

Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI)

FINAL STAGE 3 SYNTHESIS REPORT

Research and evaluation conducted in collaboration with the Australian Local Government Association and State and Territory associations

August 2012 – Philip Booth and Ron Cox

THE ADAPTATION TOOLS SELECTOR

A CULMINATION OF KEY LEARNINGS FROM STAGE 1 AND STAGE 2

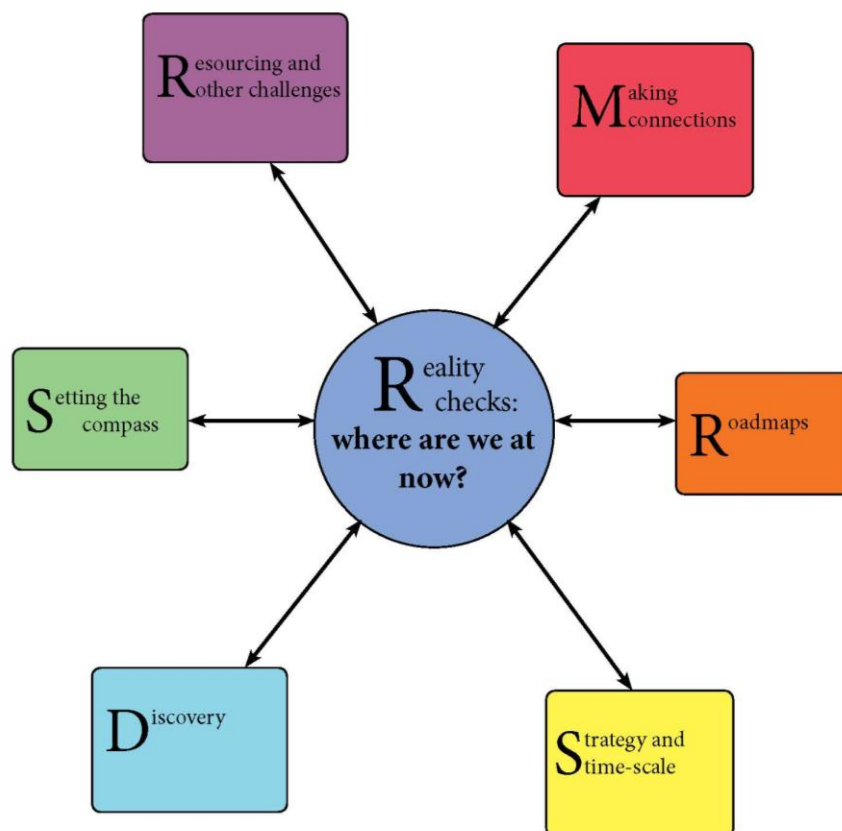


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ACKNOWLEDGEMENTS

The Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI) has engaged with the local government sector to conduct a 3-stage research and evaluation project. This project has involved an initial scoping workshop, gathering case studies, the design and distribution of a national survey, and iterative development of a decision support guide. This project has been made possible by collaborative efforts with:

- Rolf Fenner - Australian Local Government Association (ALGA)
- Katrina Graham - Hobart City Council
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Contributions from councils and regional organisations of councils:

We thank all of the councils and regional organisations of councils across Australia who provided case studies and answered the survey. Without your contributions of key data and the time and effort to organise your responses, the ACCARNSI local government research initiative would have been fruitless.

ADAPTATION TOOLS SELECTOR

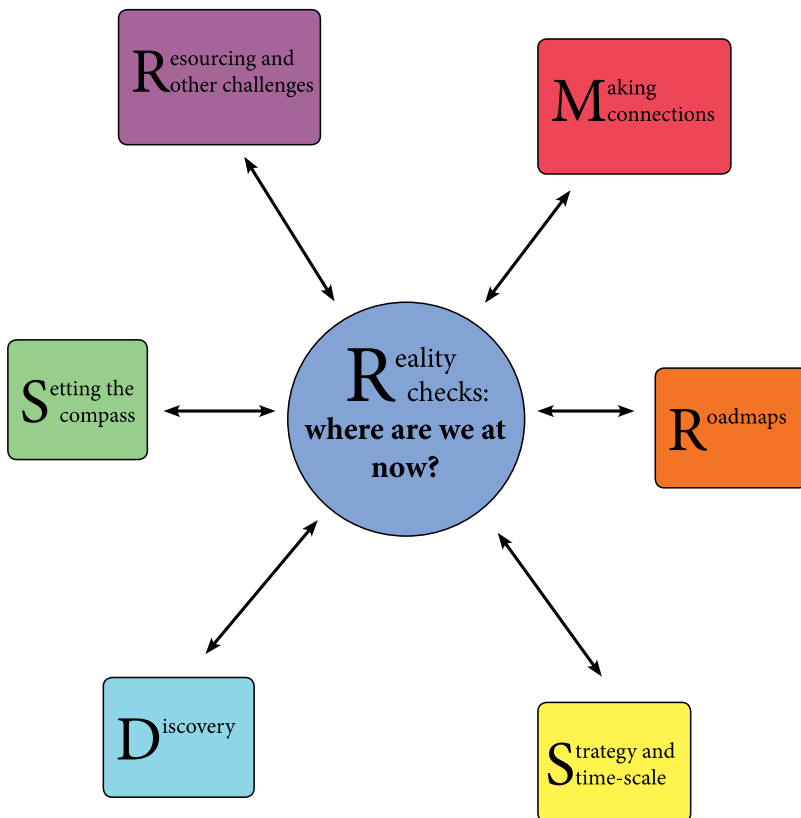


Figure 1: Adaptation Tools Selector - Summary

REALITY CHECKS: WHERE ARE WE AT NOW?

Reality checks are required at every stage. Triggers for reality checking include “What have we learnt from what’s emerged?”

STRATEGY AND TIME-SCALE:

Why do it - what knowledge needs will be met and data gaps filled? Clarify the purpose and key drivers, up front. Is our time-scale short, medium or long-term? What can we do best at local and/or regional scales?

DISCOVERY:

Which adaptation tools and application processes are required in this context? Who has used them previously in other councils and regional projects? What do they say about them, in the case studies and national survey?

ROADMAPS:

Where do we start - or what is our next step, after this current project? How do we integrate outputs into response plans: corporate, asset, strategic and community plans?

SETTING THE COMPASS:

How do we get to where we need to go? What are the *intended* outcomes i.e. what needs to be achieved? Identifying *critical success factors* will help make the intended outcomes more achievable. How will success be measured? Monitor and evaluate the *achieved* outcomes.

MAKING CONNECTIONS:

Who can partner us? Who is a leader or mentor organisation? Who are our key stakeholders? How to engage our community to get on board? Where else can we get buy-in? Do we need to find a knowledge broker? How do we communicate, promote, market and leverage our outputs?

RESOURCING AND OTHER CHALLENGES:

Do we have sufficient resources in-house for a localised project, or do we need to join in a regional collaboration? What challenges and barriers may restrict the application of a tool? Which advice on practical ways to resolve challenges is relevant?

EXECUTIVE SUMMARY

This Synthesis Report marks the culmination of the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI's) local government research, evaluation and reporting initiative. It commenced in late 2010, when ACCARNSI met with representatives from the Australian Local Government Association and State and Territory counterpart associations in an initial scoping workshop. These 'demand-driven' key questions were posed for ACCARNSI to research and evaluate: "What climate change adaptation tools are available? What are local government practitioners saying about their experiences with these adaptation tools and processes? And what helpful advice and assistance can they offer to professional peers, and other end-users, to select appropriate tools and use them effectively?"

This local government research initiative has comprised three research stages that were collaboratively identified and prioritised with the local government representatives: firstly, gather case studies and statewide synopses of adaptation tools and processes used by councils; secondly, conduct a follow-on national survey; and thirdly, synthesise and condense key learnings into a user-friendly decision support guide.

1st research priority and reporting stage: In the first stage of the research and evaluation project in early 2011, ACCARNSI devised a Case Studies Reporting Template for councils. It focused attention on *key drivers, intended outcomes and ways to measure success, challenges and barriers, critical success factors, adaptive learnings, and next steps*. A portfolio of 18 case studies and additional statewide synopses were gathered and thematically analysed to build a nationwide understanding of salient issues and concerns. Feedback on improvements to tools and applications included developing regional scale climate change models and adaptation scenarios, and web-based tools.

2nd research priority and reporting stage: The second stage of research and evaluation entailed a follow-on national survey of councils and regional organisations of councils (ROCs) in mid 2011. It was designed to incorporate and verify provisional shortlists of the key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings, and next steps distilled from the case studies analyses. In closed questions, respondents were asked to *prioritise* their drivers, outcomes, challenges and barriers and so forth, or describe other topmost issues relevant to their context in following semi-structured and open questions, including whether and how their challenges and barriers were resolved. The national survey garnered 115 valid responses. Priorities were tabulated, graphed and analysed.

3rd research priority and reporting stage - synthesis of key learnings in a decision support guide:

This third and final stage of ACCARNSI's local government initiative has entailed a synthesis of key learnings regarding the drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings and next steps, identified in the preceding research and evaluation stages. These key learnings are incorporated in the design of a culminating decision support guide i.e. the *Adaptation Tools Selector* (Figure 1). Its purposes are to:

- guide the selection and use of appropriate adaptation tools and processes;
- encourage development of appropriate adaptation response plans and actions;
- build organisational capacities in local governments and community/stakeholder groups; and
- foster communities of adaptation practitioners by encouraging adaptive learning and knowledge sharing between professional peers and with communities and stakeholders

Design rationale for the Adaptation Tools Selector

The Adaptation Tools Selector is designed to provide flexible decision support both for those who are beginning an adaptation process and deciding which tool to use, and those who have already commenced and are contemplating the next step. Many councils and ROCs have already undertaken 'first pass' risk assessments and now need a reality check i.e. "Where are we at now - and where do we need to go?" Triggers for reality checking include "What have we learnt from what's emerged?"

Surrounding this central reality-checking question are six *decision phases* in tool selection: *Resourcing and other challenges, Making connections, Roadmaps, Strategy and time-scale, Tools discovery, and Setting the compass*. These decision phases provide frameworks for *catalytic* questions and key issues that prompt strategic thinking. They steer practitioners towards identifying and applying appropriate adaptation tools and methodologies, and addressing key issues that have emerged or are likely to emerge.

The Adaptation Tools Selector is intended to enhance effective use of adaptation tools and processes (e.g. high level vulnerability assessments, corporate risk management) by assisting local government practitioners and other end-users to decide which adaptation tools and processes best meet their contexts and purposes e.g. to engage communities in mapping local-scale hazards and vulnerabilities, and to assist them in identifying key challenges. It encompasses practical measures taken, or suggested for future action, by local government practitioners to resolve key challenges to climate change adaptation. These resolutions include:

- attain high level buy-in from senior decision-makers to make adaptation an organisational change and management priority;
- prioritise adaptation actions in the Community Strategic Plans, Community and Corporate Risk Management Plans, Delivery and Operational plans and so forth;
- move from local to regional scales in climate change scenarios and action or response plans, to gain efficiency benefits and critical mass from collaborating with neighbouring councils;
- facilitate internal and external stakeholders to contribute their expertise and local knowledge of hazards and vulnerabilities to the development of local and regional action plans;
- engage the local community to ascertain their issues and manage their expectations; and
- link councillors and communities to the benefits of proactively engaging with adaptation issues – and highlight the financial pitfalls if they ignore the risks of impacts.

Who should use the Tools Selector and when in decision-making processes?

The Adaptation Tools Selector can be used by individual local government practitioners or teams, by key stakeholders and community members, and by other end-users e.g. in government agencies. It is designed to provide equally flexible decision support for those beginning an adaptation process and deciding which tool to use, and those who are moving on to a next step.

A national roadshow to iteratively improve the design of the Tools Selector

The Adaptation Tools Selector was iteratively improved during the national roadshow that ACCARNSI conducted with each of the State and Territory local government associations, during May 2012. The roadshow commenced with a workshop in Sydney at LGASA House then moved on to Melbourne, Hobart, Perth, Adelaide, Darwin and concluded at the LGAQ office in Brisbane. These workshops were facilitated to provide participants with opportunities to triangulate their knowledge gaps, capacity building needs and adaptation experiences with key findings and conclusions from the case studies and national survey that culminate in the Adaptation Tools Selector.

During the workshops participants were provided with working drafts of the Adaptation Tools Selector and invited to suggest improvements to its design and contents. They emphasised the importance of designing for maximum flexibility, so that end-users can approach and identify whichever decision phase is the most appropriate to start with, or move to next, depending on their organisational contexts. No linear or cyclic sequences of decision-making processes are inferred by the listing of the decision phases in Figure 1.

By the conclusion of the national roadshow, each of the decision phases and their catalytic questions/key issues had been reworked and transformed to the point where participants judged that they “felt it was about right now”. The finalised version of the Adaptation Tools Selector was presented at a workshop on local government at the NCCARF/CSIRO national conference, *Climate Adaptation in Action 2012: Sharing knowledge to adapt* (Melbourne, 26-28 June 2012).

Condensed advice informs strategic thinking and supports effective decision-making

Each decision phase is supported by condensed advice synthesised from the case studies, national survey, and feedback from the roadshows. The condensed advice is presented in the form of summary statements and priority checklists that end-users can tick if relevant to their context. These priority checklists are intended to assist local government practitioners and other end-users to make informed decisions by drawing on the experiences of professional peers. The priority checklists are also intended to spark some strategic thinking about which top 3 contextual issues may matter most - this is the purpose of the add-on blanks that end-users are encouraged to fill out.

The intended end result is strategic thinking about key issues, and effective utilisation of adaptation tools and application processes to achieve organisational and community change. The condensed advice also assists in-house decision making about whether to utilise a tool from a government agency or purchase a tool from a provider. Following the decision process, a council or ROC may wish to further clarify technical and other issues with agencies or external consultants.

Opportunities sought to pilot the Tools Selector in a range of contexts

Opportunities are now being sought by ACCARNSI to pilot the Adaptation Tools Selector in a range of local government and other end-user contexts that vary in scale from local to regional, and in different geographical locations that represent States and Territories.

Concluding recommendations to improve available adaptation tools

Provisional recommendations to improve adaptation tools and processes in the Stage 1 Case Studies Report were reprised in light of the Stage 2 national survey responses and feedback from participants in the culminating national roadshow. Their scope includes:

- tools that enable fine-scale risk assessments, at the property scale;
- tools and processes to engage communities in mapping hazards and vulnerabilities;
- user-friendly web-based tools;
- development of regionally relevant scenarios that communicate likely climate change impacts; and
- tools and application processes to garner local knowledge inputs for action plans.

Reporting summary: The Stage 1 Case Studies Report and accompanying Portfolio of Case Studies and Synopses, the Stage 2 National Survey Report and Stage 3 Synthesis Report are publicly available to download from the ACCARNSI website <http://www.nccarf.edu.au/settlements-infrastructure/>.

1. INTENT OF THIS SYNTHESIS REPORT

This Synthesis Report marks the culmination of the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure's (ACCARNSI) local government research, evaluation and reporting initiative. It commenced in late 2010, when ACCARNSI met with representatives from the Australian Local Government Association and State and Territory counterpart associations. They posed the following key questions for ACCARNSI to research and evaluate: "What climate change adaptation tools are available? What are local government practitioners saying about their experiences with climate change adaptation tools and processes? And what helpful advice and assistance can they offer to professional peers, and other end-users, to select appropriate tools and use them effectively?" In detail, the local government representatives requested that the following key information gaps and capacity building needs be addressed:

- i. Which climate change adaptation tools and processes have been chosen by local governments and for what purposes? Drill down into why these were chosen.
- ii. Which tools/processes worked well in meeting needs, gaps and aims – or showed flaws?
- iii. Assess whether and how the tools addressed the needs, aims and tasks of decision-makers in councils and regional organisations of councils (ROCs) including CEOs, climate change/sustainability managers, corporate planners, asset managers, strategic planners, emergency services managers, and community development/ engagement managers
- iv. Provide measures of success to evaluate evidence of executive buy-in, utilisation by early birds, and mainstreaming risk management in corporate and strategic plans
- v. Explore gaps in the availability and adaptability of tools to deal with anticipated hazards and vulnerabilities? Which tools require external funding, to be affordable?
- vi. Develop a summary matrix of tools and adaptation processes used by councils, to add value to the research and evaluation outputs.

The demand-driven knowledge/information gaps and capacity building needs described above set the compass for ACCARNSI's research and evaluation initiative. It has comprised three research stages that were collaboratively identified and prioritised with local government representatives: firstly, gather case studies and statewide synopses of adaptation tools and processes used by councils; secondly, conduct a follow-on national survey; and thirdly, synthesise and condense key learnings into a decision support guide.

1st research priority and reporting stage: In early 2011, ACCARNSI devised a Case Studies Reporting Template for councils. It focused attention on *key drivers, intended outcomes and ways to measure success, challenges and barriers, critical success factors, adaptive learnings, and next steps*. A portfolio of 18 case studies and additional statewide synopses were gathered and thematically analysed to build a nationwide understanding of salient issues and concerns. Feedback on improvements to tools and applications included developing regional scale climate change models and adaptation scenarios, and web-based tools.

2nd research priority and reporting stage: The second stage of research, evaluation and reporting entailed a follow-on national survey of councils and ROCs in mid 2011. It was designed to incorporate and verify provisional shortlists of the key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings, and next steps distilled from the case studies analyses. In closed questions, respondents were asked to *prioritise* their drivers, outcomes, challenges and barriers and so forth, or describe other topmost issues relevant to their context in following semi-structured and open questions, including whether and how their challenges and barriers were resolved. The national survey garnered 115 valid responses. Priorities were tabulated, graphed and analysed.

3rd stage Synthesis report: This third and final stage of ACCARNSI's local government initiative has entailed a synthesis of key learnings regarding the drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings and next steps, identified in the preceding research and evaluation stages. These key learnings are incorporated in the design of a user-friendly decision support guide. The *Adaptation Tools Selector* (Figure 2) is the culminating research and evaluation product. Its purposes are to:

- guide the selection and use of appropriate adaptation tools and processes, by providing decision support
- encourage development of appropriate adaptation response plans and actions;
- build organisational capacities by local governments and community and stakeholder groups; and
- foster communities of adaptation practitioners by encouraging adaptive learning and knowledge sharing between professional peers and with communities and stakeholders

The Adaptation Tools Selector is designed to enhance effective use of adaptation tools and processes (e.g. high level vulnerability assessments, corporate risk management) by assisting local government practitioners and other end-users to decide which adaptation tools and processes best meet their contexts and purposes e.g. to engage communities in mapping local-scale hazards and vulnerabilities, and to assist them in identifying key challenges. It encompasses practical measures taken, or suggested for future action, by local government practitioners to resolve key challenges and barriers to climate change adaptation.

Reporting summary: The Stage 1 Case Studies Report and accompanying Portfolio of Case Studies and Synopses, the Stage 2 National Survey Report and Stage 3 Synthesis Report are publicly available to download from the ACCARNSI website <http://www.nccarf.edu.au/settlements-infrastructure/>.

ADAPTATION TOOLS SELECTOR

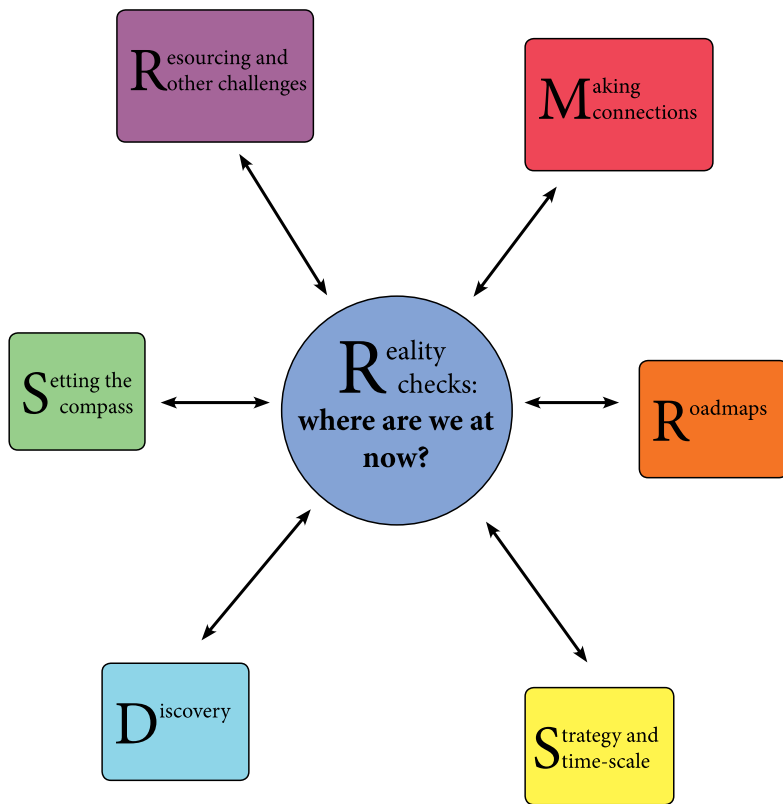


Figure 2: Adaptation Tools Selector with references to condensed advice in section 3

REALITY CHECKS: WHERE ARE WE AT NOW?

Reality checks are required at every stage. Triggers for reality checking include “What have we learnt from what’s emerged?”

STRATEGY AND TIME-SCALE:

Why do it - what knowledge needs will be met and data gaps filled? Clarify the purpose and key drivers, up front. Is our time-scale short, medium or long-term? What can we do best at local and/or regional scales? (Refer to section 3.2)

TOOLS DISCOVERY:

Which adaptation tools and application processes are required in this context? Who has used them previously in other councils and regional projects? What do they say about them, in the case studies and national survey? (Refer to section 3.3 and Appendix B)

ROADMAPS:

Where do we start - or what is our next step after this current project? How do we integrate outputs into response plans: corporate, asset, strategic and community plans? (Refer to section 3.4)

SETTING THE COMPASS:

How do we get to where we need to go? What are the *intended* outcomes i.e. what needs to be achieved? Identifying *critical success factors* will help make the intended outcomes more achievable. How will success be measured? Monitor and evaluate *achieved* outcomes. (Refer to section 3.5).

MAKING CONNECTIONS:

Who can partner us? Who is a leader or mentor organisation? Who are our key stakeholders? How to engage our community to get on board? Where else can we get buy-in? Do we need to find a knowledge broker? How do we communicate, promote, market and leverage our outputs? (Refer to section 3.6)

RESOURCING AND OTHER CHALLENGES:

Do we have sufficient resources in-house for a localised project, or do we need to join in a regional collaboration? What challenges and barriers may restrict the application of a tool? Which advice on practical ways to resolve challenges is relevant? (Refer to key issues unpacked in section 3.7 and further drilled down into in section 4. Refer also to Stage 2 National Survey Report sections 6 and 7.)

2. DESIGN AND USE OF THE ADAPTATION TOOLS SELECTOR

Throughout ACCARNSI's previous two stages of research and evaluation, the central aim was to work towards producing a decision support guide to meet the needs of local government practitioners and other end-users, by assisting them to make better-informed decisions regarding:

- Identification of adaptation tools and processes that best meet their purposes and intended outcomes e.g. tools that enable councils to engage communities in mapping hazards and vulnerabilities;
- current and potential strengths to capitalise on;
- needs and gaps to address; and
- possible ways to resolve anticipated challenges.

2.1 Design rationale

The Adaptation Tools Selector in Figure 2 condenses frequently reported experiences, practical knowledge and advice gleaned from the local government peers who provided the case studies and/or responded to the national survey, in regard to the adaptation tools and processes that they had used – refer to Appendix A.

Many councils have already undertaken a 'first pass' risk assessment and now need a reality check i.e. "Where are we at now - and where do we need to go?" Triggers for reality checking include "What have we learnt from what's emerged?" *Decision phases* in tool selection surround this central reality-checking question. These phases can be approached quite differently, depending on context, to enable maximum flexibility. The decision phases are frameworks for *catalytic* questions and key issues that prompt strategic thinking and informed decision-making. Most of these catalytic questions and key issues were either suggested or iteratively reworked by the road show participants. They steer practitioners towards identifying appropriate adaptation tools and methodologies, and effective application processes.

The top 5 ranked and weighted answers to closed question 3a to question 9a in the national survey (refer to Stage 2 Report, section 1A) are built into the supportive checklists, which are unpacked in section 3. These checklists give guidance on the nature and scope of prioritised drivers, intended outcomes, critical success factors, frequently encountered challenges and barriers and possible ways to resolve these, and appropriate next steps to consider, deemed relevant by the survey respondents. This condensed wisdom assists local government practitioners and other end-users to draw on the experiences of professional peers, and to identify and prioritise key issues to address, early on in their projects.

2.2 Methodology to triangulate key learnings with practitioners' feedback

In Stages 1 and 2, evaluations of the *usefulness* (or not) of adaptation tools and their application processes were aggregated from the thematic analyses of reports by local government practitioners in the case studies and the national survey responses. However, each practitioner's report on the usefulness of a particular tool was *context-bound* i.e. it reflected whether or not that practitioner's team, division, or whole-of-Council or ROC had defined the purpose for selecting a tool and undertaking its application, the key drivers, whether intended outcomes and measures of success were identified early on, whether challenges and barriers were anticipated, and so forth.

The research approach for all three stages of ACCARNSI's local government initiative has drawn on three social research methodologies: Grounded Theory (Glaser 2001, 2004), Appreciative Enquiry (Coughlan et al 2003; Preskill and Catsambas 2006; Reed 2007) and organisational learning approaches including ways to contend with organisational resistances to change fostered by Action Research (Argyris 1990, 1993; Argyris and Schön 1996; Schön 1987; Grant and Humphries 2006; Preston et al 2010; Willows and Connell 2003).

The methodology for the Stage 1 Case Studies, thematic analyses and sense-making evaluations of the survey responses also drew on a combination of *Realist Evaluation* (Pawson 2002; Pawson & Tilley 1997) and *Developmental Evaluation* methodologies and approaches. The Realist Evaluation approach seeks answers to three pragmatic questions:

- i. What adaptation tools and processes work for whom?
- ii. Why?
- iii. And under what circumstances or in which contexts?

The *Developmental Evaluation* approach (Patton 2008, 2010; Rogers 2010; Rogers and Funnell 2011) supports collaborative decision-making enterprises and continuous improvement. It is especially suited for evaluating sustainability and climate change pilot programs. The evaluator plays a key role in facilitating *evaluative thinking* skills among decision-makers and stakeholders. These roles include sense-making and reality-testing, and providing evaluative feedback to decision makers in *real time*.

In this culminating synthesis stage, the qualitative research and evaluation methodologies deployed in the previous stages were extended to provide further opportunities for local government practitioners to triangulate their knowledge gaps, capacity building needs and adaptation experiences with key findings and conclusions from the case studies and national survey.

2.3 Iterative improvements to the design and content of the Tools Selector

The Adaptation Tools Selector was iteratively improved during the national roadshow that ACCARNSI conducted with each of the State and Territory local government associations, during May 2012. The roadshow commenced with a workshop in Sydney at LGASA House then moved on to Melbourne, Hobart, Perth, Adelaide, Darwin and concluded at the LGAQ office in Brisbane. These workshops were facilitated to provide participants with opportunities to triangulate their knowledge gaps, capacity building needs and adaptation experiences with key findings and conclusions from the case studies and national survey that culminate in the Adaptation Tools Selector.

During the workshops participants were provided with working drafts of the Adaptation Tools Selector and invited to suggest improvements to its design and contents. They emphasised the importance of designing for maximum flexibility, so that end-users can approach and identify whichever decision phase is the most appropriate to start with, or move to next, depending on their organisational contexts. No linear steps or sequence (e.g. a cycle) of utilisation are prescribed.

By the conclusion of the national roadshow, each of the decision phases and their catalytic questions/key issues had been reworked and transformed to the point where participants judged that they "felt about right now". The finalised version of the Adaptation Tools Selector was presented at a workshop on local government at the NCCARF/CSIRO national conference, *Climate Adaptation in Action 2012: Sharing knowledge to adapt* (Melbourne, 26-28 June 2012).

2.4 Who should use the Tools Selector and when in decision-making processes?

The Adaptation Tools Selector can be used by individual local government practitioners or by teams, by key stakeholders and community members, and by other end-users e.g. in government agencies. It is designed to provide equally flexible decision support for those beginning an adaptation process and deciding which tool to use, and those who are moving on to a next step.

2.5 Condensed advice informs strategic thinking and supports decision-making

Each decision phase is supported by condensed advice synthesised from the case studies, national survey, and feedback from the roadshows. The intended end result is strategic thinking about key issues, and effective utilisation of adaptation tools and application processes to achieve organisational and community change. The scope of strategic decision-making includes:

- identifying and prioritising key risks to address;
- guiding the choice of adaptation tools and processes, early on, before embarking on adaptation projects; and
- engaging communities and stakeholders, and managing their expectations.

The condensed advice also assists in-house decision making about whether to utilise a tool from a government agency or purchase a tool from a provider. Following the decision process, a council or ROC may wish to further clarify technical and other issues with agencies or external consultants.

2.6 Opportunities sought to pilot the Tools Selector in a range of contexts

Opportunities are now being sought by ACCARNSI to pilot the Adaptation Tools Selector in a range of local government and other end-user contexts that vary in scale from local to regional, and in different geographical locations that represent States and Territories.

3. UNPACKING THE SUPPORTIVE ADVICE FOR THE DECISION PHASES

In the lead-up to utilising the Adaptation Tools Selector, end-users are encouraged to refer to the supportive advice, unpacked below, for each of the decision phases and their catalytic questions and key issues. Gleaned from the case studies, national survey and national roadshow workshops, this condensed advice reflects the underlying knowledge needs and information gaps stated pragmatically by local government practitioners during all three stages of this research initiative i.e. *'What adaptation tools are out there? And what are the most important issues, including ways to resolve anticipated challenges, that colleagues and I need to know in advance, to select and use climate change adaptation tools effectively?'*

The condensed advice is presented in the form of summary statements and priority checklists that end-users can tick if relevant to their context. The priority checklists are also intended to spark some strategic thinking about which top 3 contextual issues may matter most - this is the purpose of the added-on blank checklists that end-users are encouraged to fill out.

3.1 Reality checks: where are we at now?

Triggers for reality checking include "What have we learnt from what's emerged?"

This is the central issue for each council or ROC. Key decision phases in tool selection surround this central reality-checking question. End-users can freely identify whichever of these phases is the appropriate place to start for their organisation, or the appropriate phase to move to, next. No linear or cyclic sequences of decision-making processes are inferred by the listing of the decision phases in Figure 2 and below.

3.2 Strategy and time scale

Why do it - what knowledge needs will be met and which gaps filled? What data do we need? What can be done at a local or regional scale? Clarify the purposes and key drivers.

Purpose: Clarify the purpose of undertaking a climate change adaptation process, up front. This will assist in ensuring that the aims and objectives of using an adaptation tool are worth pursuing. For example, the purpose may be to undertake a 'first pass' risk assessment as an initial step, before moving on to the next step, a detailed hazard and vulnerability study involving external experts, or undertake a corporate and community risk assessment. Note the following examples of clearly stated purposes from the Portfolio of Case Studies:

City of Port Adelaide Enfield Flood Risk Management Study: "The purpose of the study was to enable informed design guidelines and informed public and private spending on additional protective infrastructure, or the application of non-infrastructure responses where appropriate, such as land use planning policy."

Eastern Metropolitan Regional Council (Perth): "EMRC and its six member Councils - Shires of Mundaring and Kalamunda, Cities of Swan, Belmont and Bayswater and Town of Bassendean - collaborated to undertake a comprehensive risk assessment to identify potential impacts and risks from climate change for the Perth Eastern Region. In addition, actions that could better prepare the Region to adapt to the pressures of climate change were identified. This formed the basis of a Regional Climate Change Adaptation Action Plan outlining what needs to be done at the regional level to adapt to climate change."

Redland City Council: “The purpose of the risk assessment was to explore the ways in which climate change may impact on Redland City Council’s assets and services, and to obtain a prioritised register of risks that could be used for spatial and other assessments to develop the Climate Change Adaptation Action Plan.”

Gosford City Council – Business Case: “In early 2010, Gosford City Council’s Manager of Integrated Planning suggested that staff should develop a business case to outline Council’s existing climate change adaptation initiatives and gaps, and provide a roadmap for future strategic direction.”

City of Clarence, Tasmania: “The purpose of the project was to begin the process of selecting and implementing appropriate, effective and supported adaptation strategies for priority areas of coastal vulnerability. This project is unique in its integrated approach incorporating community preferences and risk communication, and its objective to avoid sterilising development in coastal areas.”

Key drivers: Use the checklist of the top 5 ranked drivers from the national survey (left hand column below) as catalysts to help clarify and prioritise the key drivers in your organisation and community. The right-hand checklist summarises other salient drivers and related insights and experiences, described by survey respondents that may be relevant to your context:

Checklist of top ranked key drivers in the national survey	Checklist of other salient drivers & related experiences described by survey respondents
<ul style="list-style-type: none"> <input type="checkbox"/> Identify & prioritise hazards, vulnerabilities & risks of climate change impacts <input type="checkbox"/> Provide leadership at local and regional levels <input type="checkbox"/> Reduce risks to avoid liabilities <input type="checkbox"/> Enhance resilience at a range of scales <input type="checkbox"/> Support development of relevant policies <input type="checkbox"/> Build internal organisational capacities <input type="checkbox"/> Save money by being proactive <p>Our key drivers:</p> <ul style="list-style-type: none"> ▪ ▪ ▪ 	<ul style="list-style-type: none"> <input type="checkbox"/> Maintain Council’s credibility with community & stakeholders; <input type="checkbox"/> Required by governments <input type="checkbox"/> Derive multiple benefits from working collaboratively <input type="checkbox"/> Identify changes to the economic landscape of local & regional areas <input type="checkbox"/> Meet & manage community expectations <input type="checkbox"/> Support from proactive councillors <p>Other drivers relevant to our context:</p> <ul style="list-style-type: none"> ▪ ▪ ▪

Develop a Brief: Consider developing a *briefing* document that sets out the purpose and key drivers. Communicate it through the senior management team to all divisions.

3.3 Discovery

Which adaptation tools and application processes are required in this context? Who has used them previously in other local and regional projects? What do they say about them, in the case studies and national survey?

The Portfolio of Case Studies and the National Survey indicate the range of available adaptation tools and application processes available as of mid-2011. They include:

- tools and methodologies developed externally by the International Standards Organisation (ISO), government agencies including the Department of Climate Change and Energy Efficiency, insurers, engineering consultancies, and so forth;
- tools developed in-house, such as Gosford City Council's Business Case for Adaptation;
- modifications of externally developed tools to suit contextual needs, such as Cairns Regional Council's application of ARUP's Sustainability Scorecard, and Clarence Valley Council's (NSW) use of NSW Statewide Mutual's facilitated Climate Change Risk Assessment Workshop Program to produce a corporate risk management plan that encompasses operations, services, assets and personnel;
- combinations of tools used in detailed or high level vulnerability and impact studies e.g. combined flood and coastal inundation studies undertaken by Moreton Bay Regional Council and City of Port Adelaide Enfield Council; and
- series of tools and application processes used in initial and follow-on projects e.g. an externally facilitated '1st pass' risk assessment, followed by detailed coastal zone study conducted by an external consultancy, leading to completion in-house of a comprehensive Climate Change Adaptation and Risk Management Plan.

Appendix B provides a summary matrix of adaptation tools and processes in the case studies, their funding sources, collaborations with partner organisations, and internal or external facilitation. For further detailed guidance on which tool and application processes are likely to be useful in your context, refer to the:

- Portfolio of Case Studies and Statewide Synopses;
- Stage 1 Report section 4; and
- Stage 2 Report section 2

Be aware that new adaptation tools, including web-based tools, are being designed by research organisations and consultancies.

3.4 Road maps

Where do we start - or what is our next step after this current project? How do we integrate outputs into response plans: corporate, asset, strategic and community plans?

An issue may be whether it will be more advantageous for your organisation and community to focus on local adaptation issues and response planning e.g. through a detailed or high-level vulnerability study, or join forces in a regional collaboration.

The case studies and survey responses provide timely advice on next steps and future directions. Utilise the checklists below to develop a road map that identifies the next priority projects that need to be taken e.g. 'Following a 'first pass' risk assessment, we will....'

Checklist of top ranked next steps in national survey	Checklist of other salient next steps
<ul style="list-style-type: none"> <input type="checkbox"/> Incorporating tool/process outputs in a strategic plan <input type="checkbox"/> Complete the current tool/process <input type="checkbox"/> Incorporate tool/process outputs into a corporate plan <input type="checkbox"/> Continue implementing a current action plan <input type="checkbox"/> Develop a new action plan; <ul style="list-style-type: none"> b) incorporate tool/process outputs into a community plan <p>Our next steps:</p> <ul style="list-style-type: none"> ▪ ▪ ▪ 	<ul style="list-style-type: none"> <input type="checkbox"/> Consolidate development of plans including Regional Risk Response Plans & revised Strategic Plans <input type="checkbox"/> Improve community consultation through social research <input type="checkbox"/> Gather necessary information to develop new adaptation plans <input type="checkbox"/> Develop a new City Plan in the near future <input type="checkbox"/> Take up offer from insurance provider e.g. to facilitate detailed corporate risk assessment workshops <input type="checkbox"/> Take a next step championed & supported by a ROC <input type="checkbox"/> Utilise critical mass from amalgamations of smaller local governments into regional councils to initiate collaborative projects <input type="checkbox"/> Prepare to maintain business continuity and service delivery in the face of impacts & disruptions <p>Other relevant Insights/experiences re next steps:</p> <ul style="list-style-type: none"> ▪ ▪ ▪

3.5 Setting the compass

What are the intended outcomes i.e. what needs to be achieved? Identify critical success factors that make intended outcomes more achievable. How will success be measured? Monitor and evaluate achieved outcomes.

Intended outcomes and measures of success set the compass for adaptation journeys

Clarify the *intended* outcomes of the adaptation tool and process, early on, to set the compass. Measures of success provide a compass to guide the journey and check progress on whether intended outcomes are being reached, and to identify which program or project aspects or phases are going well or need extra attention. Use the checklist of top 5 ranked outcomes and other salient outcomes and measures of success, as catalysts to identify the *intended* outcomes and measures of success in your context:

Checklist of top ranked outcomes & measures of success	Checklist of other salient outcomes & measures of success
<ul style="list-style-type: none"> <input type="checkbox"/> Enables informed decision-making <input type="checkbox"/> Identifies key gaps and needs <input type="checkbox"/> Enables development of action plans <input type="checkbox"/> Promotes systems thinking <input type="checkbox"/> Encourages collaboration within & across organisations <p>Our <i>intended</i> outcomes & measures of success:</p> <ul style="list-style-type: none"> ▪ ▪ ▪ 	<ul style="list-style-type: none"> <input type="checkbox"/> Outcomes improve when funding is secured for an internal champion to drive adaptation processes & plans <input type="checkbox"/> Develop clear measures of success for projects, beforehand, & KPIs for risk management <p>Other relevant outcomes & measures of success:</p> <ul style="list-style-type: none"> ▪ ▪ ▪

Guidance on clarifying *intended*, *achieved* and *emergent* outcomes

You (and other council staff) may be unfamiliar with or daunted by the task of defining *intended* outcomes and measures of success, and developing key performance indicators (KPIs) to gauge *achieved* outcomes. It is easier to rely on evaluation templates mandated by funding programs and evaluation criteria provided by external experts. However, circumstances may require project-specific outcomes, measures of success, and KPIs. This additional guidance may be helpful:

Intended outcomes and measures of success are usually worded in the future tense. Whereas KPIs are worded in the past tense to indicate that outcomes have or are being *achieved* in mid-project progress reports, end-of-project evaluations and summary reports. *Achieved* outcomes may differ from the initial intended outcomes, reflecting changed circumstances, opportunities and challenges. *Emerging* outcomes are also important to note – these are unanticipated but may be very useful in hindsight, and provide opportunities for adaptive learning from complex situations and initial projects with steep learning curves.

Changes of wording and tense convert the top five ranked intended outcomes and measures of success in the checklist above, into KPIs:

Measuring intended outcomes ⇒ **KPIs to measure achieved outcomes**

- 1st - Enables informed decision-making ⇒ Informed decision-making enabled
- 2nd – Identifies key gaps and needs ⇒ Key gaps and needs identified
- 3rd – Enables development of action plans ⇒ Action plans developed
- 4th – Promotes systems thinking ⇒ Systems thinking promoted
- 5th – Results can be clearly communicated ⇒ Results clearly communicated

Identify critical success factors in achieving intended outcomes

Early identification of *critical success factors* will provide useful guidance in making intended outcomes more *achievable*. Availability of adequate human and financial resources to undertake a successful adaptation process is a very obvious critical success factor. The checklists below provide starting points to identify critical success factors that could matter most in your context:

Checklist of top ranked critical success factors	Checklist of other salient critical success factors
<ul style="list-style-type: none"> <input type="checkbox"/> Tools & application processes engaged staff from all departments <input type="checkbox"/> External facilitator brought expertise & gave staff confidence to assess & integrate multiple factors <input type="checkbox"/> Tools & application processes required minimal Council resources <input type="checkbox"/> Senior managers & councillors supported the tool/process <input type="checkbox"/> One or more internal champions drove the tool/process <p>Our critical success factors:</p> <ul style="list-style-type: none"> ▪ ▪ ▪ 	<ul style="list-style-type: none"> <input type="checkbox"/> Availability of adequate human and financial resources to undertake a successful adaptation process <input type="checkbox"/> Clarify differences in what adaptation means to different staff, to successfully implement action plans <input type="checkbox"/> Maximise intra- & inter-organisational support <input type="checkbox"/> Maintain momentum beyond 'first pass' risk assessments <input type="checkbox"/> Complex tools and processes work best when led by an external facilitator <input type="checkbox"/> Engage high profile, persuasive & plausible community advocates <input type="checkbox"/> Provide opportunities for professional peers to share information <p>Other relevant critical success factors:</p> <ul style="list-style-type: none"> ▪ ▪ ▪

Note that these critical success factors were written in the past tense because they were retrospectively described in the case studies and national survey, after tools and processes had been used. However, it is easy to convert these into intended outcomes, simply by rewording them in the future tense e.g.:

- ✓ Tools and processes will be selected that require minimal Council resources
- ✓ Opportunities for professional peers to share information will be provided
- ✓ Selected tools and processes will be supported by senior managers and councillors.

3.6 Making connections

Who can partner us? Who is a leader or mentor organisation? Who are our key stakeholders? How to engage our community to get on board? Where else can we get buy-in? Do we need to find a knowledge broker? How do we communicate, promote, market and leverage our outputs?

Regarding the importance of good connections, key learnings from the case studies and national survey include:

- Crucial to have an experienced, reputable external facilitator who is familiar with both community/stakeholder engagement and local governments
- Good local knowledge of hazards, risks and vulnerabilities including inter-decadal floods and major bushfires is a crucial input
- Summarise key information in simplified, non-scientific language to improve communication and general comprehension
- Clarify how community leadership roles and responsibilities can best contribute to assessment processes and implementation plans.

Key issues to consider in engaging communities include:

- Involve communities and stakeholders in developing local impact scenarios and adaptation response plans
- Encourage local communities and stakeholders to join in developing regional action plans, by sharing local knowledge with neighbouring towns and communities
- Provide an experienced, reputable external facilitator who is familiar with local governments and adept at engaging communities and stakeholders
- Wherever feasible, link with and provide in-kind support for initiatives that communities have self-started, such as climate change coalitions

Note also these community and stakeholder **learning enablers**:

- emphasise benefits of regional approaches to adaptation planning;
- utilise knowledge of local circumstances, issues & histories of impacts;
- create good communications through jargon-free, non scientific language

Engaging communities in developing regional climate change action plans (RCCAPs) provides ways and means to draw locals out of and beyond their parochial frames, and to balance their local issues and concerns with broader regional ones. They are likely to be presented with bigger pictures of challenges and solutions, and be asked to pool their local knowledge and wisdom. Successful approaches to engage communities and key stakeholders in hazards and vulnerability mapping, and developing action plans, may also provide opportunities for peer learning.

CSIRO's Adaptation Flagship, the 3 Pillars Network, the Australian Youth Climate Coalition <www.youthclimatecoalition.org> and other organisations are developing innovative communications strategies and networks that include local governments, and sharing successful experiences in community engagement.





The case study of City of Clarence's Integrated Coastal Impacts Assessment provides an exemplar of engaging the community through a community survey, stakeholder interviews, and communication strategy. Swan Metropolitan Regional Council and Randwick City Council are using the *Living Smart*

program to engage residents in energy and water efficient techniques, badged as **saving money** but linked to climate change adaptation issues and responses. Auburn Council is part of a network of councils in Western Sydney that are using similar money-saving approaches – refer to the flier in Figure 3.

Figure 3: Auburn City Council’s community engagement program

Help your community understand climate change and how to save money on energy bills:

An educational forum for community workers and community leaders

-  Is everyone around you talking about their increasing household energy bills?
-  Do you want to know what the carbon price implementation on 1 July 2012 will mean for you and your community members?
-  Would you like to learn about the benefits of energy efficiency and reducing carbon emissions?
-  Are your community members concerned about the impact of climate change, such as increased temperatures?

Come along to this free forum to hear about how you can support your community members to improve their household energy efficiency and save money on energy bills.

Venue: Auburn Centre for Community,
44A Macquarie Rd, Auburn NSW 2144

Date: Thursday May 31st, 2012

Time: 10am – 12pm, registrations open 9.30am.

Free entry • Refreshments served

For more information and to register contact Claire Pettigrew on **9649 5559** or email **environment@acd.org.au**

This forum is being delivered as part of ACDN's Living Green Community Environmental Education and Storytelling Project.

Living Green
Communities, Environment, Education

ACDN
Arts • Youth • Community

clean energy future

Australian Government
Department of Climate Change and Energy Efficiency

The views expressed herein are not necessarily the views of the Commonwealth of Australia, and the Commonwealth does not accept responsibility for any information or advice contained herein.

3.7 Resourcing and other challenges

Do we have sufficient resources in-house for a localised project, or do we need to join in a regional collaboration? What challenges and barriers may restrict the application of a tool? Which advice on practical ways to resolve challenges is relevant?

Answers to challenging questions about whether sufficient human and financial resources are available, are likely to hinge on assessment of these key issues:

- availability of funding and/or attached funding conditions
- whether human and financial resource needs can be met in-house, or whether a regional collaboration to pool scarce resources is required
- decisions on the most appropriate scale for developing initial adaptation response plans i.e. go local, or go regional?

As a start-up process, participation in developing a *regional* climate change adaptation project (RCCAP) may make it easier to engage other in-house staff and offer shared professional development and capacity building opportunities with partner organisations. These experiences can then be leveraged in a next-step project to develop *local* action plans. Depending on the context and resources at hand, *reversing* these steps may be the better option i.e. start local then go regional.

Whichever start-up approach suits, use the best available climate vulnerability and/or impact scenarios for your local or regional context. There may be suitable off-the-shelf scenarios developed by a research organisation. If a good scenario for your location has not yet been developed, it may warrant a collaborative project with a research organisation.

Use the most *appropriate* local or regional scale to develop an adaptation response or action plan. The choice between a local or regional scale is likely to depend on resourcing, capacity, and technical issues including:

- availability of robust, fine-scale data preferably at the property scale so that landowners can relate to it
- availability of local or regional vulnerability/impact scenarios
- access to adequate funding – can the organisation fund it, or is external funding necessary and if so will it be stipulated for a local or regional project?
- in-house capacities of staff – already capable to go it alone, or in need of support from a regional collaboration?

Be prepared for likely challenges and barriers that may be encountered

Heed the advice from professional peers on the topmost challenges and barriers they encountered, and their practical ways to identify and resolve their challenges. The top ranked challenges and barriers, checklisted below, are paired with practical solutions suggested in the national survey responses. Other salient challenges and barriers – and practical resolutions to them - described by survey respondents (refer to Stage 2 Report p.10) are summarised in the right hand column in Appendix A, below. You may encounter similar challenges and barriers in your context.

Checklist of top ranked challenges & barriers	Checklist of practical ways to resolve challenges
<input type="checkbox"/> Lack of sustained funding for action plans	<input type="checkbox"/> Link climate change to sustainability agenda <input type="checkbox"/> Persuade senior staff & Councillors that adaptation actions deal with current issues <input type="checkbox"/> Demonstrate the legal argument supporting 'do something' options over 'do nothing'
<input type="checkbox"/> Getting planners & decision-makers to participate in risk assessment workshops	<input type="checkbox"/> Create a key stakeholder group to get the right participants involved in risk assessment workshops <input type="checkbox"/> Focus on effective leadership roles to 'sell' to internal staff importance of securing divisional resources into the future
<input type="checkbox"/> Integrating tool and process outputs into strategic response planning processes	<input type="checkbox"/> Integrate adaptation actions in Community Strategic Plan and Delivery and Operational Plans <input type="checkbox"/> Ensure a cross section of management levels & staff roles participate in vulnerability/risk assessment workshops as well as adaptation planning processes
<input type="checkbox"/> How to move beyond 'first pass' risk assessments	<input type="checkbox"/> Collaborate in regional scale adaptation plans to move beyond local scale 'first pass' risk assessments <input type="checkbox"/> Obtain specific project funding to develop fine scale data <input type="checkbox"/> Forge partnerships with research organisations e.g. CSIRO
<input type="checkbox"/> Getting vulnerability & risk assessment workshop participants to complete follow-up tasks	<input type="checkbox"/> Ensure senior management issues firm directions to complete follow-up tasks from workshops
<input type="checkbox"/> Complex vulnerability & risk assessments require external expertise	<input type="checkbox"/> Develop a rationale & seek funding to engage experts to undertake complex hazard, vulnerability & risk assessments
<p>Challenges & barriers in our context:</p> <ul style="list-style-type: none"> ▪ ▪ ▪ 	<p>Practical resolutions:</p> <ul style="list-style-type: none"> ▪ ▪ ▪

4. DRILLING DOWN INTO KEY ADAPTATION CHALLENGES AND THEIR RESOLUTIONS

Some of the key adaptation challenges and their resolutions unpacked above warrant further drilling down. This is the purpose of this follow-on section.

The Stage 1 Report illustrated how the local government sector has carriage for much of the ‘on-the-ground’ management and implementation of climate change adaptation. This accords with the *subsidiarity principle* emanating from the Rio Earth Summit and Agenda 21 (Steele and Burton, 2010). This principle is a driver for locating power and responsibility for climate change adaptation strategies and actions at the lowest appropriate spatial scales of governance and decision-making to address local issues and contexts, and attain buy-in through community engagement. However, the survey responses affirmed this key challenge: how to engage communities and key stakeholders, with potential local knowledge inputs, to collaborate with experts in council-led hazards and vulnerability studies e.g. inundation mapping workshops? Effective engagement enables communities to own and support ‘grass roots’ adaptation action plans but some councils reported that they are struggling to garner community buy-in.

ACCARNSI’s research and evaluation also found that effective management and implementation of adaptation by local governments is challenged by their limited financial resources and the lack of sustained funding from state and federal sources to consolidate adaptation action plans. Other key challenges for local governments commonly reported in case studies and the national survey included:

- low involvement of planners in cross-council vulnerability and risk assessment workshops, which reflects internal organisational boundaries between planners and staff in other council divisions;
- failure to incorporate key outputs from adaptation tools and processes e.g. corporate and/or community risk assessment workshops in longer-term strategic plans;
- other forms of internal organisational resistances or ‘foot-dragging’ regarding preparation and implementation of adaptation action plans;
- inter-organisational barriers and governance issues including inappropriate spatial scales for effective adaptation; and
- lastly, weak regulatory policies and legislative barriers to adaptation initiatives

4.1 Synthesis of key challenges

i. Low involvement of planners

Reported low involvement of planners in cross-council risk assessment workshops leads to a failure to incorporate key workshop outputs in longer-term strategic plans, and the continuation of inappropriately short-term planning regimes. This issue has implications for organisational change and often indicates internal boundaries.

ii. Organisational barriers

Inherited planning standards and guidelines have, over time, become deeply embedded in organisational and governance cultures. This makes it difficult to change the way decision-making and policy-making processes work. Key factors inhibiting effective adaptation include: *path dependency* (i.e. trends are hard to change when initial investments have already been made); under-appreciating the value of hazards/vulnerability prevention and preparedness; lack of internal capacity and skills to deal with climate change issues, and loss of corporate memory.

iii. Governance issues

How to resolve *internal* organisational boundaries between planners and other divisions is a key governance concern for the local government sector, requiring policy and management redress at senior decision-making levels. Complex external boundary issues and governance arrangements between state/territory and national departments and agencies are perhaps the biggest barrier to local governments undertaking climate change adaptation initiatives (Withycombe, 2012).

iv. Weak regulatory policies and legislative barriers

Many barriers propagate from legislative restrictions that entangle all 3 tiers of government and anachronisms inherited from State and Federal Constitutions (Smith, 2011). At this macro-level, there are inconsistent policy priorities and directions among the States and the Australian Government, which have not yet been 'sorted' by COAG. Secondly, there are no overarching state and national planning and land use frameworks to effectively drive adaptation in a nationally coordinated manner.

Current regulatory and legal frameworks are not strong enough and are a major impediment for effective adaptation. For example, the Victorian State Planning Policy was unable to prevent development occurring in vulnerable coastal areas, despite the inclusion of an erosion-prone-areas policy. State, territory and local governments are constrained by limited budgets and resources for implementation. The lack of federal constitutional power to legislate with regard to climate change and planning is one reason for this weakness (McDonald, in Bonyhady et al., 2010). The complexity of legislative frameworks - with layers of Common Law and Statutes that are often contradictory - is also an issue. These legislative issues relate to lack of leadership and guidance in adaptation planning (Gates et al., 2010). Local governments were not perceived to have the resources available to restrict development in hazardous areas, particularly when wealthy residents and developers are determined to build on vulnerable floodplains and foreshores. Some State Planning Policies are deficient: they identify erosion prone, high-risk areas but appear not sufficiently strong enough to prevent inappropriate development.

4.2 Where to from here?

Resolving internal organisational boundaries between planners and other divisions in local government requires management redress at senior decision-making levels, as well as policy reforms at state, territory and national levels, to drive effective adaptations. At the macro-level and longer-term, ALGA is calling for a successful referendum to reform the Constitution to provide the requisite national legislative framework, enable statutes to codify the functions and powers of local governments vis-à-vis state and national tiers, and allocate a guaranteed share of funding directly from consolidated revenue. However, few in local government are anticipating the success of such wide-scale reforms 'any time soon'. Meanwhile, things can be done at the micro-level, and in the short to medium-term.

4.3 Resolving challenges in the short- and medium-term

Thematic analyses of the case studies and national survey identified practical measures that can be taken by local governments - or suggested for future action - to resolve some of their key challenges and barriers to climate change adaptation. These solutions include:

- attaining high level buy-in to adaptation programs and embedding responsibility for management of particular risks into use of adaptation tools and processes;
- prioritizing adaptation actions in the Community Strategic Plans, Community and Corporate Risk Management Plans, Delivery and Operational plans and so forth;
- utilising regional climate change scenarios to better understand and prepare for likely risks and impacts of sea level rise and increased frequency of extreme weather events associated with climate change; and
- moving from local to regional scales to gain efficiency benefits and attain critical mass from collaborating with neighbouring councils to devise regional adaptation response plans.

Question 7 in the national survey sought practical resolutions to the challenges that local government practitioners face. These resolutions are summarised in Appendix A. One resolution that has wider application is regional scale funding to develop and consolidate adaptation action plans, which is potentially a cost effective approach for smaller rural, peri-urban and urban councils challenged by limited financial resources. Other advantages on offer from moving from local towards collaborative regional scale response plans – including effective use of limited human resources, and pooling resources to bring in external expertise - were highlighted in the case studies and national survey responses. These solutions are reflected in the supporting checklist for the Adaptation Tools Selector, in section 3.7.

4.4 Encouraging adaptive learning

For council decision-makers, residents, local business people and other key stakeholders, successful adaptation requires positive approaches to learn from challenging experiences. *Resilience thinking* and *agile problem-solving* are essential ingredients in adaptive learning approaches, where decisions by local government practitioners are viewed as experiments from which those involved in future projects can learn (Harding et al., 2009). Research and evaluation of appropriate adaptation tools and approaches for the local government sector also entails wide-ranging assessments of multiple, complex factors including urban planning and environmental law, emergency management, urban and rural landscape management, insurance and financial planning (McDonald, in Bonyhady et al., 2010: 2).

4.5 Identifying critical success factors in engaging communities

The case studies and national survey responses provided an understanding that the following factors underpin successful engagements with communities and local stakeholders:

- i. Local attitudes and preferences are assessed early on in the process (Clarence City Council integrated coastal study)
- ii. Good use of scenarios and visual modelling tools at community and stakeholder meetings is essential
- iii. Outputs meet with expectations that Council will address and respond to community and stakeholder perspectives and concerns (City of Port Adelaide Enfield metro flood study)
- iv. Effective reporting on outputs e.g. tightly worded, visually engaging Executive Summaries and Community Communiqués so that councillors, community leaders, champions and residents can “get their heads around” the key issues.

5. RECOMMENDATIONS TO IMPROVE ADAPTATION TOOLS AND PROCESSES

Provisional recommendations to improve adaptation tools and processes in the Stage 1 Case Studies Report were reprised in light of the Stage 2 national survey responses and feedback from participants in the culminating national roadshow. Their scope includes:

- tools that enable fine-scale risk assessments, at the property scale;
- tools and processes to engage communities in mapping hazards and vulnerabilities;
- user-friendly web-based tools;
- development of regionally relevant scenarios that communicate likely climate change impacts; and
- tools and application processes to garner local knowledge inputs for action plans.

5.1 Develop a better ‘first pass’ risk assessment tool

The Stage 1 Case Studies provided a platform to identify gaps in the availability of adaptation tools that need to be addressed and to improve their applications at local and regional scales. For example, a key finding on the usefulness of the AGO 2006 Guide was highlighted in the West Australian Overview. It identified two problematic issues with its risk framework. Firstly, it yielded results that were similar across councils around Western Australia. Was this because the risks are the same - or was the tool too broad scale to be useful at local or regional scales? Secondly, it targeted local government level *operational risks* but it is actually a framework for broader strategic assessments and cannot deliver site-specific outputs. The findings point towards a decision point: develop an improved tool for a ‘first pass’ risk assessment process.

Practitioners involved in ‘first pass’ risk assessments undertaken by the Cities of Burnside, Marion and Onkaparinga suggested ways to improve in-house and community applications of a ‘first pass’ risk assessment tool:

i. In-house applications (within organisational cultures)

- *“Allow plenty of time to enable good engagement across the organisation”*
- *“Be clear in your initial brief, be clear in what you expect with regards to the project outputs, and do not accept the lowest common denominator from the consultancy. You will need to work with the consultancy to achieve the desired outputs.”*
- *“Start with some base level climate change and risk management education for all staff who will be involved in the project. This will enhance capacity and give you an understanding of the levels of knowledge and skill.”*

ii. Community applications

- *“Keep the description of risks simple.”*
- *“Definitely involve your community as a way of getting an understanding of how they perceive the issue. This will give you information on how you can best communicate back to the various demographics. Demographic segments obtain information differently and you may have to use a variety of communication channels.”*

5.2 Tools to enable hazard and vulnerability assessments at the property level

Challenges to identifying localised, site-specific risks (as reported by Mandurah, Clarence Valley, Eastern Metropolitan Regional Council, Devonport and Launceston councils) underscore the need for councils and residents to gain access to accurate, fine scale data at the property level, for site-specific risk identifications and to develop targeted adaptation action plans that garner community buy-in and support. An exemplar is the City of Clarence's comprehensive coastal vulnerability study of climate change impacts and adaptive responses, which incorporated integrated spatial mapping, assessments of social and economic impacts, cost-benefit analyses and risk communication strategies.

5.3 Regional scenarios that inform longer-term strategies and action plans

Regional scale climate scenarios with 20+ year time frames are also needed to underpin the development of longer-term strategies and action or response plans. Examples include the Integrated Assessment Of Climate Change Impacts On Urban Settlements (IACCIUS) Project: Report on Local Climate Variability and Change in Bendigo, Canberra and Queanbeyan, Cooma, and Darwin (2010) undertaken by the Fenner School at ANU. These regional-scale scenarios are an important component of **integrated decision-making**. However, they must be practitioner-friendly and assist in getting key messages to communities. These findings corroborate key concerns underscored at the NCCARF workshop on *Learning from Experience* (Sydney 27 June 2011): comprehensive vulnerability assessments and adaptation action planning are most effective at regional scales of application, where 'major players' including water utilities and government departments are required to share data and work collaboratively to design and implement strategies.

5.4 'Next generation' strategic plans

Informing *next generation* strategic plans emerges as a key outcome of all adaptation tools and processes. Although the planning outputs of the risk assessment tools/processes may not be immediately striking, they can have longer-term benefits that become more apparent, including a significant contribution to updating or developing new strategic plans. Nevertheless, leadership commitment is required to incorporate tool/process outputs in longer-term Strategic Plans with realistic visions, directions, outcomes, and a timeframe for achieving objectives – ideally with a correlating Financial Plan to ensure delivery.

5.5 Web-based tools

Web-based adaptation can make significant contributions to development of local-scale and regional-scale climate change impact scenarios. The Cairns Sustainability Scorecard project prompts consideration of developing a correlating web-based version i.e. a *Climate Change Adaptation Scorecard* that sits alongside its Sustainability Scorecard. There are other pointers in the case studies to the value of web-based tools for visualising, communicating and monitoring impacts, and demonstrating adaptation effectiveness to communities and key stakeholders. The UKCIP's Local Climate Impacts Profile (LCIP) provides an on-line method of quantifying extreme weather impacts, to underpin regional and local risk assessments, and development of strategic adaptation plans. The feasibility of modifying good web-based adaptation tools from overseas for Australian applications, and gaps that warrant the design of new web-based adaptation tools, are being investigated in another NCCARF funded research project, *Leading adaptation practices and support (LAPS project)*, being undertaken by the Fenner School at the Australian National University.

5.6 Develop a tool to address gaps in financial modelling

Another significant gap is the paucity of tools for longer-term financial analyses. In the Port Adelaide Enfield Metropolitan Flood Risk case study, Council felt that there was, and still is, very little available in the way of effective financial modelling tools for adaptation planning and investment decision making that adequately incorporates longer term climate risk.

5.7 Encourage tools to support participatory scenario modelling processes

Meet requests for tools that support *participatory scenario modelling* i.e. enabling communities and key stakeholders to contribute their local knowledge and memories of extreme weather events and impacts, and cooperate with experts to devise local or regional scenarios. For example, inundation mapping undertaken by the Sydney Coastal Councils Group in collaboration with CSIRO e.g. at Manly and Warringah councils, and similarly at Mornington Peninsula, have proved to be good stepping stones to involving locals in constructing scenarios and adaptation plans. The City of Clarence's recommendations on how to achieve successful organisational and community engagement in participatory scenario modelling processes include:

- *“Attract and engage highly recognised and competent consultants. Spend time locating these people and getting to know their capabilities.”*
- *“It is critical for Local Government to capture information on long term coastal change trends, to support the calibration and refinement of coastal hazard modelling and research studies. Once you have this information any subsequent coastal hazard assessments will be more reliable and defensible, and the information will support future funding submissions.”*
- *“Where climate change is a compounding impact on existing risks, the existing risks can be used to gain support from those who are sceptical regarding climate change.”*
- *“The Communication Strategy has been an essential element of this project, enabling all staff and elected representatives to deliver the same key messages.”*

However, bear in mind that “local knowledge will not always comprise the necessary expertise required to identify and assess risks” (Launceston City Council).

5.8 Meet requests for follow-on consolidation processes

Feedback to WALGA indicates that despite having undertaken LAPP funded risk assessment processes, WA Councils feel that prioritising risks does not necessarily make them strategically or operationally more capable of dealing with these priorities. Furthermore, they feel that the process has opened them to increased public perceptions of risks - but they lack the capacity to deal with the additional burden that these risks may present. A rationale emerges for a follow-on round of funding to consolidate ‘first pass’ risk assessment projects, focused sharply on incorporating outputs in strategic planning and climate action plans (CAPs).

5.9 Improve the continuity of funding for adaptation processes

Provide follow-on funding to enable ‘next step’ adaptation projects e.g. to develop local and regional climate action plans. Reflections on the West Australian experiences described above prompt calls for a more strategic approach to funding, which would offer at least ‘part funding’ to all complying councils, rather than competitive funding to those who have the resources or assistance to apply for the grants.

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6. APPENDIX A: SUMMARY OF TOP RANKED ISSUES IN THE NATIONAL SURVEY

Top ranked issues in the national survey	Other salient issues, insights & experiences
<p>Top 5 key drivers</p> <p>1st: Identify & prioritise hazards, vulnerabilities & risks of climate change impacts 2nd: provide leadership at local and regional levels 3rd: reduce risks to avoid liabilities 4th: enhance resilience at a range of scales Equal 5th: a) support development of relevant policies; b) build internal organisational capacities; c) save money by being proactive</p>	<p>Other salient key drivers</p> <ul style="list-style-type: none"> ○ Maintain Council's credibility with community & stakeholders; ○ Required by governments ○ Derive multiple benefits from working collaboratively ○ Identify changes to the economic landscape of local & regional areas ○ Meet & manage community expectations ○ Support from proactive councillors
<p>Top 5 outcomes & measures of success</p> <p>1st: enables informed decision-making 2nd: identifies key gaps and needs 3rd: enables development of action plans 4th: promotes systems thinking 5th: encourages collaboration within & across organisations</p>	<p>Other salient outcomes & measures of success</p> <ul style="list-style-type: none"> ○ Outcomes improve when funding is secured for an internal champion to drive adaptation processes & plans ○ Develop clear measures of success for projects, beforehand, & KPIs for risk management
<p>Top 5 critical success factors</p> <p>1st: tools & application processes engaged staff from all departments 2nd: external facilitator brought expertise & gave staff confidence to assess & integrate multiple factors Equal 3rd: a) tools & application processes required minimal Council resources; b) senior managers & councillors supported the tool/process 4th: one or more internal champions drove the tool/process</p>	<p>Other salient critical success factors</p> <ul style="list-style-type: none"> ○ Clarify differences in what adaptation means to different staff, to successfully implement action plans ○ Maximise intra- & inter-organisational support ○ Maintain momentum beyond 'first pass' risk assessments ○ Complex tools and processes work best when led by an external facilitator ○ Engage high profile, persuasive & plausible community advocates ○ Provide opportunities for professional peers to share information
<p>Top 5 challenges & barriers</p> <p>1st: lack of sustained funding for action plans</p> <p>2nd: getting planners & decision-makers to participate in risk assessment workshops</p> <p>3rd: integrating tool and process outputs into strategic response planning processes</p> <p>4th: how to move beyond 'first pass' risk assessments</p> <p>Equal 5th: a) getting vulnerability & risk assessment workshop participants to complete follow-up tasks; b) complex vulnerability & risk assessments require external expertise</p>	<p>Practical ways to resolve challenges & barriers</p> <p>1st: a) link climate change to sustainability agenda; b) persuade senior staff & Councillors that adaptation actions deal with current issues; c) demonstrate the legal argument supporting 'do something' options over 'do nothing'</p> <p>2nd: a) create a key stakeholder group to get the right participants involved in risk assessment workshops; b) focus on effective leadership roles to 'sell' to internal staff importance of securing divisional resources into the future</p> <p>3rd: a) integrate adaptation actions in Community Strategic Plans and Delivery and Operational Plans; b) ensure a cross section of management levels & staff roles participate in vulnerability/risk assessment workshops as well as adaptation planning processes</p> <p>4th: a) collaborate in regional scale adaptation plans to move beyond local scale 'first pass risk assessments; b) obtain specific project funding to develop fine scale data; c) forge partnerships with research organisations e.g. CSIRO</p> <p>Equal 5th: a) ensure senior management issues firm directions to complete follow-up tasks from workshops; b) develop a rationale & seek funding to engage experts to undertake complex hazard, vulnerability & risk assessments</p>

<p>Other salient challenges and barriers</p> <ul style="list-style-type: none"> ○ Unavailability of local data to assess risks ○ Lack of overarching planning & landuse frameworks, & inconsistent policies & jurisdictions ○ Difficulties incorporating adaptation strategies in landuse planning schemes ○ Stretched resources in smaller (especially rural) councils makes taking action difficult ○ Organisational resistance to change ○ Difficulties effectively integrating adaptation management in the right places across organisations ○ Inertia stemming from the ongoing debates about validity of climate science ○ Politicisation of adaptation issues ○ Scepticism& low buy-in by councillors and communities 	<p>Resolving other salient challenges & barriers</p> <ul style="list-style-type: none"> ○ Gain ongoing National & State funding to engage external expertise, build capacities & enable follow-on action projects ○ Seek effective State and National support for longer-term landuse planning schemes ○ Generate fine-scale local data to inform regional scenarios by involving staff, communities & stakeholders in local-to-regional approaches ○ Use management reviews of priorities to overcome internal barriers to integrated planning ○ Engage communities through informed dialogues on climate change impacts & risks that they face
<p>Top 5 adaptive learnings</p> <p>1st: need to build staff ownership of adaptation processes, priorities, strategies & action plans</p> <p>2nd: build climate change into Council’s business</p> <p>3rd: good local knowledge of hazards, risks & vulnerabilities</p> <p>4th: maintain continuity of key staff throughout projects</p> <p>5th: vulnerability assessment generated more questions than answers</p>	<p>Other salient adaptive learnings</p> <ul style="list-style-type: none"> ○ Need coordination across all levels of governance; ○ Address intergenerational equity issues including extra costs borne by current ratepayers for future impacts; ○ <i>Organisational</i> learning enablers: a) envisage layers of learning from adaptation processes; b) maintain staff continuity to consolidate processes & retain learnings; c) incorporate adaptation in business plans ○ <i>Community & stakeholder</i> learning enablers: a) emphasise benefits of regional approaches to adaptation planning; b) utilise knowledge of local circumstances, issues & histories of impacts; c) create good communications through clear language
<p>Top 5 next steps</p> <p>1st: incorporating tool/process outputs in a strategic plan</p> <p>2nd: complete the current tool/process</p> <p>3rd: incorporate tool/process outputs into a corporate plan</p> <p>4th: continue implementing a current action plan</p> <p>Equal 5th: a) develop a new action plan; b) incorporate tool/process outputs into a community plan</p>	<p>Other salient next steps</p> <ul style="list-style-type: none"> ○ Consolidate development of plans including Regional Risk Response Plans & revised Strategic Plans ○ Improve community consultation through social research ○ Gather necessary information to develop new adaptation plans ○ Develop a new City Plan in the near future ○ Take up offer from insurance provider e.g. to facilitate detailed corporate risk assessment workshops ○ Take a next step championed & supported by a ROC ○ Utilise critical mass from amalgamations of smaller local governments into regional councils to initiate collaborative projects ○ Prepare to maintain business continuity and service delivery in the face of impacts & disruptions

Figure A1: (Figure 1 in Stage 2 Report) Synopsis of top ranked issues and resolutions to challenges

7. APPENDIX B: SUMMARY MATRIX OF ADAPTATION TOOLS

Adaptation Tools & Processes	Case studies of Councils & Statewide synopses	Funding sources, collaborations, internal or external facilitation
'First pass' risk assessments: <ul style="list-style-type: none"> AGO Guide to Risk Management 2006 (AGO 2006) ISO Risk Assessment Frameworks: <ul style="list-style-type: none"> - AS/NZS 4360:2004 - superseded by AS/NZS ISO 31000:2009 	<ul style="list-style-type: none"> Synopsis of 30⁺ LAPP funded risk assessment projects in WA councils Sector-wide study of LAPP funded projects in 19 Victorian councils Cities of Burnside, Marion & Onkaparinga – Adelaide City of South Perth Redland City Council (Qld) Launceston City Council 	National: Local Adaptation Pathways Program (LAPP) - mandated external facilitation by approved consultants including JWT/Echelon Australia P/L & AECOM
Climate Adaptation Plans based on corporate &/or community risk assessments: <ul style="list-style-type: none"> Climate Change Adaptation Actions for Local Government (DCC 2009) AS/NZS 4360:2004 & AS/NZS ISO 31000:2009 	<ul style="list-style-type: none"> City of Campbelltown Council (South Australia) 	South Australian Local Government Association Mutual Liability Scheme (LGAMLS) Local Government Insurance Services (LGIS) in Western Australia
Corporate risk assessment & management: operations, services, assets & personnel	Clarence Valley Council (NSW)	NSW Statewide Mutual <i>Climate Change Risk Assessment Workshop Program</i>
Coastal vulnerability & risk assessments & adaptation options & responses: <ul style="list-style-type: none"> AGO 2006 DCC 2009 additional methodologies provided by consultants 	<ul style="list-style-type: none"> Mandurah City Council Devonport City Council & Cradle Coast Authority 	Mandurah: LAPP funded consultancy provided by Coastal Zone Management P/L Devonport: LAPP funded consultancy provided by Climate Risk P/L
Regional Adaptation Action Plans: <ul style="list-style-type: none"> AGO 2006 AS/NZS 4360:2004 / AS/NZS ISO 31000:2009 	<ul style="list-style-type: none"> Eastern Metropolitan Regional Council (ERMC): <i>Future Proofing Perth's Eastern Region</i> 	LAPP funded consultancy provided by Coastal Zone Management P/L & Greensense P/L
Vulnerability assessment – development of spreadsheet tool by external consultant	<ul style="list-style-type: none"> Eyre Peninsula Natural Resource Management Board 	Partnership with CSIRO, BoM, SARDI & ABARE
High level vulnerability & risk assessment	<ul style="list-style-type: none"> Sutherland Shire Council: Professional integration of spatial mapping & other tools 	Collaborative project with SCCG, CSIRO & University of the Sunshine Coast (USC)
Detailed flood risk & climate adaptation studies & decision support tools:	<ul style="list-style-type: none"> Moreton Bay Regional Council City of Port Adelaide Enfield Council 	Professional integration of spatial mapping, rapid appraisal tools et cetera by engineering consultancies
Integrated coastal impacts study: hazards & vulnerabilities & Climate Adaptation Options and Responses	<ul style="list-style-type: none"> Clarence City Council (south Hobart) 	Professional integration of a range of tools by SGS Economics & Planning, Myriad Research & Water Research Laboratory UNSW
Business Case for Adaptation	<ul style="list-style-type: none"> Gosford City Council 	Tool developed in-house
Sustainability Scorecard	<ul style="list-style-type: none"> Cairns Regional Council 	Adaption of a sustainability tool initially developed by ARUP

Figure B1: Matrix of adaptation tools and processes used, case study councils, funding sources, collaborations and internal or external facilitation.

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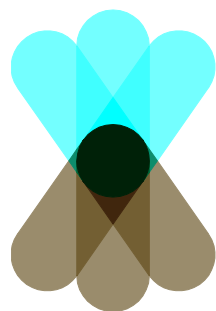
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