be a good outcome from the Mediated Modelling process for you?

_____

_____

_____

_____

13. What would be the worst possible outcome from the Mediated Modelling process for you?

_____

_____

_____

_____

14. Have you used STELLA (= the modelling software used in this project) before?

    Yes/No

15. Have you used other computer based modelling tools before?

    Yes/No

    If yes which?_____

16. May we use your answers to this questionnaire for research purposes? Note: individual responses will not be identifiable in any publications from this research.

    Yes/No

17. Have you visited the project website www.sp2.org.nz ?

    Yes/No

18. Do you require any further information regarding the process, the model, etc. prior to the workshops?

    Yes/No

    If yes, please state what additional information you need or questions you would like to have answered.

_____

_____

_____

_____

THANK YOU!

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