NCCARF
National
Climate Change Adaptation
Research Facility
Adaptation Research Network
SETTLEMENTS AND INFRASTRUCTURE

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

FINAL STAGE 2 REPORT

NATIONAL SURVEY OF CLIMATE CHANGE ADAPTATION TOOLS AND PROCESSES USED IN THE LOCAL GOVERNMENT SECTOR

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

May 2012 – Philip Booth and Ron Cox

King tide flood event at Fletcher Road, Birkenhead, City of Port Adelaide Enfield, 25 May 2009

ISBN: 978-0-7334-3200-2

TABLE OF CONTENTS

TABLE OF FIGURES

ACKNOWLEDGEMENTS

ACCARNSI's prioritised research and evaluation projects with the Local Government sector - involving an initial scoping workshop, gathering case studies and the design and distribution of a national survey - have been made possible by collaborative efforts with:

- Rolf Fenner - Australian Local Government Association (ALGA)
- Katrina Graham - Hobart City Council
- Melanie Brown - Local Government Association of Tasmania (LGAT)
- Amy Lovesey and Robert Verhey – NSW Local Government and Shires Association (LGSA)
- Adam Gray and Anne Weckert – Local Government Association of South Australia (LGA-SA)
- Melanie Bainbridge and Mark Batty – West Australian Local Government Association (WALGA)
- Dorean Erhart and Luke Reade – Local Government Association of Queensland (LGAQ)
- John Ravlic – Local Government Managers Association (LGMA)
- Ben Morris – Municipal Association of Victoria (MAV)
- Shenagh Gamble – Local Government Association of Northern Territory (LGANT)
- Geoff Withycombe – Sydney Coastal Councils Group (SCCG)
- Christopher Lee – NSW Office of Environment and Heritage

Survey design

Thanks especially to Amy Lovesey, Anne Weckert and Luke Reade for their collaborative inputs to the survey design.

Contributions from councils and regional organisations of councils

We thank all of the councils and regional organisations of councils who answered the survey. Without your contributions of key data and the time and effort to organise your responses, this 2nd ACCARNSI local government research initiative would have been fruitless.

Citing this report

Research and evaluation for ACCARNSI's Stage 2 Local Government initiative with ALGA was undertaken by Dr Philip Booth. Please cite this report as: Booth P, 2012, *Stage 1 Report: Case Studies of Climate Change Adaptation Tools and Application Processes used by Local Government practitioners*, Australian Climate Change Adaptation Research Network for Settlements and Infrastructure, School of Civil and Environmental Engineering, University of New South Wales, Sydney

EXECUTIVE SUMMARY

This report on a national survey of climate change adaptation tools and processes used by councils and regional organisations of councils (ROCS) is the second of three 'demand-driven' research and evaluation priority projects undertaken by the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI). These priorities were identified at a workshop for local government representatives convened by ACCARNSI and the Australian Local Government Association (ALGA) in Adelaide in December 2010. The representatives posed this key question for ACCARNSI to research and evaluate: "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 to select appropriate tools and use them effectively?" The research priorities are reflected in ACCARNSI's 3-stage work plans for 2011 and 2012, below:

1st research stage: this involved the design of a reporting template to gather 16 case studies and 4 statewide synopses of how local government practitioners have used climate change adaptation tools and their application processes. Reported purposes, key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings and next steps were thematically analysed to evaluate whether and how these tools have enabled councils to mainstream adaptation, and build the skills and capacities of practitioners, organisations and communities. An initial matrix was developed to categorise the adaptation tools and processes used by councils (reproduced in Appendix 1).

2nd research stage: the Stage 1 Case Studies Report was utilised to design and undertake a nationwide on-line survey of councils and regional organisations of councils (Appendix 2) The survey was undertaken in collaboration with ALGA and State and Territory associations, and conducted in August-September 2011. There were 115 valid responses to the survey.

3rd research stage: key learnings from the Stage 1 and Stage 2 research and evaluation will be will synthesised in the Stage 3 Report. It will feature a Decision Support Guide that assists local government practitioners and other end-users to make better-informed decisions on which adaptation tools and processes best meet their purposes, assist them to identify strengths to capitalise on, needs and gaps to address, and possible ways to resolve anticipated challenges.

The final Stage 1 Case Studies Report and accompanying Portfolio of Case Studies and Synopses, the Stage 2 National Survey Report and the Stage 3 Synthesis Report will be publicly available on the ACCARNSI website by mid-2012.

Intent of the National Survey

The central aims of the national survey of councils and ROCs were to: test the nationwide relevance of issues provisionally shortlisted from the preceding case studies, by asking respondents to rank their top 3 issues; provide opportunities to describe other context-specific priority issues; further explore and evaluate the range of government agency and professionally designed adaptation tools available to local government practitioners; canvass their experiences with application processes; and analyse the results to inform the Stage 3 Synthesis Report and build a Decision Support Guide.

Design of the survey questions

Question 1a identified responding councils and ROCs by state/territory. Question 1b provided geographic and demographic profiles including the regularity of hazards. Question 1c gauged the level of management involved in signing-off the survey responses, if required, ranging from general manager to team leader. Question 2 gathered data on which tools and processes have been used by Councils and ROCS. The list of options in closed question 2a was derived from the initial Matrix of

Adaptation Tools and Processes produced in the Stage 1 Report (Appendix 1). Open question 2b enabled respondents to describe **other** tools and processes.

Compulsory closed questions 3a to 9a drilled down into issues concerning the use of tools and processes. Respondents were instructed to rank their top 3 key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings and next steps, by choosing from shortlists of *corporate*, *business case, response planning, technical, community and stakeholder*, and *context-specific* issues gleaned from the preceding case studies. Correlating semi-structured questions 3b to q9b enabled respondents to report on **other** salient contextual issues. Additional open questions 3c to 9c provided further opportunities to richly describe significant experiences and insights regarding applications of climate change adaptation tools and processes. Question 7 asked respondents to describe whether and how their top ranked challenges were *resolved*, and was designed to shift respondents' thinking from reactive to proactive modes.

Conduct of the survey

The survey was conducted independently by ACCARNSI to ensure integrity of the research and external evaluation. The survey was accessed on-line through Survey Monkey. A PDF copy of the survey questions (as per Appendix 2) was attached to emails to councils and ROCs so that respondents could grasp its scope and intent, prepare answers and determine if signing off was required. A user-oriented cover page accompanied the emailed invitation. It outlined the key aims and Intended outputs of the national survey. In contrast to the Stage 1 Case Studies Report where the identities of the councils and key staff who provided responses is made known to all, the identity of survey respondents and their organisations will be kept anonymous.

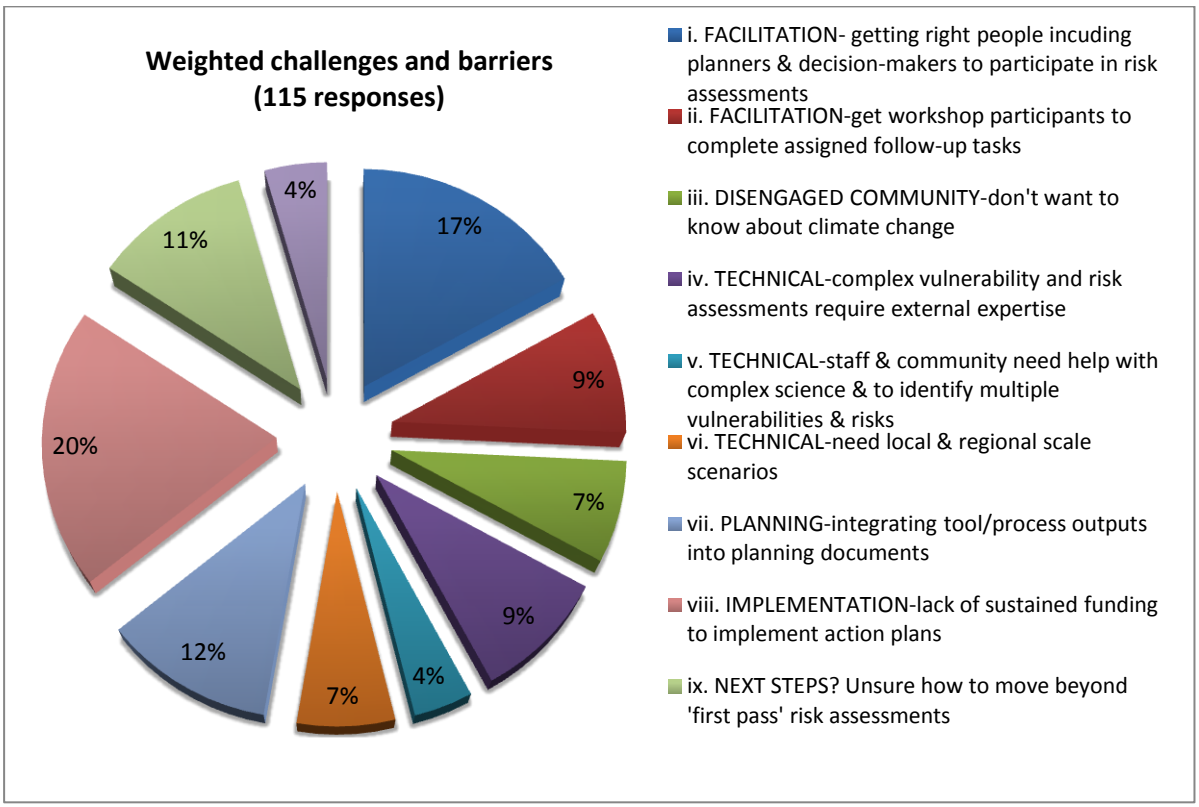
Survey response rate

The national survey garnered 115 valid responses. It was impossible to calculate the response rate as a percentage of all councils and ROCs who have used adaptation tools and processes, because that is a 'known unknown'. Local government practitioners have expressed views that the response rate was good in the circumstances of 'on-line survey overload' and time constraints on busy people.

Analyses of responses

The purpose of each question is explained in introductory paragraphs in each section or sub-section of the Survey Report. Geographic and demographic profiles of responding councils and ROCs provided by answers to question 1 are shown in pie and bar charts. Cited answers to following semi-structured and open questions are referenced to the profiles garnered from q1, to provide local and regional contexts for understanding reported issues and experiences in using adaptation tools and processes. Answers to question 2 are summarised in tables and bar charts to show patterns of usage. These key outputs of the national survey will enable the initial Matrix of Adaptation Tools and Processes from Stage 1 to be further populated in the Stage 3 Synthesis Report.

A *reality-testing* method underpinned instructions to survey respondents to rank their top 3 issues from the shortlists provided in compulsory closed questions 3a to 9a. For example, the challenges and barriers in q6a are listed clockwise, beginning at 1 o'clock, in Figure 6 reproduced below. 1st, 2nd and 3rd ranked responses to q6a (and similar closed questions) were weighted using a Borda Count method then summed and plotted, and percentages shown for each issue as per Figure 6:



Reproduction of Figure 6: Weighted challenges and barriers from answers to survey Question 6a

Summarising the survey findings

The top 5 ranked and weighted answers to closed questions 3a to 9a are highlighted to indicate a broader scope of key issues prioritised by survey respondents. These top 5 rankings are listed in the left column in *Figure 1: Synopsis of top ranked issues and resolutions to challenges,* below. Other salient issues deemed relevant by respondents are listed in the right column of the Synopsis. Answers to question 6a and question 7 are paired to show the range of practical resolutions to each of the top 5 challenges and barriers. Respondents' practical resolutions to other challenges are also listed, to shed further light on ways to resolve challenges that other practitioners may face.

The two central aims of the national survey have been met. Firstly, to evaluate through the ranking process which issues shortlisted in the closed questions were relevant, nationwide, to local government practitioners' experiences. Secondly, to gather reports on other salient issues raised in responses to the semi-structured and open questions, and highlight those that provide guidance to other practitioners and decision-makers.

Foreshadowing a Decision Support Guide in the Stage 3 Synthesis Report

Key learnings from the Stage 1 Case Studies and the Stage 2 National Survey will be synthesised in the Stage 3 Report. It will feature a user-friendly Decision Support Guide to enhance effective use of adaptation tools and processes. Frequently reported experiences, practical knowledge and advice gleaned from the case studies and survey analyses will be condensed into a question and answer format: *What are the Top Ten Enablers, including ways to resolve anticipated challenges, that colleagues and I need to know in advance, to use climate change adaptation tools and processes effectively?* These enablers will be communicated to end-users in a web-based design linking checklists of prioritised drivers, intended outcomes, critical success factors, barriers and challenges frequently encountered and possible ways to resolve these, adaptive learnings and appropriate next steps to consider, in undertaking climate change adaptation projects.

SYNOPSIS OF TOP RANKED ISSUES AND RESOLUTIONS TO CHALLENGES

Top 5 ranked issues in answers to closed questions 3a to 9a	Other salient issues, insights & experiences in answers to semi-structured questions 3b to 9b and open questions 3c to 9c
Section 3a: top 5 key drivers 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	**Section 3b & 3c: other salient key drivers** ○ 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
Section 4a: top 5 outcomes & measures of success 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	**Section 4b & 4c: other salient outcomes & measures of success** ○ 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
Section 5a: top 5 critical success factors 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	**Section 5b & 5c: other salient critical success factors** ○ 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
Section 6a: top 5 challenges & barriers 1st: lack of sustained funding for action plans 2nd: getting planners & decision-makers to participate in risk assessment workshops 3rd: integrating tool and process outputs into strategic planning processes 4th: how to move beyond 'first pass' risk assessments Equal 5th: a) getting vulnerability & risk assessment workshop participants to complete follow-up tasks; b) complex vulnerability & risk assessments require external expertise	**Section 7.1: Practical ways to resolve top 5 challenges** 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' 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 3rd: a) integrate adaptation actions in Community Strategic Plan 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 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 Equal 5th: a) ensure that 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
Section 6b & 6c: other salient challenges & barriers	**Section 7.2: resolving other salient challenges**

○ 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	○ 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
Section 8a: top 5 adaptive learnings 1st: need to build staff ownership of adaptation processes, priorities, strategies & action plans 2nd: build climate change into Council's business 3rd: good local knowledge of hazards, risks & vulnerabilities 4th: maintain continuity of key staff throughout projects 5th: vulnerability assessment generated more questions than answers	**Section 8b & 8c: other salient adaptive learnings** ○ Need coordination across all levels of governance; ○ Address intergenerational equity issues including extra costs borne by current ratepayers for future impacts; ○ *Organisational* 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 ○ *Community & stakeholder* 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
Section 9a: top 5 next steps 1st: incorporating tool/process outputs in a strategic plan 2nd: complete the current tool/process 3rd: incorporate tool/process outputs into a corporate plan 4th: continue implementing a current action plan Equal 5th: a) develop a new action plan; b) incorporate tool/process outputs into a community plan	**Section 9b: other salient next steps** ○ 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 1: Synopsis of top ranked issues and resolutions to challenges

1.A SURVEY QUESTIONS AND ANALYSIS METHODS

1.1 Overview of ACCARNSI's survey project

This report on a national survey of climate change adaptation tools and processes used by councils and regional organisations of councils ('ROCs') culminates the second of three 'demand-driven' research and evaluation priority projects that the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI) has addressed since 2010. These priorities were identified at a workshop for local government representatives convened by ACCARNSI and the Australian Local Government Association (ALGA) in Adelaide in December 2010. The representatives posed this key question for ACCARNSI to research and evaluate: "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 to select appropriate tools and use them effectively?" The research priorities are reflected in ACCARNSI's 3-stage work plans for 2011 and 2012.

The 1st **research stage** involved the design of a reporting template to gather 16 case studies and 4 statewide synopses of how local government practitioners have used climate change adaptation tools and their application processes. Reported purposes, key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings and next steps were thematically analysed to evaluate whether and how these tools have enabled councils to mainstream adaptation, and build the skills and capacities of practitioners, organisations and communities. An initial matrix was developed to categorise the adaptation tools and processes used by councils (reproduced in Appendix 1).

In this 2nd **research stage,** the Case Studies Report was utilised to design and undertake the nationwide on-line survey of councils and regional organisations of councils (see copy of the survey questions in Appendix 2) The survey was undertaken in collaboration with ALGA and State and Territory associations, and conducted in August-September 2011. There were 115 valid responses to the survey.

In the **3rd research stage**, key learnings from the Stage 1 and Stage 2 research and evaluation will be will synthesised in the Stage 3 Report. It will feature a Decision Support Guide that assists local government practitioners and other end-users to make better-informed decisions on which adaptation tools and processes best meet their purposes, assist them to identify strengths to capitalise on, needs and gaps to address, and possible ways to resolve anticipated challenges

1.2 Intent of the national survey

The survey drew on and sought to verify the experiences, issues and concerns of local government people as reported in their case studies. Its enquiry framework also maintained continuity with the semi-structured questions in the Case Studies Reporting Template (refer to section 3.1 in the Stage 1 Case Studies Report). The survey was intended to

- generate geographic and demographic profiles of councils and ROCs (q1a & q1b);
- gauge the level of management involved in signing off (q1c);
- identify tools frequently used by councils and ROCs across Australia or by commissioned consultants (q2a), and other tools used (q2b);
- rank the top 5 key drivers, outcomes and measures of success, critical success factors, challenges and barriers, adaptive learnings, and intended next steps (q3a to q9a);
- gather descriptions of **other** key drivers, critical success factors, challenges and barriers, and so forth, in follow-on semi-structured questions (q3b to q9b);

- analyse rich descriptions of significant experiences and insights regarding key drivers, challenges and barriers, and so forth, in open questions (q3c to q9c);
- prompt reflections on whether and how challenges and barriers were resolved (q7);
- identify next steps that could be taken, and key prompts for these (q9a to 9d)
- provide an opportunity to suggest alternative questions that can be raised in flow-on roadshows, workshops and seminars (q10a); and
- in closing, gather reflections on experiences with an adaptation tool/process that stood out as the most memorable or rewarding (q10b)

1.3 Survey methodology

The case studies and national survey projects represent research initiatives grounded in evaluating grounded in evaluating local government practitioners' nationwide reports on their experiences and reflections on using adaptation tools and processes. This research approach draws 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, 1991, 1993; Argyris & Schön 1996; Schön 1987; Grant & Humphries 2006; Preston, Jovicich & Yuen 2010; Willows & Connell 2003)

1.3.1 Drawing on Realist and Developmental Evaluation approaches

As in the methodology for the Stage 1 Case Studies, thematic analyses and sense-making evaluations of the survey responses also draw 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 & 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.*

1.3.2 Encouraging adaptive learning

Resilience thinking and *agile problem-solving* are essential ingredients in evaluating complex climate change concepts, issues, tools and processes, where priorities may shift from outcomes-based reporting towards 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 entails wide-ranging assessments of multiple 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).

1.4 Design of survey questions

The national survey was designed in close consultation with ALGA, the Local Government Managers Association (LGMA) and representatives from State and Territory associations. Questions on *mitigation* tools and processes were excluded. The survey design and analysis were informed by but

did not seek to emulate previous surveys including a survey of NSW councils conducted by their Local Government and Shires Association (LGSA) and surveys of British councils conducted for the United Kingdom Climate Impacts Programme (UKCIP).

'Less is more' in designing and conducting on-line surveys for busy local government people. The number of question areas within the inquiry framework was limited to 10 (refer to Appendix 2).

1.4.1 Balance of closed, semi-structured and open questions

The survey design was structured to offer a balance of closed and correlating semi-structured and open questions that connected with the thinking and language of local government practitioners. Closed questions 1 and 2 were designed to gather data to compare how, why and where adaptation tools and processes were being used across the local government sector. Respondents were asked to *prioritise* the 'top 3' issues most relevant to their context, in the series of closed questions on key drivers in q3a, outcomes and measures of success in q4a, critical success factors in q5a, challenges and barriers in q6a, adaptive learnings in q8a, and next steps in q9a. Each of these closed 'a' questions presented a shortlist of salient *corporate*, *business case, response planning, technical, community and stakeholder* or *context-specific* issues and concerns, gleaned from analyses of the case studies and statewide synopses (refer to Stage 1 Case Studies Report, section 2.2).

A *reality-testing* method underpinned instructions to survey respondents to rank their top 3 issues from the shortlists provided in compulsory closed questions 3a to 9a. Rankings in each closed question were weighted using a Borda Count method then summed and plotted in pie charts.

1.4.2 Generating rich data from semi-structured and open questions

From question 3 onwards to question 9, correlating semi-structured 'b' questions (q3b to q9b) provided respondents with options to describe *other* topmost issues relating to climate change adaptation tools and processes used in their organisation and/or community: other key drivers in q3b, outcomes and measures of success in q4b, critical success factors in q5b, challenges and barriers in q6b, adaptive learning in q8b, and next steps in q9b. Semi-structured question 7 asked respondents to describe whether and how their top ranked challenges and barriers were *resolved.* This question was designed to shift respondents' thinking from reactive 'problem-modes' proactive to 'solutions-modes' and gather useful problem-solving advice to assist other practitioners in understanding what kinds of practical resolutions may be available at local and regional levels.

Then from question 3c onwards, additional open 'c' questions invited respondents to provide further reflective feedback and rich descriptions of significant *experiences or insights* that emerged from using tools and processes. It is noteworthy that from questions 3 to 8, survey respondents provided far more comments in the open 'c' questions than to the semi-structured 'b' questions.

1.5 Conduct of the on-line survey

The survey was conducted independently by ACCARNSI, to ensure integrity of the research and external evaluation, and to report candidly on how climate change adaptation tools and processes are being used by local government practitioners.

The survey was accessed on-line through Survey Monkey. Invitations to complete the survey were promoted nationally on LGA websites and electronic bulletins during August and September 2011. In addition, ACCARNSI emailed the invitation to councils and ROCs on its membership list, together with a copy of the survey questions so that respondents could understand its scope and intent, prepare answers and determine if signing off was required. A user-oriented cover page accompanied the

invitation. It outlined the key aims and Intended outputs of the national survey and foreshadowed that a Final Draft Survey Report would be provided to garner feedback.

In contrast to the Stage 1 Case Studies Report where the identities of the councils and key staff who provided responses is made known to all, the identity of survey respondents and their organisations will be kept anonymous.

1.6 Survey analysis and evaluation methods

There were 115 valid responses from participating councils and regional organisations of councils, gathered from each of the States and the Australian Capital Territory (ACT). It is impossible to determine the survey response rate as a percentage of all councils and ROCs who have used adaptation tools and processes because that is a 'known unknown'. Local government associations have expressed views that the response rate was quite good in the circumstances of 'on-line survey overload' and time constraints on busy people.

Three s*ense-making* qualitative methods - discourse analysis, word associations and pattern recognition - were used to thematically analyse, codify and evaluate responses to the semi-structured and open survey questions. These qualitative methods generated the following research and evaluation outputs:

- *content analysis* to identify salient issues and concerns that local government practitioners around Australia raised about their experiences with adaptation tools and processes;
- *word associations* to classify domains of application i.e. corporate, technical, facilitation, planning, community/stakeholder, and context-specific; and
- *pattern recognition* to develop shortlists of councils' purposes, key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learning, next steps, and future directions concerning selection of tools and processes

This approach maintained continuity with the methodology described in the Case Studies Report. It also aligned with methods used by other researchers and evaluators who work with spatially and temporally complex situations, evolving contexts and *wicked problems* (Blackmore 2007; Snowden 2002). These characterise the challenges of adapting to climate change faced by local government practitioners and decision makers in other organisations and levels of government (Gunderson and Holling 2002; Hulme and Adger 2007; Harding et al 2009; Preston et al 2010; Patton 2010).

'ROC' is a shorthand term that may generate some confusion in apprehending the proportions of survey responses from the states. In NSW, it ascribes a voluntary cluster of neighbouring organisations e.g. the Riverina Eastern Regional Organisation of Councils (REROC) is a voluntary association of 13 General Purpose Councils and two water county councils: the councils of Bland, Coolamon, Cootamundra, Corowa, Greater Hume, Gundagai, Junee, Lockhart, Temora, Tumbarumba, Tumut, Urana, Wagga Wagga; and Goldenfields Water and Riverina Water. But elsewhere - in Western Australia, Victoria and South Australia - 'ROC' may imply an amalgamation, often forced by state governments, of small rural councils into 'regional councils'. For this reason, the term 'VROC' is used in In Western Australia to distinguish **voluntary** regional organisations from the forced amalgamations.

1.6.1 Charts and tables of responses to closed questions

Answers to the closed questions were tabulated in Excel format and results for q1 and q2 are summarised in figures (tables and bar charts). Using a *Borda Count* method, respondents' 1st to 3rd ranked priorities in closed questions 3a to 9a were weighted and summed according to this formula:

W = (1st priorities x3) + (2nd priorities x2) + (3rd priorities x1). The weightings were plotted and shown in figures (pie charts) for each closed question.

The top 5 ranked and weighted answers to closed questions 3a to 9a are highlighted to indicate a broader scope of key issues prioritised by survey respondents. These top 5 rankings are listed in the left column in *Figure 1: Synopsis of top ranked issues and resolutions to challenges*.

1.6.2 Thematic analyses of responses to open questions

Coding methods were used to clarify *other* salient issues in the answers to questions 3b to 9b, and in answers to the open 'c' questions 3c to 9c. These salient issues are listed in the right column of the Synopsis (Figure 1). Answers to questions 6a and 7 are paired to show the range of practical resolutions to each of the top 5 ranked and weighted challenges and barriers. Thematic analyses of respondents' practical resolutions to other challenges are also listed, to shed further light on ways that other practitioners may resolve challenges faced.

Some of the salient answers are paraphrased or quoted verbatim, below, to enable direct apprehension of respondents' views. Commencing with analyses of answers to q2b, geographic profiles of respondents' organisations, garnered from answers to q1, are provided to enhance understandings of contexts e.g. a Western Australian landlocked regional council, population 20,001-50,000 and type of adaptation tool/process used**.**

Thematic analyses of the *rich data* gathered from responses to semi-structured and open questions add value to this Stage 2 Report and will inform the concluding Decision Support Tool in the Stage 3 Synthesis Report.

1.7 Foreshadowing further in-depth analyses

Further purpose-driven, in-depth interrogations of the data are foreshadowed, including:

- drilling down into differences in patterns of usage among states;
- comparing urban, regional and rural responses;
- comparing responses from larger and better resourced urban and regional councils with smaller rural councils; and
- identifying web-based adaptation tools of particular relevance and benefit to the local government sector and to communities and stakeholders

1.B PROFILING RESPONDENT COUNCILS AND ROCS

Purpose of Question 1: Q1a and Q1b identified responding councils and ROCs by state/territory; and provided geographic and demographic profiles including the regularity of hazards faced. Q1c gauged the level of management involved in signing-off the survey responses - ranging from general manager to team leader – or whether no sign-off was required. These profiles provide contexts to better comprehend tools and processes used by councils and ROCS.

There were 115 valid responses to Q1. Councils and ROCs are collectively referred to as 'response units' in the tables below.

1.8 Identifying responses from each state and territory

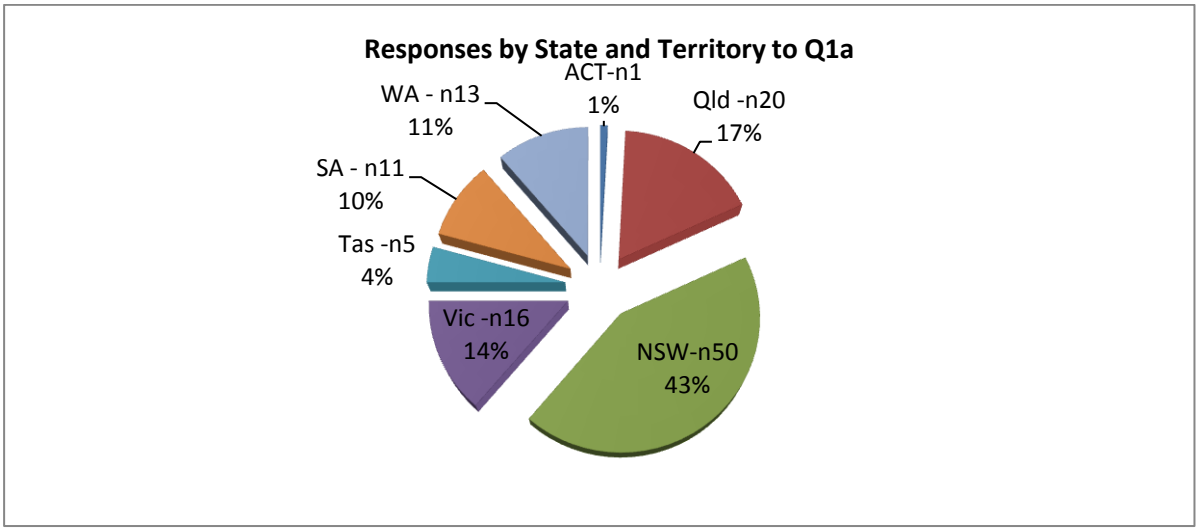


Figure 1.1: Responses by State and Territory to Question 1a

The pie graph of responses to q1a, above, shows that the largest proportion of responding organisations were from New South Wales, where smaller urban and rural councils have not yet been forced to amalgamate. Responses from Queensland were the second largest proportion. Responses from Western Australia, Victoria and South Australia – where forced amalgamations have created large regional councils - were more or less evenly shared. Tasmania and the ACT were also represented but the Northern Territory was unrepresented.

1.9 Geographic and demographic profiles of councils and ROCs

Question 1b was designed to gather the following geographic and demographic profiles of councils and ROCs:

- geography and density – whether urban, peri-urban, regional, rural or remote;
- population density, measured by ABS brackets;
- whether landlocked or bounded by a coastline; and
- regularity of the following hazards, risks and vulnerabilities: coastal inundation; storm-water and/or river flooding; bushfires; windstorms (land-gales, east coast lows or cyclones); heatwaves; and droughts

96 councils and 19 ROCs answered q1b. Response counts and percentages are shown in Figure 1.2 below and analysed according to:

I. *Settlement density*: nationwide a third of responding councils/ROCs were urban (34%), and another 28% were regional.
II. *Population bracket*: nation-wide almost half of responding councils have populations above 50,001 and another 30% have populations above 20,001. It is unsurprising that these councils with larger resources also represent the lion's share of users of adaptation tools and processes.
III. *Coastal or landlocked*: nation-wide more than half of the responding councils are coastal; and more than two-thirds of the ROCs

Geographic & demographic characteristics of councils & ROCs who answered q1b	**Of all valid responses to q1b (n=115)**	
Settlement density	**Councils & ROCs response number**	**Percentage**
Urban	39	34%
Peri-urban	16	14%
Regional	33	29%
Rural	21	18%
Remote	3	3%
No response	3	3%
Total – across all states & territories	***115***	***100%***
Population bracket	**Councils & ROCs response number**	**Percentage**
up to 2,000	5	4%
2,001-5,000	4	3%
5,001-20,000	15	13%
20,001-50,000	33	29%
50,001-70,000	13	11%
over 70,001	40	35%
No response	5	4%
Total - across all states & territories	***115***	***100%***
Boundaries	**Councils & ROCs response number**	**Percentage**
Landlocked	50	43%
Coastal boundary	59	51%
No response	6	5%
Total - across all states & territories	***115***	***100%***

Figure 1.2: Geographic & demographic characteristics of councils and ROCs

1.9.1 Regularity of hazards

Patterns of regularity for each hazard faced by councils and ROCs are shown in the series of bar charts below. Response counts are indicated on the left hand side of each bar chart.

i. **Coastal hazards: n**ationwide there is a marked disparity between councils and ROCs in the 'Rarely' category. This may reflect differences in the proportions of councils that have coastal boundaries vis-à-vis ROCs.

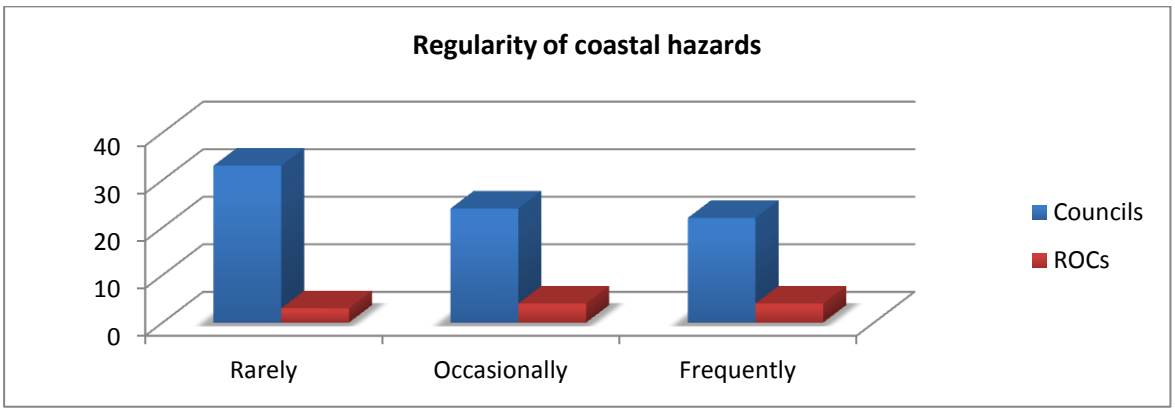


Figure 1.3: Regularity of coastal hazards

ii. **Windstorms including land-gales, east coast lows or cyclones:** frequencies of these hazards are more or less even. They show some correlation with coastal hazards.

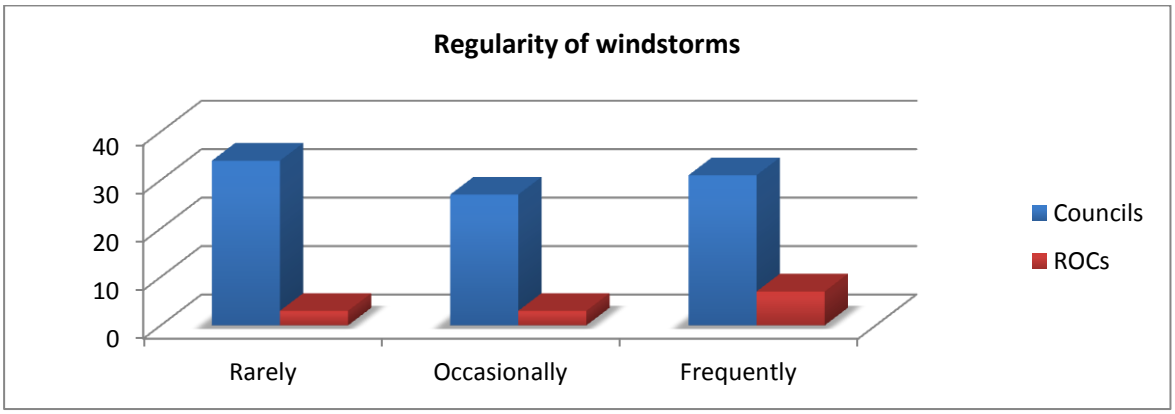


Figure 1.4: Regularity of windstorms

iii. **Storm water/river flooding:** almost equal numbers of councils contend with these hazards occasionally or frequently. The categories also serve as a proxy indicator of rainfall and run-off. Future changes in the pattern e.g. towards an increase in 'Frequently' would also serve as a proxy for changes in rainfall and run-off.

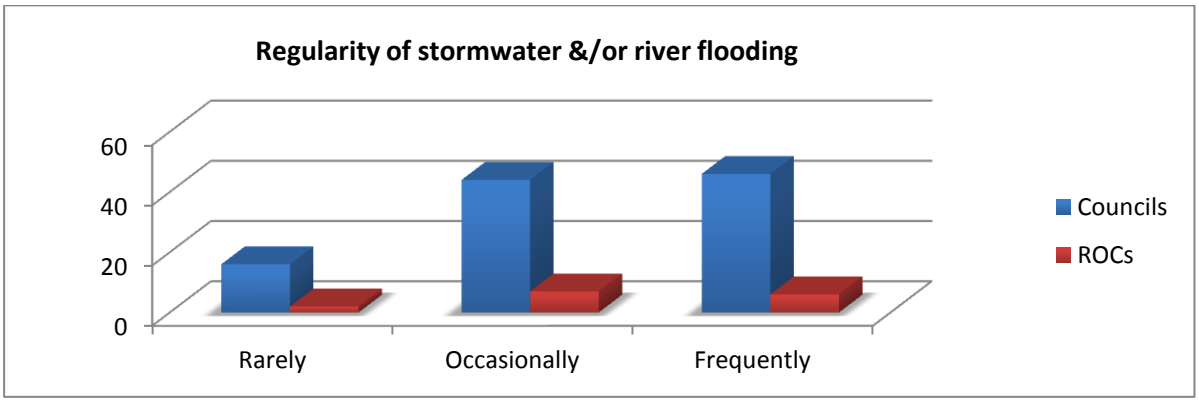


Figure 1.5: Regularity of stormwater and/or river flooding

iv. **Bushfires:** the majority of respondent councils and ROCS frequently contend with bushfires.

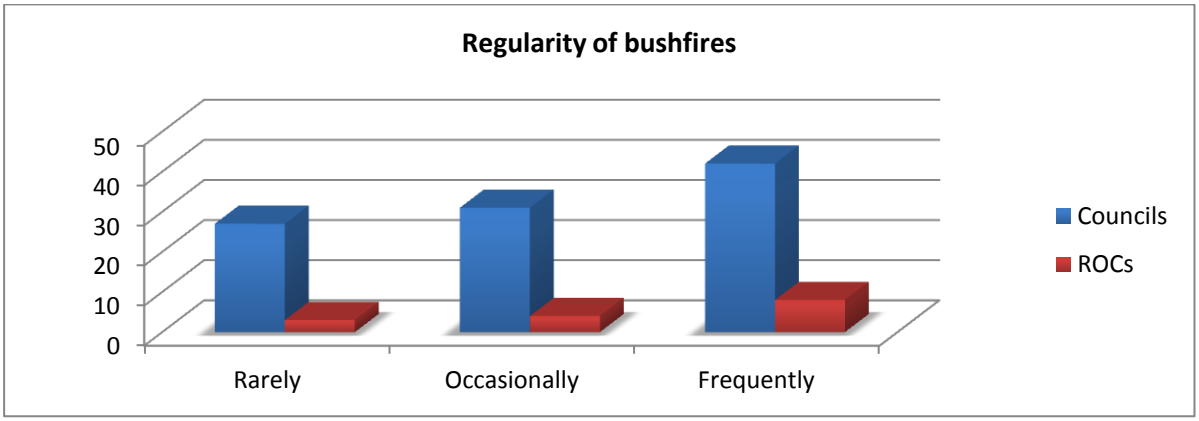


Figure 1.6: Regularity of bushfires

v. **Heatwaves:** almost equal numbers of councils face heatwaves occasionally or frequently. A higher proportion of ROCS face them frequently.

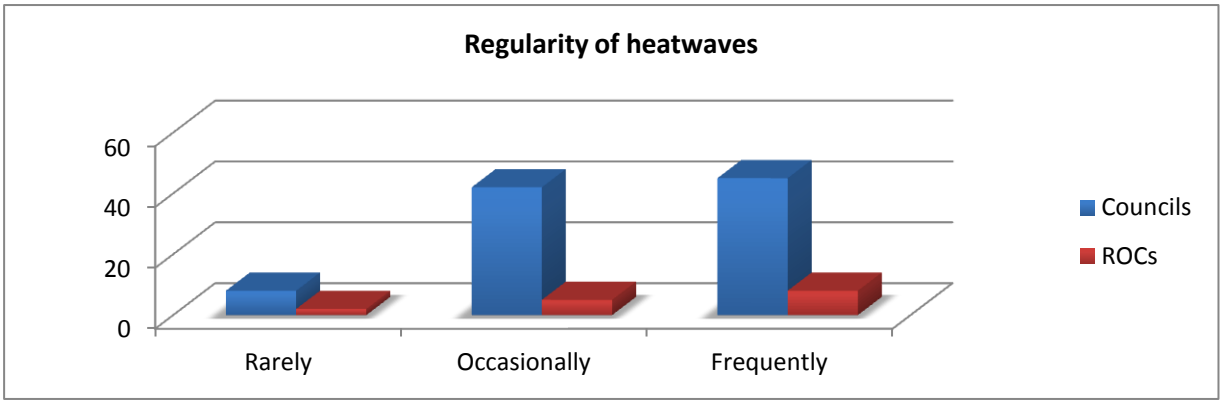


Figure 1.7: Regularity of heat waves

vi. **Droughts:** almost half of the councils face droughts occasionally, and more than a third of councils face them frequently. For ROCs, the frequency pattern for drought is almost identical to heatwaves. Only a small minority of councils and ROCs rarely endure droughts.

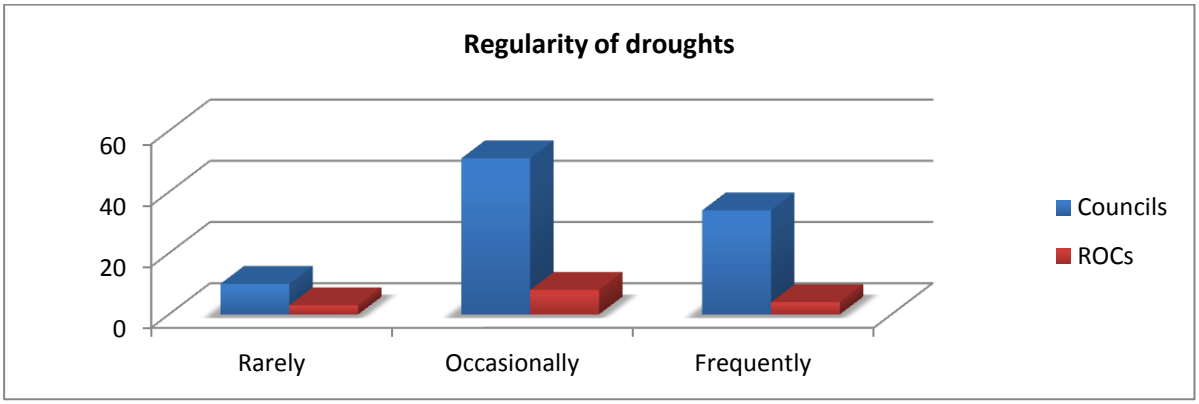


Figure 1.8: Regularity of droughts

1.10 Level of sign-off, if required

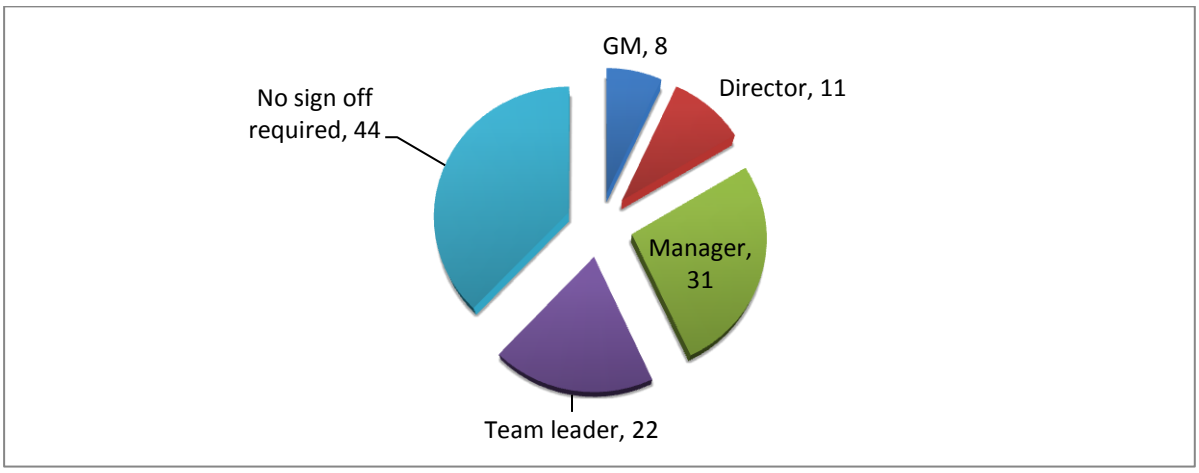


Figure 1.9: Level of sign-off, if required

Question 1c was designed to gauge the level of involvement by staff and senior management in signing-off the survey responses:

- 8 general managers and 11 directors signed off, which gives a positive indication (higher than anticipated by ACCARNSI) that adaptation is being addressed seriously by senior decision-makers in some councils and ROCs;
- 31 managers and 22 team leaders signed off, which indicates that it is being addressed predominantly at middle-management levels; and
- 44 respondents required no sign-off.

2. IDENTIFYING ADAPTATION TOOLS AND PROCESSES USED

Purposes of Question 2: to gather data on tools and processes used by Councils and ROCS. The list of options provided in closed question q2a was derived from the Matrix of Adaptation Tools and Processes produced in the Stage 1 Case Studies Report section 2.3 (reproduced in Appendix 1). Open q2b enabled respondents to describe other tools and processes.

Survey respondents were asked to:

- choose the option that best described the climate change adaptation project undertaken at their council/ROC (vertical axis);
- select the main or 'top' tool/process used per project (horizontal axis);
- clarify whether each tool/process was used in-house or eternally by consultants;
- indicate if the project had been completed or was ongoing; and
- indicate the funding source.

Responses to q2a and q2b are summarised in a series of tables and bar charts below, to show patterns of usage. These key outputs of the national survey will enable the initial Matrix of Adaptation Tools and Processes from Stage 1 to be further populated in the Stage 3 Synthesis Report.

2.1 Comparative framework for analysing valid responses to Q2

Response counts: Question 2 was non-compulsory. Of the total of 115 valid survey responses, 48 respondents did not answer q2a. The subset of valid responses to q2a was therefore n67 as shown in Figure 2.1:

Responses to q2a	Councils & ROCs (units)	Percentage
Valid responses	67	58%
No answer	48	42%
Total	115	

Figure 2.1: Responses to question 2a

2.2 Geographic and demographic profiles of respondents to q2a

Figure 2.2 below shows that there were closer correlations between total valid survey responses and answers to q2a in Tasmania, Western Australia and the ACT but less so in Queensland.

Settlement density: higher proportions of regional and peri-urban councils and ROCs answered q2a, and an almost equal proportion of urban councils and ROCs, whereas the majority of rural and remote councils skipped this question.

Population brackets: the highest proportion of respondents were councils and ROCs with populations of 50,001-70,000 and >70,0001

Boundaries: a higher proportion (60%) of councils and ROCS who answered q2a have coastal boundaries, whereas there are equal proportions in the total response count.

Geographic & demographic characteristics	Of valid responses from councils & ROCs to q2a (n=67)		Comparison with total of valid survey responses (n=115)	
Respondents by state/territory	**Response number**	**Response percentage**	**Total responses**	**Percentage**
SA	6	9%	11	10%
VIC	8	12%	16	14%
NSW	32	48%	49	43%
QLD	9	13%	20	17%
WA	8	12%	13	11%
TAS	3	4%	5	4%
ACT	1	0%	1	1%
Total	***67***	***100%***	***115***	***100%***
Settlement density	**Q2a responses**	**Q2a percentage**	**Total responses**	**Percentage**
Urban	22	33%	39	34%
Peri-urban	12	18%	16	14%
Regional	23	34%	33	29%
Rural	8	12%	21	18%
Remote	1	1%	3	3%
No response	1	1%	3	3%
Total	***67***	***100%***	***115***	***100%***
Population density	**Q2a Responses**	**Q2a percentage**	**Total responses**	**Percentage**
up to 2,000	1	1%	5	4%
2,001-5,000	3	4%	4	3%
5,001-20,000	4	6%	15	13%
20,001-50,000	8	12%	33	29%
50,001-70,000	22	33%	13	11%
over 70,001	28	42%	40	35%
No response	1	1%	5	4%
Total	***67***	***100%***	***115***	***100%***
Boundary type	**Q2a Responses**	**Q2a percentage**	**Total responses**	**Percentage**
Landlocked	26	39%	50	43%
Coastal Boundary	40	60%	59	51%
No response	1	1%	6	5%
Total	***67***	***100%***	***115***	***100%***

Figure 2.2: Geographic & demographic characteristics of councils and ROCS answering q2a

2.3 Frequency of tool use and points for usefulness

The following series of figures show patterns of tool/process use by the councils and ROCs who validly answered q2a (n67). In some of the tables this subset is compared with other valid response counts. Respondents were instructed that if their council or ROC had undertaken more than one climate change adaptation project, then provide answers for each project and rank the projects in terms of usefulness or success.

Responses to question 2 indicated adaptation tools and processes used in projects by councils and ROCs (as of September 2011), and their usefulness. The tools and processes are divided into two categories: *generic* and *named*. Bear in mind that the survey data tabled below is somewhat 'fuzzy' because multiple tools and processes may have been used in situations where:

- some projects fell into more than one category**;**
- some councils and ROCs undertook large projects involving multiple hazards, vulnerability studies and risk analyses e.g. coastal zone and flood zone hazard studies to inform their development of adaptation plans; and
- additionally, some councils and ROCs were part-way through undertaking a series of projects.

2.3.1 Generic tools and processes

Figure 2.3.1 below shows generic tools and processes (as listed in q2a) and their frequency of use in projects undertaken by councils & ROCs. Note that:

- half of responding councils and ROCs used corporate risk assessment and management tools and processes;
- almost half used community and corporate risk assessment/management tools and processes; and
- a quarter to a third have undertaken a detailed coastal hazards and/or detailed flood risk and climate adaptation study

Generic tools & processes used in total of projects (n=134). Note some projects fall into more than one category	**Frequency of use in projects**	**Weighted for usefulness in projects**
Of ranked projects (n=49)		**Points for usefulness**
Corporate risk assessment & management	33	40
Community risk assessment & management	4	8
Community & corporate risk assessment & management	30	31
Coastal risk/hazard assessment & adaptation project	13	14
High level vulnerability assessment	15	15
Detailed flood risk & climate adaptation study	21	33
Detailed coastal zone hazards study & coastal zone mgt	16	21
Developing a business case for adaptation	8	6
Sustainability scorecard, checklist or similar tool	13	21
Other tool/process (please describe in q2b)	4	6

Figure 2.3.1: Generic tools and processes - frequency of use and points for usefulness

Generic tools and processes are listed in the left-hand column of Figure 2. The middle column shows their frequency of use in projects. The right-hand column shows points for usefulness in projects. Responses were weighted using the Borda Count method to show the most useful = 5 points**;** 2nd useful = 4 points**;** 3rd useful= 3 points**;** 4th = 2 points**;** 5th least useful = 1 point.

The pattern for frequency of use and the weightings for usefulness vary after the topmost ranking:

- *corporate risk assessment and management* topped the most frequently used and scored the most points for usefulness;
- followed by *community and corporate risk assessment and management* for the 2nd highest frequency of use – whereas *detailed flood risk and climate adaptation study* scored the 2nd

highest points for usefulness; and

- 3rd most frequently used was a *detailed flood risk and climate adaptation study* – whereas *community and corporate risk assessment and management* scored 3rd for usefulness.

2.3.2 Named tools and processes

Figure 2.3.2 below shows the usefulness of *named* tools and processes in q2a, listed in the left-hand column. As in Figure 2.3 above, the middle column shows their frequency of use in projects. The right-hand column shows points for usefulness in projects, weighted using the Borda Count method. Note how:

- '*other tool*' topped both the frequency of use in projects and points for usefulness;
- followed by *professionally integrated tool* in equal 2nd place for frequency of use and also points for usefulness – and *AS/NZS ISO 31000:2009 only* was equal 2nd for frequency of use but scored less points for usefulness;
- then *AGO 2006 only* in 3rd place for frequency of use – whereas *AS/NZS ISO 31000:2009 only* scored the 3rd highest points for usefulness.

Named tools and processes used in total of projects (n=134)	Frequency of use in projects	Weighted for usefulness in projects
Of ranked projects (n=49)		**Points for most useful**
AGO 2006 only	13	14
AS/NZS ISO 31000:2009 only	17	25
AGO 2006 & AS/NZS ISO 31000:2009	12	17
DCC 2009	9	4
Professionally integrated tool	17	59
RAM 2000	1	0
Other tool/process (please describe in q2b)	28	76

Figure 2.3.2: Named tools and processes – frequency of use in projects and points for usefulness

2.3.3 Adaptation projects undertaken in-house, with consultants, or outsourced

Figure 2.3.3 below provides an understanding of internal vis-à-vis external patterns of adaptation projects. A third of projects reported by 135 respondents have been conducted In-house; slightly higher with consultants, and more than a quarter were outsourced to consultants.

Valid units (n=135)	Projects undertaken in-house, with consultants, or outsourced to external consultants	Percentage of projects
In-house only	44	33%
With consultant	49	36%
Consultant(s) only	37	27%
Not specified	5	4%

Figure 2.3.3: Adaptation projects undertaken in-house, with consultants, or outsourced

2.3.4 Completed and uncompleted adaptation projects

Figure 2.3.4 below shows that the majority of projects had been completed. Uncompleted projects may have involved an intended 'first step' tool/ process with follow-on steps yet to be taken e.g. a 'first pass' risk assessment has been undertaken but a risk management plan and/or an adaptation plan are not yet completed.

Of total projects (n = 135)	Complete projects:	Percentage of total projects
Complete	81	60%
Incomplete	50	37%
Not specified	4	3%

Figure 2.3.4: Completed and uncompleted adaptation projects

2.3.5 Funding for adaptation projects from internal or external sources

Figure 2.3.5 below provides a useful overview of funding sources. More than half of the reported adaptation tools/processes were funded internally. A third received State government funding. A quarter received some type of Federal funding and, specifically, a fifth received Federal funding for Local Adaptation Priority Plan (LAPP) projects:

Of valid responses (n=66)	Units	Percentage of units who obtained funding from internal or external sources
Internally funded by council/ROC	37	56%
Externally funded by:		
State Government program/grant	22	33%
Federal Government program/grant	16	24%
Local Adaptation Priority Plan (LAPP)	14	21%
Insurance Provider	14	21%
Not specified	2	3%

Figure 2.3.5: Funding for adaptation projects from internal or external sources

2.4 Other tools and processes used

Question 2a asked respondents to describe other tools and processes they had used. Some respondents disliked the "*arbitrary limitations*" imposed by being asked to designate 'a topmost tool/process', in circumstances where several tools and processes have been and/or will be used in cumulative adaptation projects. For example, a medium-size urban council in NSW designated the *DCC 2009 - Climate Change Adaptation Actions for Local Government* as the initial tool used, then elaborated two follow-on tools and processes: *"Council is presently completing a coastal processes and hazards zone study to inform the development of a Coastal Zone Management Plan and to provide recommendations to inform our planning documentation... [undertaken] by a qualified consultant. Following this Council will complete, in-house, a Climate Change Adaptation and Risk Management Plan."*

2.4.1 Four broad categories of other tools and processes

Response count: 28 respondents to q2b described other specified and unspecified tools and processes. These responses answers fell into four broad categories, listed below, which warrant inclusion in a synthesis of adaptation tools and processes. Geographic and demographic characteristics of 15 responses are provided to enhance an understanding of why and how these other tools/processes were used:

i. Regional adaptation plans:

- *"Our Council participated in a regional-level community climate adaptation risk identification project. The region included 7 Council areas"* - Victorian peri-urban council, landlocked, population>70,001
- "*Our Council is participating in the development of a regional adaptation plan as part of a*

federally funded Regional Councils Climate Adaptation Project grant. This grant will also produce a specific strategy and action" - Tasmanian rural council, coastal, population 5,001-20,000

ii. Decision support:

- "*Decision Support System for land use and infrastructure planning [for] vulnerable coastal areas*" – federally funded, non-specific tool developed by consultants for application in a NSW ROC, coastal region, population >70,001
- Floodplain Management Manual, NSW Coastal Protection Act - NSW urban coastal council, population >70,001
- ICLEI's Adaptive and Resilient Communities (ARC) program - NSW urban council, population >70,001
- "ICLEI *Cities for Climate Protection initially, LGA MLS program and now through Strengthening Basin Communities project*" – South Australian peri-urban council, population 20,001-50,000
- Sustainability Health Check, developed in NSW by the LGMA and DECC - NSW urban landlocked council, population >70,001

iii. Developed in conjunction with consultants

- Non-specified tool *"developed by insurers [plus] Industry standard modelling tools (Bruun Model)"* - NSW regional coastal council, population 20,001-50,000
- *"Sea level rise risk assessment undertaken by external consultant (GHD). Study includes flood risk. Elements of the study used AGO 2006 and other recognised flood and sea level rise modelling standards"* - NSW urban landlocked council, population >70,001
- "*Consultant to undertake Regional Climate Change Project – 'A World with Less Water'* for NSW rural landlocked ROC, population 5,001-20,000. *"Total cost of $1.6M. Stages 1 & 2 completed. Stage 3 due for completion in Jan 2012. Stage 3 involves preparation of plans and policies specific to each Local Council, in the areas of:*
    - *Infrastructure and asset management; and*
    - *Development strategies and land use planning"*

iv. Project-specific purpose and development:

- Project specific criteria based on guidelines i.e. planning for bushfire protection or Floodplain Management Manual - NSW urban coastal council, population 20,001-50,000
- *"Climate Change and Energy Transition Strategy - 2030 + Corporate Climate Change Policy + Climate and Energy Transition Action Plan - 2010 – 2015 + Shoreline Erosion Management Plan Victoria Point + Coastal Hazard Adaptation Plan - Amity Point Storm Tide Planning Levels"* - Queensland peri-urban coastal council, population >70,001
- Coastal hazard study using OEH Coastal Hazard Guidelines - NSW peri-urban coastal council, population 50,001-70,000
- "[*Our council] has its own adaptation method which it has used to create a prioritised suite of adaptation options ranked according to Triple Bottom Line and ability to reduce hazard specific risks*" - NSW peri-urban council, population >70,001

3. KEY DRIVERS FOR USING TOOLS AND PROCESSES

Purpose of Question 3: to rank the shortlisted key drivers for using adaptation tools and processes, and gather qualitative evidence of other significant key drivers in questions 3b and 3c.

3.1 Ranked and weighted key drivers

Closed question 3a asked respondents to rank a shortlist of key drivers gleaned from the Stage 1 Case Studies. These are listed clockwise, beginning at 1 o'clock, in Figure 3 below. Using a Borda Count method, respondents' 1st to 3rd ranked key drivers were weighted according to this formula: *W* = (1st ranked x3) + (2nd ranked x2) + (3rd ranked x1), then summed to quantify the top ranked key drivers. The results were plotted and shown as percentages:

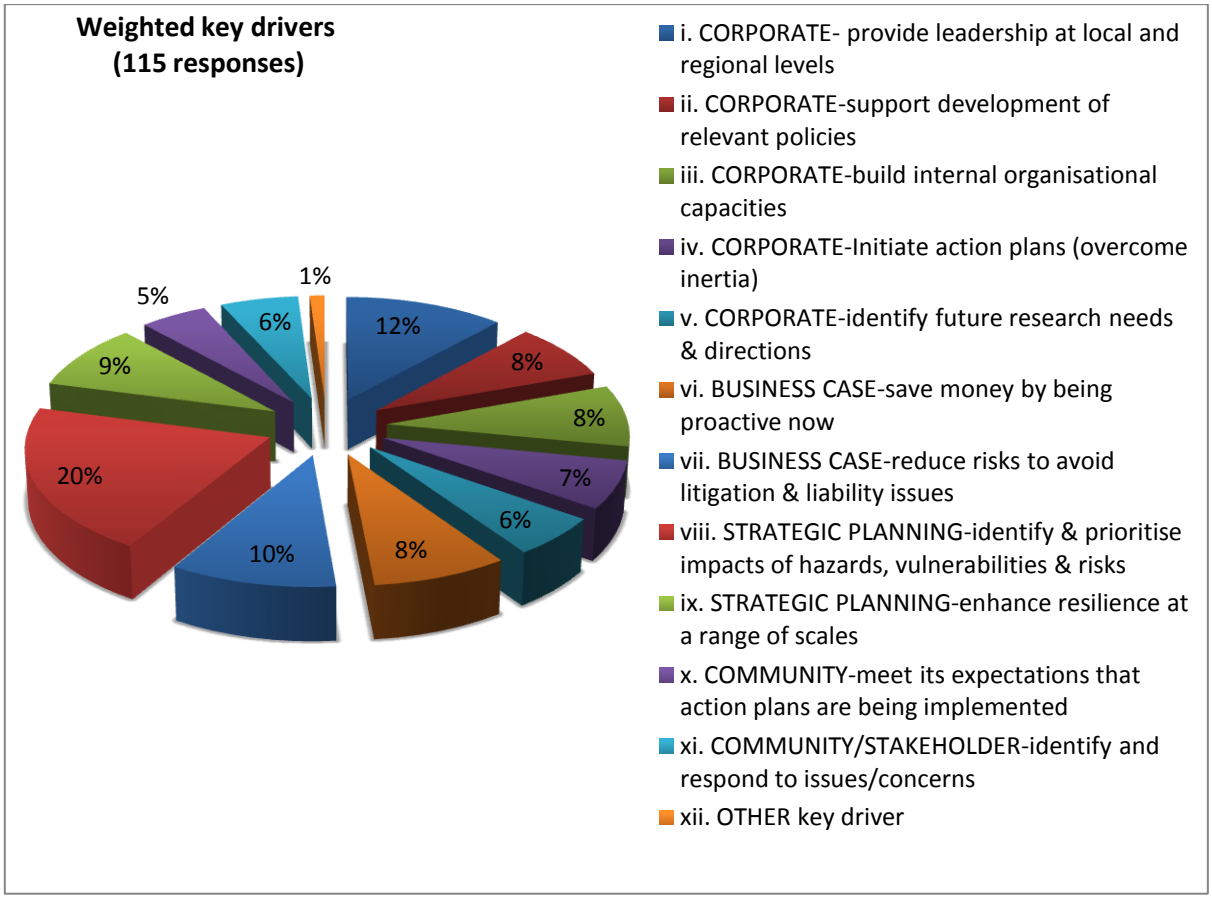


Figure 3: Weighted key drivers from ranked answers to q3a

Top five ranked drivers:

The top 5 ranked and weighted answers to closed question 3a (and similarly for q4a to q9a) are highlighted below to indicate a broader scope of key drivers prioritised by survey respondents. The rankings also build an understanding of drivers that other local government practitioners would do well to clarify, prior to selecting appropriate tools and processes:

- The 1st ranked driver (20%) was a strategic planning issue: Identify and prioritise hazards, vulnerabilities and risks arising from climate change impacts
- 2nd ranked driver (12%) was a corporate issue: provide leadership at local and regional levels

- 3rd ranked 10%) was a business case or financial benefit driver: reduce risks to avoid liabilities
- 4th ranked (9%) was another strategic planning driver: enhance resilience at a range of scales
- 5th ranked (8%) equally were two more corporate drivers: a) support development of relevant policies, b) build internal organisational capacities; and c) another business case issue: save money by being proactive

3.2 Other key drivers

There were 3 valid responses to follow-on semi-structured question 3b. Two are noteworthy:

i. Maintain Council's credibility with community and stakeholders

A manager in a large Queensland peri-urban coastal council embellished the 3rd ranked business case driver identified above: *"Sustainable bottom line - action we take now saves money in the future and reduces community risk later"*. This manager also added to a 5th ranked corporate driver: "*Council's credibility and obligations - understanding and meeting financial, legal and community risks and acting on them*."

ii. **Meeting requirements of higher tiers of government**

The NSW State Government requires councils to complete climate change risk/adaptation studies through WaSIP, the Waste and Sustainability Improvement Payment Program, funded by the NSW Office of Environment and Heritage from waste levies. WaSIP is an important source of sustained funding to enable longer-term, strategic response planning.

3.3 Significant experiences or insights regarding key drivers

There were 28 responses to open q3c – almost six times the rate than in q3b. As described above, several respondents commented that it was difficult or "*artificial*" to prioritise the shortlisted key drivers because several were equally important or complimentary and "*different areas of the organisation are more responsive to some drivers than others*". Nevertheless, these regional, economic and community/stakeholder key drivers were accentuated in the comments:

i. **Derive multiple benefits from working collaboratively** - to gain the necessary funding to undertake common regional risk assessments and develop regional *enabling strategies* and action plans.

ii. **Identify changes to the *economic landscape* of local and regional areas -** e.g. potential loss of vineyards resulting from reduced rainfall in Western Australia, increased bushfire risks, vulnerability to coastal erosion and so forth. And on the 'flip side', identifying possible benefits.

iii. **Meet and manage community expectations** - the respondent from a large coastal council in regional Queensland wrote *"Community survey results indicating nearly 90% of community believed action needed to be taken regarding climate change and that local government was best suited to deliver these actions".*

iv. **Supported by proactive councillors -** a different large coastal council in regional Queensland reported *"Councillors were the key stakeholders who identified the need to understand potential impacts from a spatial mapping context… [but] there is some concern that future planning will become anchored to the hazard maps that have been produced."*

4. EVALUATING OUTCOMES AND MEASURING SUCCESS

Purpose of Question 4: to rank the outcomes and measures of success in using adaptation tools and processes, shortlisted in question 4a, and gather qualitative evidence of other outcomes and measures of success in questions 4b and 4c.

4.1 Ranked and weighted outcomes and measures of success

Closed question 4a asked respondents to rank a shortlist of outcomes and measures of success. These are listed clockwise, beginning at 1 o'clock, in Figure 4 below. Using the Borda Count method described previously, respondents' 1st, 2nd and 3rd ranked outcomes and measures of success were weighted and summed. The results were plotted and shown as percentages:

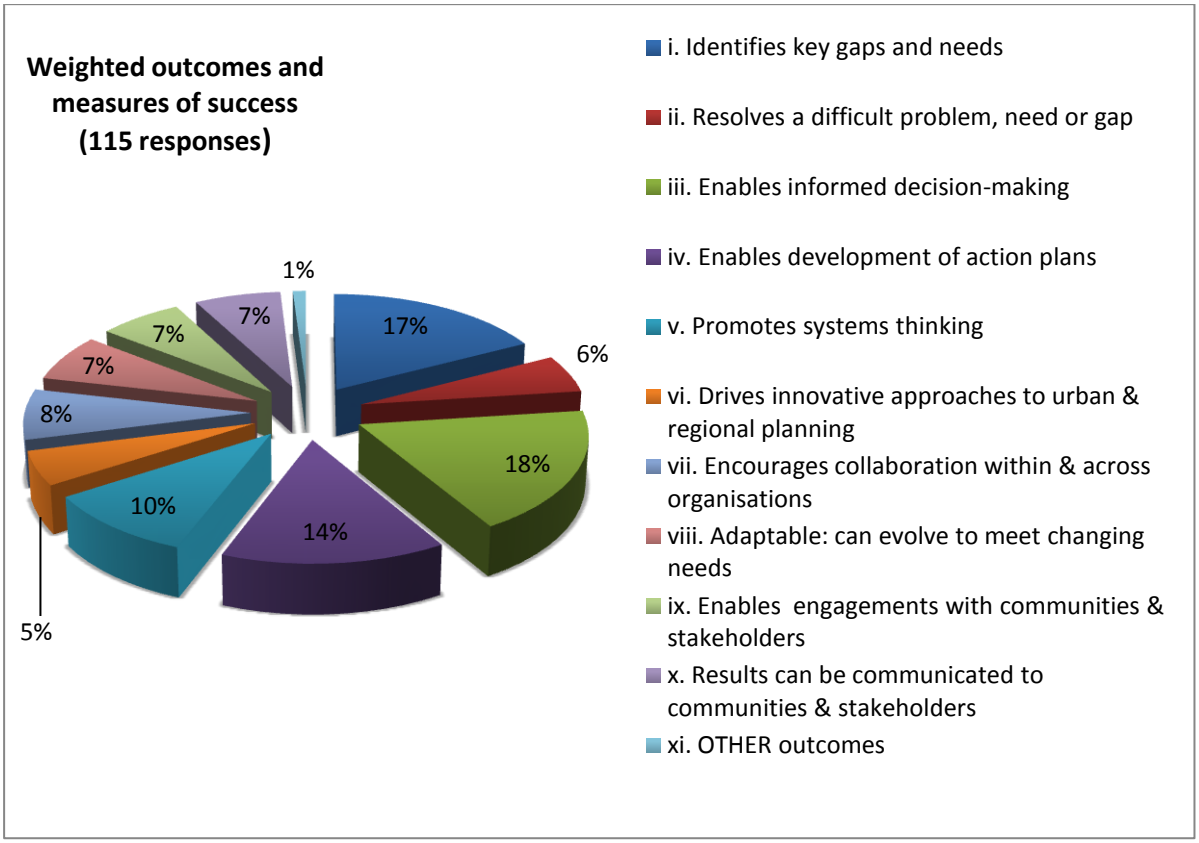


Figure 4: Weighted outcomes and measures of success from ranked answers to q4a

Top five ranked outcomes and measures of success:

The top 5 rankings below provide evidence of outcomes and measures of success that respondents considered most relevant in evaluating the adaptation tools and processes that they had used. The rankings also assist other local government practitioners to clarify *intended* outcomes and evaluation tools, including measures of success and key performance indicators (KPIs) for *achieved* outcomes in their adaptation projects:

- 1st ranked outcome and measure of success (18%): enables informed decision-making
- 2nd ranked (17%): identifies key gaps and needs
- 3rd ranked (14%): enables development of action plans
- 4th ranked (10%): promotes systems thinking
- 5th ranked (8%): encourages collaboration within and across organisations

4.2 Other outcomes and measures of success

No other outcomes or measures of success were suggested for Q4b. Perhaps the 10 issues listed in Q4a sufficiently covered the field.

4.3 Significant experiences or insights with evaluating outcomes

In contrast, there were 14 responses to open Question 4c. Several respondents reiterated their difficulties ranking the issues listed in q4a. For example, the respondent from a large urban, coastal council in Victoria wrote: *"Again, I think a number of these [measures of success] overlap and are of equal importance. They are all pieces of the outcome we need to achieve."* Nevertheless, two key issues warrant consideration by other practitioners. The first issue underscores a critical success factor listed in the following question 5a:

i. **Outcomes improve when funding is secured for an internal champion to drive adaptation processes and plans** - two contrasting responses highlighted how the **presence** of a dedicated person in the organization is an enabler of a good outcome and a measure of success. On the one hand, a large coastal council from regional Queensland reported that it *"Appointed sustainability officer who is driving a defined agenda across the organisation regarding sustainability and climate change adaptation".* On the other hand, a peri-urban, medium size landlocked council in Western Australia experienced poorer outcomes attempting to integrate the Local Climate Change Adaptation Plan into Council business in the **absence** of an internal champion to drive the project.

ii. **Develop clear measures of success for adaptation projects at the design stage, prior to implementation, and KPIs for risk management** - a respondent from a large urban coastal council in NSW that undertook a LAPP funded corporate and community risk assessment described a shortfall in expertise among staff to clearly define *intended* outcomes, measures of success and key performance indicators for risk management plans, at the outset. The first task is to get clear on *"What exactly is the problem or issue against which progress is to be measured?"*

5. CRITICAL SUCCESS FACTORS

Purpose of Question 5: to rank the critical success factors in using adaptation tools and processes, shortlisted in question 5a, and clarify other factors critical to the successful application of a tool or process in questions 5b and 5c.

5.1 Ranked and weighted critical success factors

Closed question 5a asked respondents to rank a shortlist of critical success factors. These are listed clockwise, beginning at 1 o'clock, in Figure 5 below. Respondents' 1st, 2nd and 3rd ranked critical success factors were weighted and summed. Results were plotted and shown as percentages:

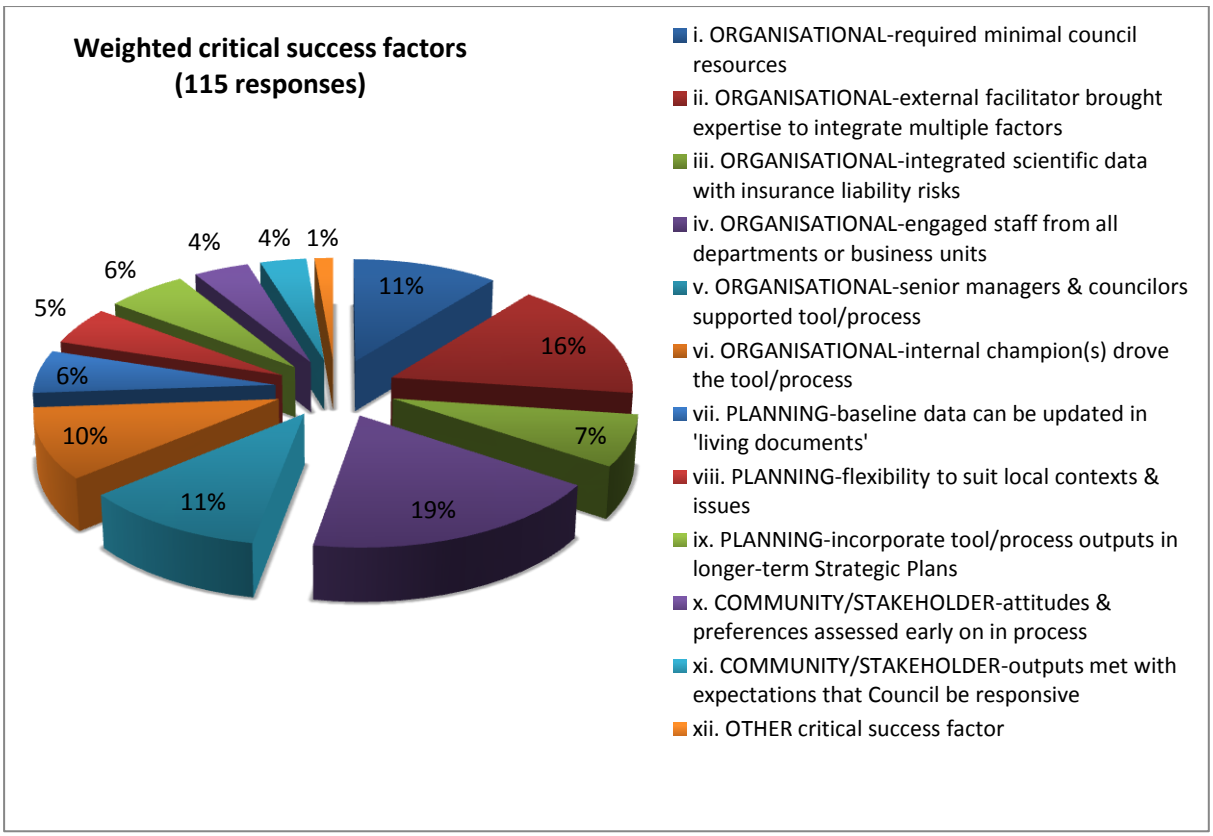


Figure 5: Weighted critical success factors from ranked answers to q5a

Top five ranked critical success factors:

All of the top 5 ranked critical success factors involved *organisational* issues. This underscores the significance of in-house critical success factors that local government practitioners need to think about and get clear on, prior to selecting an adaptation tool and application process:

- 1st ranked (19%): tools and application processes engaged staff from all departments
- 2nd ranked (16%): an external facilitator brought expertise and gave staff confidence to assess and integrate multiple factors
- Equal 3rd ranked (11%): a) tools and application processes required minimal Council resources; and b) senior managers and councillors supported the tool/process
- 4th ranked (10%): one or more internal champions drove the tool/process

5.2 Other critical success factors

There were 6 answers to semi-structured question 5b. One answer was salient:

i. **Clarify differences in what adaptation means to different staff, to successfully implement action plans** - the respondent from a large urban coastal council in NSW (who raised the issues of devising relevant KPIs for risk management in preceding q4c) viewed clarifying what adaptation means to the roles and responsibilities of different staff members as critical for successful action plans.

Two respondents actually described critical **failure** factors that were halting adaptation processes in their organisations. The respondent from a medium size coastal council in regional NSW wrote: *"No funding, no sense of urgency, internal resistance, not considered core business. We also have no pressure from the community..."* Likewise a larger urban council in NSW reported: *"At the moment the process hasn't succeeded. We are getting opposition from the majority of our councillors to adopting our Climate Change Adaptation Plan."*

5.3 Significant experiences or insights regarding critical success factors

Fifteen respondents took the opportunity provided by open question 5c to describe critical factors that made an adaptation tool, process or approach succeed in their contexts. Five insights on organisational and community/stakeholder critical success factors warrant wider recognition:

i. **Maximise intra-organisational and inter-organisational support** –a successful risk assessment process in a medium size coastal council in regional NSW resulted from being internally driven by Corporate Services. A counterpart coastal council in regional Western Australia emphasised that its community and corporate risk assessment and management plan, using the DCC 2009 tool, succeeded because of inter-organisational factors: *"Would not have happened without the federal funding. WALGA lead in presentation set the scene very well. Many council reps participated"*

ii. **Maintain momentum beyond a 'first pass' risk assessment** – ensure that the process leads towards integrated action planning across organisations. Otherwise key outputs generated in the initial phase are likely to fade away, as generally happens with stand-alone projects

iii. **Complex tools and processes work best when led by an external facilitator** - particularly by opening doors for community and stakeholder participation. Best outcomes are also likely to be attained from a 'winning combination' of in-house and consultants' expertise. A large coastal council in regional Queensland concluded that experts in modeling flood and coastal hazard scenarios provided staff with added confidence to identify and quantify risks

iv. **Engage high profile, persuasive and plausible community advocates** – they can persuade doubtful councillors of the scale of problems that must be addressed, and exhibit the high priority that they and other high profile people place on addressing climate change

v. **Provide opportunities for professional peers to share information and approaches** – for the respondent from a large non-metropolitan ROC in NSW, this *"…was a key factor attracting staff from larger councils to participate in cross-council risk & adaptation workshops. For smaller rural councils, participation levels were higher when events were delivered direct at their premises. This reflected small staff numbers, competing resource priorities and time lost to travel if having to participate in central regional events".*

6. CHALLENGES AND BARRIERS

Purpose of Question 6: to rank the challenges and barriers commonly faced by local government practitioners, shortlisted in question 6a, and gather descriptions of other significant challenges and barriers in questions 6b and 6c.

6.1 Ranked and weighted challenges and barriers

Closed question 6a asked respondents to rank a shortlist of challenges and barriers. These are listed clockwise, beginning at 1 o'clock, in Figure 6 below. Respondents' 1st, 2nd and 3rd ranked challenges and barriers were weighted and summed. Results were plotted and shown as percentages:

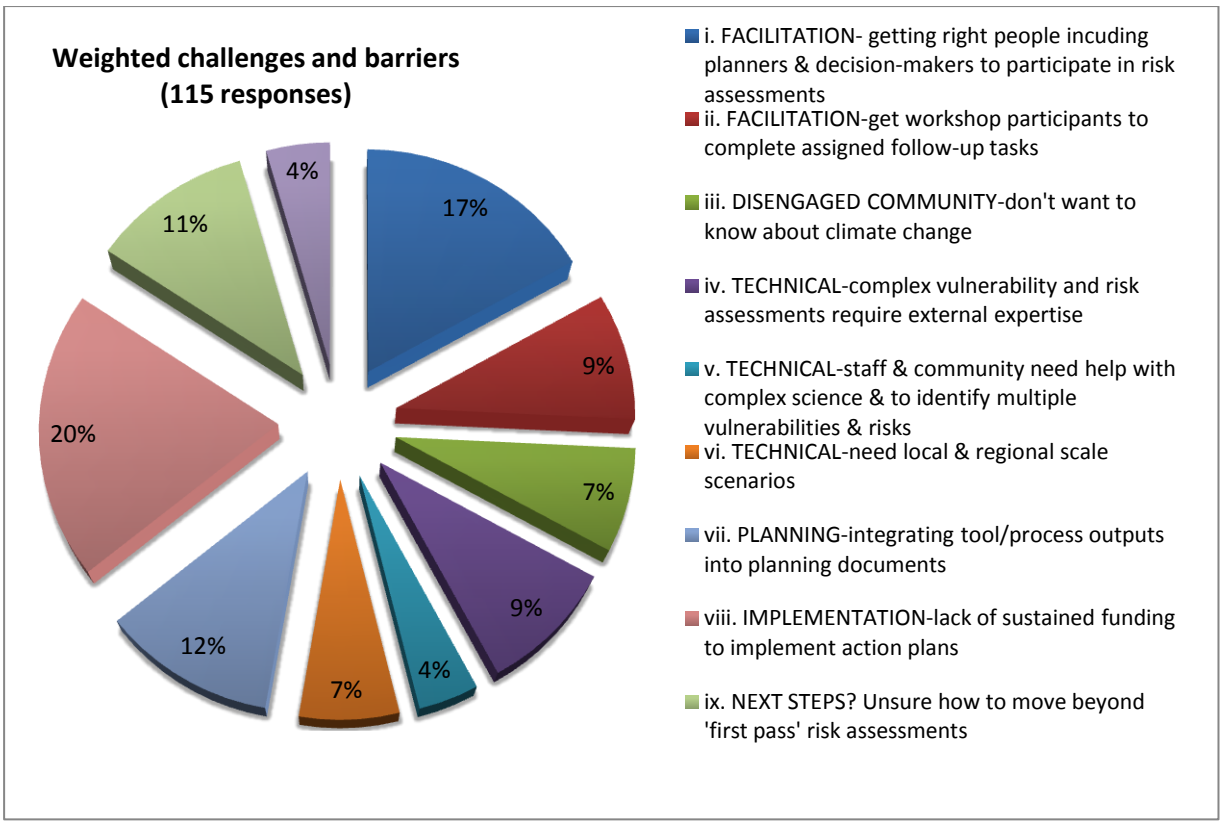


Figure 6: Weighted challenges and barriers from ranked answers to q6a

Top five ranked challenges and barriers:

The rankings below inform an understanding of the challenges and barriers commonly faced by the survey respondents, which other local government practitioners should take note of before embarking on an adaptation project:

- 1st ranked challenge or barrier (20%) was an *implementation* issue: lack of sustained funding from internal and external sources to implement adaptation action plans. At issue here is the short-term nature of most state and federally funded adaptation programs.
- 2nd ranked (17%) concerned *in-house facilitation* issues: getting the right participants including planners and decision-makers to participate in risk assessment workshops and related adaptation processes.
- 3rd ranked issue (12%) involved *response planning*: integrating tool and process outputs into strategic planning processes

- 4th ranked issue (11%) involved quandaries about moving beyond 'first pass' risk assessments
- Equal 5th ranked (9%): a) another *facilitation issue* - getting workshop participants to complete follow-up tasks; and b) a *technical* issue - complex vulnerability and risk assessments do require external expertise.

6.2 Other challenges and barriers

Thirteen respondents described other challenges and barriers in responses to semi-structured Question 6b. Chief among these were:

i. **Unavailability of good local data to assess risks** - this was summed up by a large Queensland peri-urban coastal council: *"Maintaining a high level [risk] assessment was difficult, participants wanted to dive into detail, but there was insufficient science at [the] local level to support detailed discussions. There was a lot we did not know and participants were uncomfortable with guessing."*

ii. **Lack of overarching State and National planning and landuse frameworks, inconsistent policy directions and jurisdictions** - at issue is how much responsibility for various risk levels should be borne by Council vis-à-vis State and National Governments and other organisations including CMAs and water utilities? A medium size urban coastal council in NSW identified "*Lack of State and federal support in a land-use planning context i.e. state planning departments*" as the biggest barrier. These governance and inter-organisational barriers are addressed in ACCARNSI's Discussion Paper: Towards a National Climate Change Adaptation Framework for the Built Environment http://www.nccarf.edu.au/settlements-infrastructure/node/76

iii. **Intra-organisational difficulties in reaching shared agreement on risk levels and management responses -** a large landlocked urban council in Victoria that undertook a corporate risk assessment using the AS/NZS ISO 31000:2009 tool reported difficulties reaching shared agreement on *"…highly variable interpretation of risk levels from different work areas, and different perspectives [on] balancing risks of different likelihoods and consequence relationships.*

iv. **Organisational resistance to change -** this emerged in a medium size coastal council in regional Queensland as another strong theme linked to no senior level champions - Councillors, Mayor or CEO. Another landlocked medium size council from regional NSW reported that *"…the key barrier at the moment is persuading our councillors to adopt the Climate Change Adaptation Report that has been produced"*

v. **Inertia stemming from the ongoing debates about the validity of climate science** - a director from a medium size peri-urban coastal council in NSW reported that there is *"Still a perception that the science is not settled and a need to act or commit funding is not immediately necessary."*

vi. **Politicisation of adaptation issues -** a large landlocked regional council in NSW contended that "'*luddites' in high places and climate change deniers*" were aided and abetted the *"poor standard of media coverage that confuses the community… [and] divided Councillors along party lines and disengaged them from the merits of the discussion"*

6.3 Significant experiences or insights regarding a challenge/barrier

Repeating the pattern in previous open questions, Question 6c drew 18 responses i.e. 5 more than q6b. Rich descriptions of additional significant challenges and barriers to response planning, organisational management, and community and stakeholder engagement mirror the issues and concerns identified above:

i. **Incorporating adaptation strategies in landuse planning schemes** - this key challenge entails synchronisation of planning scheme cycles. A large urban coastal council in NSW that conducted a community risk assessment, using the AS/NZS ISO 31000:2009 tool, reported: *"In a landuse planning context there is a significant time lag (years) between studies and policy development and its eventual incorporation into planning instruments… In NSW the Standard Template LEP also has very limited flexibility to inform or amend land use zoning."*

ii. **Difficulties in effectively integrating adaptation management in the right places across organisations –** two responses illustrated barriers to achieving the kinds of whole-of-organisation involvement required to integrate outputs of adaptation tools and processes in various management plans:

- firstly, in a large urban coastal council in South Australia, *"Integrating the outputs of the LAPP funded project into Asset & Infrastructure Management Plans and also possible Development Plans hasn't really occurred to any great extent"; and*
- secondly, the respondent from a large urban landlocked council in NSW that undertook a LAPP funded risk assessment vented frustration with silos and non-involvement: *"Bloody impossible to get the Assessment team along who are responsible for building compliance et cetera. Tried to get meetings, presentations. Did the work for them then asked for a symbolic rubber stamp, got nothing."*

iii. **Stretched resources makes taking action difficult for smaller councils** - three respondents underscored the difficulties of stretched resources faced by rural councils in particular. External funding for risk assessments needs to be followed up with adequate financial and human resourcing to develop and implement action plans.

iv. **Scepticism and low buy-in among councillors and communities** – four respondents drew attention to climate science scepticism and resistance to the case for developing adaptation strategies among councillors and communities – matched by low levels of buy-in among council staff and decision-makers

7. PRACTICAL WAYS TO RESOLVE CHALLENGES

Purpose of Question 7: Generally speaking, *challenges* can be resolved with insight and efforts – whereas *barriers* (especially external) are much harder if not impossible to overcome. This follow-on open question was designed to shift respondents' thinking from 'problem-modes' to 'solutions-modes' and to garner accounts of whether and how their topmost challenges described in answers to question 6 were resolved - or could be in future if circumstances change. Practical resolutions to the top 5 ranked challenges listed from q6a are correlated below.

Most of the survey respondents who described other challenges and barriers in answering q6b and q6c went on to elaborate whether and how they resolved these. Thematic analyses of these salient resolutions are also presented below to shed further light on ways to resolve challenges that other practitioners may face in their particular contexts.

Response count: 64 respondents answered question 7, which on the one hand made it the most complex open question to analyse and on the other hand provided rich data on how organisations and practitioners have handled their challenges and provide useful problem-solving advice to assist other practitioners at local and regional levels. This valuable feedback will be reflected in the Stage 3 Synthesis Report and its Decision Support Guide.

7.1 Practical resolutions to the top 5 ranked challenges

Resolving the 1st ranked challenge: gain funding for action plans - in relation to a high level vulnerability assessment using professionally integrated tools plus developing a business case for adaptation, a large landlocked council in regional NSW found three ways to secure funding for its action plans:

- firstly, it linked climate change to its sustainability agenda;
- equally important, persuade senior staff & Councillors that regardless of 'believing' in climate change, adaptation actions deal with current issues - bushfires, storms, droughts and heat waves; and
- thirdly, *"Demonstrating the legal argument supporting the* 'do something' *option over 'do nothing' was also effective"*

Resolving the 2nd ranked challenge: get the right participants involved in risk assessment workshops and related adaptation processes

i) **create a key stakeholder group -** a large coastal council in regional Queensland outlined that in future it would create a key stakeholder group to oversee improved planning and timing of workshops and other milestone events.

ii) **focus on effective leadership roles -** a medium size landlocked council in regional NSW, that commissioned a detailed flood risk and climate adaptation study, using a professionally integrated tool, emphasized how high level support and buy-in can resolve this issue: *"Senior management appointment plus "sell" to internal staff [the] importance of securing divisional resources into future i.e. be part of it so that they don't miss out!"* Similarly, a medium size coastal council in regional Western Australia that undertook a community and corporate risk assessment and management plan, using DCC 2009, cleverly changed the culture of the organization: it *"…had directors send the invite rather than the climate change champion. Made it very clear why attendance was needed by an education and awareness campaign around the sessions"*

Resolving the 3rd ranked challenge: integrating tool and process outputs into strategic response planning processes

i) **integrate adaptation actions in Community Strategic Plans and Delivery and Operational Plans** - following a LAPP funded risk assessment and adaptation strategy (completed with assistance from a consultant) a medium size peri-urban coastal council in NSW concluded that this was the first step to integrate adaptation tool and process outputs in strategic plans. *"Prioritising future actions will be the next challenge."*

ii) **ensure a cross-section of management levels and staff roles participate in vulnerability/risk assessment workshops as well as adaptation response planning** - a coastal ROC in NSW representing >70,001 people concluded this was *"central to effective discussion and identification of risks and to whole-of-council development and ownership of adaptation solutions"*

Resolving the 4th ranked challenge: moving beyond 'first pass' risk assessments

i) **collaborate in regional-scale adaptation plans –** DCCEE funded Regional Councils Climate Adaptation Projects [RCCAP] have emerged as a good interim process for rural, peri-urban and urban councils to keep moving forward, especially in circumstances where the absence of sufficient local data to support risk management plans has created an impasse

ii) **obtain specific project funding to develop fine-scale data** – this is the key to moving at the local scale, as indicated by large Victorian peri-urban landlocked council involved in a regional-level community climate adaptation risk identification using the AGO 2006 tool: *"We have just got funding as a group of 7 councils to create a regional response plan… but the [local] operational and specific risks identified in our initial project are still yet to be tackled by our Council. They may end up being incorporated into Council's broader Risk Management Framework and follow-up workshops may be held with staff. Beyond this, we are not sure how to proceed given limited resourcing and higher-level support to do this kind of work."*

iii) **forge strategic partnerships with research organisations** - taking this tack, a large urban coastal council in NSW that conducted a corporate risk assessment, using AS/NZS ISO 31000:2009, moved on to engage CSIRO to provide a decision making toolkit*: "This should allow Council to take the next step in managing climate change risk."*

Resolving equal 5th ranked challenges: a) getting workshop participants to complete follow-up tasks; and b) complex vulnerability and risk assessments require external expertise.

a) **ensure that firm directions are issued by senior management** - emphasise that workshop task completion is essential to achieve good governance and effective change management. This resolution was reported by several respondents including a large urban landlocked council in NSW that undertook a coastal hazards/risk assessment and adaptation project plus a community and corporate risk assessment, using the pilot ICLEI Adaptation and Resilient Communities (ARC) program

b) **develop a rationale and seek funding to engage external experts** - a large urban coastal council in NSW that undertook a first pass LAPP funded corporate risk assessment using the AGO 2006 tool decided that *"Instead of using council employees [again in the next step i.e. a detailed] climate change risk assessment we will use external consultants to do the entire assessment and use experts looking at just a few significant risks in detail. Councils are not qualified to do this work."*

7.2 Resolving other challenges

Most of the respondents who had described other challenges in answering q6b went on to describe whether and how they were able resolve them – or could do so in the future if circumstances change to enable these resolutions to operate. Five significant themes emerged:

i. **Gain ongoing National and State funding** - chief among 'other' resolutions was securing ongoing National and/or State funding to engage external expertise, build capacities to overcome challenges, and provide adequate resourcing for follow-on action plans. For example, after conducting a risk assessment using the AGO 2006 tool, a large peri-urban landlocked council in Western Australia identified the need for "*Additional funding for changes required to infrastructure e.g. more efficient irrigation systems to ensure that drains on water resources are minimized"*

ii. **Seek effective State and National support for longer-term landuse planning schemes** - dysfunctional governance arrangements underlie the lack of nationally coordinated approaches to adaptation landuse planning. A medium size NSW urban coastal council that undertook a community and corporate risk assessment, using the DCC 2009 tool, identified the *"Need to resolve a common goal at all levels of government"*

iii. **Generate fine-scale local data to inform regional scenarios by involving staff, communities & stakeholders in local-to-regional approaches** - survey respondents affirmed the significance of this dual approach to resolve challenges, including how to engage staff in grasping local impacts and ways to manage community expectations.

a) **localised data acquisition** - two problem-solving approaches are noteworthy:
   - *"Seek to involve key stakeholders in data acquisition and reporting*". This solution was used by a large urban coastal council in NSW to support its community risk assessment and management plan, developed using the AS/NZS ISO 31000:2009 tool and the NSW Floodplain Management Manual and Coastal Protection Act;
   - utilize current best available local data in a 1st pass assessment and incorporate it in a 'living document' that can be upgraded when improved data becomes available. In Western Australia, a medium size regional landlocked council that commenced a LAPP funded coastal risk assessment using AGO 2006, plus a council/ROC co-funded corporate risk assessment using DCC 2009, reported that *"As localised data on climate variables such as sea level rise, temperature change etc is not yet available, the project utilised available data for the south-west of WA. Lidar data was also unavailable when the risk assessment was completed. Assessment can be undertaken again when localised data and information becomes available"*

b) **develop regional adaptation scenarios** - a medium size Tasmanian urban coastal council that undertook a community and corporate risk assessment plus a coastal hazards/risk assessment and adaptation project, using AS/NZS ISO 31000:2009, is involved with 12 other councils in an RCCAP Project. *"First step to engaging council participation in the risk/opportunity assessment workshop: introductory session held with General Managers and senior management to nominate suitable employees to participate… RCCAP project has engaged Climate Futures Tasmania to develop regional and municipal climate scenarios based on fine scale models at 1 degree intervals across the State".*

iv. **Use management reviews of priorities to overcome internal challenges to integrated response planning** – in regard to resolving organisational challenges of highly variable interpretations of risk levels from different work areas and different perspectives on determining priorities (discussed in section 6.2 iii above), the respondent from a Victorian council reported that its

challenges were resolved pragmatically: *"There was a management review and 'adjustment' of the priorities that came out of the key staff workshop."*

v. **Engage communities through informed dialogues on climate change impacts and risks that they face – a** large urban coastal council in Queensland undertook a Council/ROC funded coastal hazards/risk assessment and adaptation project, plus high-level vulnerability assessment using a professionally integrated tool. It described how *"Dialogue with community about solutions and costs needs to be undertaken so that the steps are taken with surety…"*

8. ADAPTIVE LEARNINGS

Purpose of Question 8: to rank the adaptive learnings from applying adaptation tools and processes, shortlisted in question 8a, and gather descriptions of other significant adaptive learnings in questions 8b and 8c.

8.1 Ranked and weighted adaptive learnings

Closed question 8a asked respondents to rank the shortlist of adaptive learnings, listed clockwise, beginning at 1 o'clock, in Figure 8 below. Respondents' 1st, 2nd and 3rd ranked adaptive learnings were weighted and summed. Results were plotted and shown as percentages:

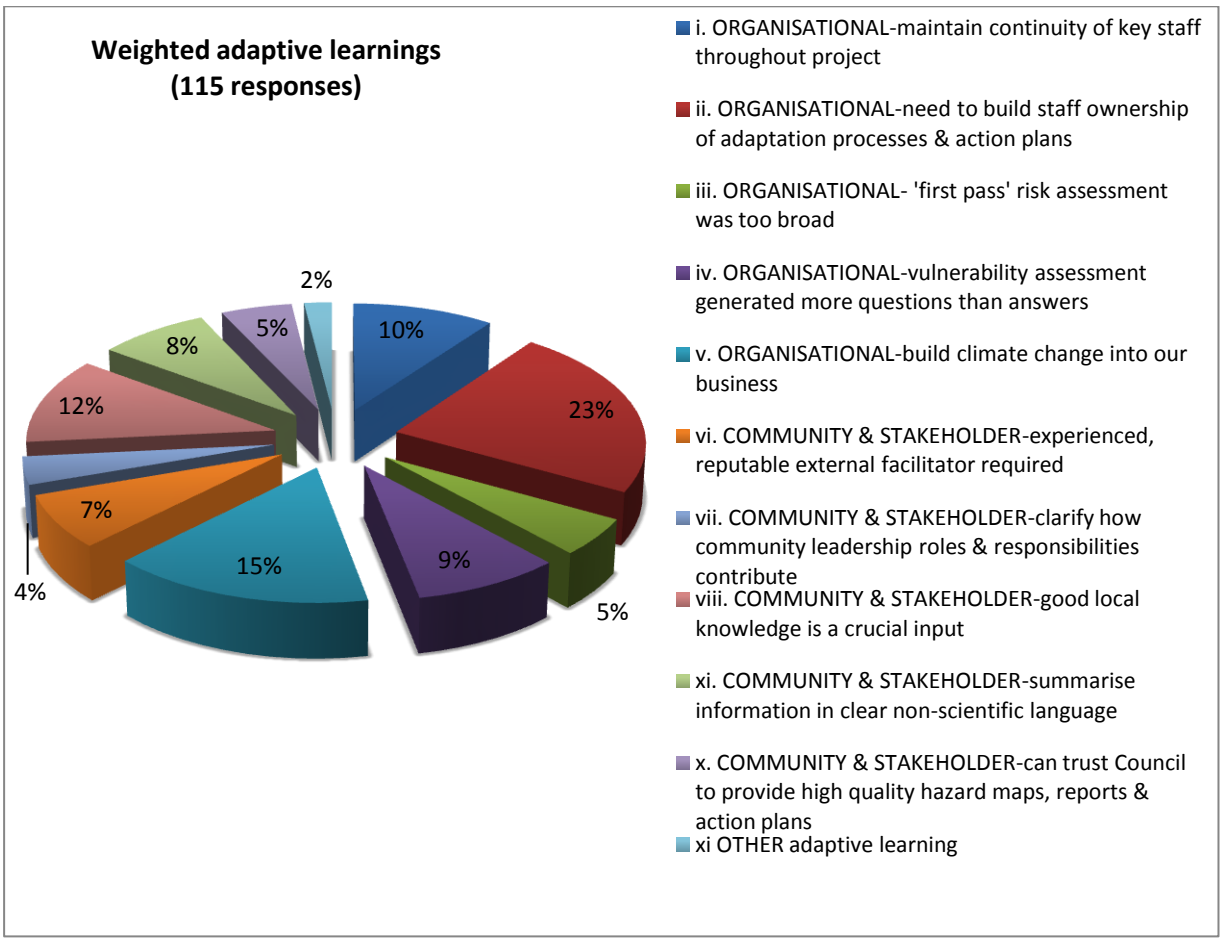


Figure 8: Weighted adaptive learnings from ranked answers to q8a

Top five ranked adaptive learnings:

The rankings below provide evidence of the adaptive learnings that respondents considered to be the most relevant to their organisational, community and stakeholder contexts. The rankings illuminate adaptive management issues for other local governments to consider, in selecting a tool or process, and encourages sharing adaptive learnings with professional peers to contribute to a community of adaptation practice.

- 1st ranked (23%) adaptive learning was an organisational issue: need to build staff ownership of adaptation processes, priorities, strategies and action plans
- 2nd ranked (15%) again an organisational issue: build climate change into our business

- 3rd ranked (12%) a community and stakeholder engagement issue: good local knowledge of hazards, risks and vulnerabilities e.g. flooding and bushfire is a crucial input
- 4th ranked (10%): another organisational issue: maintain continuity of key staff (human resources) throughout the project
- 5th ranked (9%): a combination of technical and organisational issues: vulnerability assessment generated more questions than answers.

8.2 Other adaptive learnings

Response count: there were 4 responses to semi-structured question 8b. Two respondents highlighted how other sources of information on adaptation options and strategies prompted additional adaptive learning at local government levels e.g. publications by the Western Australian Department of Health and Curtin University on healthcare impacts of climate change. Another two responses concerned governance issues and intergenerational equity:

i. **Need coordination across all levels of governance** – a peri-urban landlocked council in Western Australia that undertook a LAPP funded risk assessment using the AGO 2006 tool highlighted how *"Quite a few of the adaptive measures were State Government or other responsibilities - not just Local government - and how do we now use this plan to advocate support from other organisations both state and federal?"* This response reaffirms the need for requisite policy changes to enable coordinated adaptation responses across all levels of governance, as previously discussed in section 6.2 on other challenges and barriers, and resolving these in section 7.2ii

ii. **Address intergenerational equity issues including costs borne by current ratepayers for future impacts** – in NSW a landlocked regional council with a large population was concerned that *"This generation has also been allocated costs from past generations to clean up e.g. Sydney Olympic Park and feels to an extent like the meat in the sandwich - paying for both past and future costs."* This is a new issue, not raised previously.

8.3 Significant experiences or insights on adaptive learning

Response count: there were 16 responses to open question 8c. Respondents reaffirmed that adaptive learning often occurs as a fusion across organisational, community and stakeholder levels:

i. Organisational learning enablers:

a) **envisage layers of learning from adaptation processes** - a medium size coastal council in regional Western Australia provided a rich description of layers of organisational learning gained from its adaptation processes, which *"went beyond the strategic level assessment under the LAPP program and incorporated a spatial risk assessment and adaptation action plan, which was funded by Council. This assisted in providing 'localised' assessment of risks and identification of 'on-ground' actions required to address these risks. The consultants were [therefore] required to 'develop and implement' an innovative process, as the required process under the LAPP program was aimed at identifying and addressing strategic corporate risks."*

b) **maintain staff continuity to enable consolidation of adaptation processes and retain learnings** - the respondent from a large urban coastal council in NSW described how the loss of corporate memory resulting from staff turnover impacted adversely on consolidation processes: *"Key staff involved in the risk assessment and adaptation process have left and the project has lost momentum. There is no internal funding to carry out the 'next steps' e.g. flood*

modelling. And until the 'next steps' are completed…[to] more clearly identify risks and adaptive actions and their costs, it is very difficult to get buy in from other sections of Council."

c) **acknowledge the importance of incorporating adaptation in business plans** - two large South Australian urban coastal councils reiterated the importance of linking the development of action plans to business plans and work priorities across their organisations: *"The need to build climate change thinking and planning into our business is the most critical learning from this process"*. In regional Western Australia, a medium size coastal council emphasised *ownership* of where and how adaptation fits with their organisations' current business processes.

ii. Community and stakeholder learning enablers:

a) **emphasise the benefits of regional approaches to adaptation response planning** - several respondents highlighted that regional demonstrations of impacts assisted in gaining not only organisational support but also community support to develop adaptation strategies. In Tasmania a medium size urban coastal council reported that *"Through the RCCAP project, engagement with community stakeholders has been targeted and based on where council's corporate risk and vulnerabilities intersect with the 'communities', enabling council to drive the agenda and avoid creation of over-expectations of what can reasonably be delivered by the project."*

b) **utilise knowledge of local circumstances, issues and histories of impacts** - local knowledge of significant climatic events emerged as important contributions to risk assessment and adaptation response planning workshops in councils across all states. However, a large coastal council in regional Queensland cautions peers to be wary of assuming that participants have adequate levels of knowledge and skills to participate and readily interact in a workshop environment. Multiple options for engagement and feedback are needed

c) **create good communications through clear language** - high-level risk assessments present exceptionally demanding opportunities and challenges to adaptive learning among staff, the community and stakeholders because these adaptation tools and processes tend to raise more questions than immediate answers. The respondent from a large Victorian urban coastal council concluded: *"The key is to identify which questions should be prioritised. Simple language is essential both internally and externally. The clearer the language the better everyone will understand their risks, roles and responsibilities."*

9. NEXT STEPS?

Purpose of Question 9: non-compulsory question 9a asked respondents to reflect on where to from here, then rank their next steps from the shortlist provided. **Response count**: there were 84 responses to q9a. Question 9b continued the pattern of follow-on open questions by asking respondents to describe other next steps. However, questions 9c and 9d differed in purpose and design from the previous pattern of closed and follow-on open questions. Q9c asked respondents to indicate only the **key prompt** for their 1st ranked next step. Question 9d asked respondents to describe key prompts for **other** context-specific factors.

9.1 Ranked and weighted next steps

Closed question 9a asked respondents to rank the shortlist of next steps. Respondents' 1st, 2nd and 3rd ranked adaptive learnings were weighted and summed. Results were plotted and shown as percentages in Figure 9.1 below:

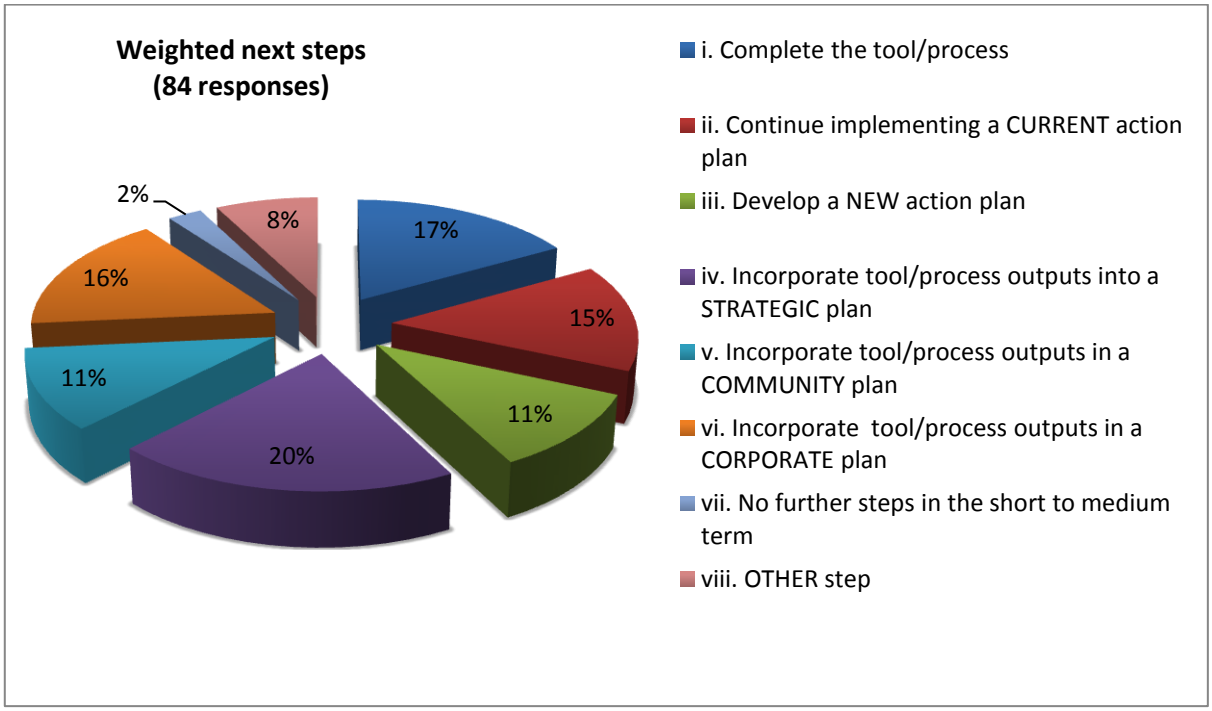


Figure 9.1: Weighted next steps from ranked answers to q9a

Top five ranked next steps:

The rankings below provide indicators of the next steps that respondents were considering the most relevant to their contexts. These rankings will also assist other practitioners and organisations to identify next steps that need to be taken to consolidate the outputs and outcomes of tools and processes e.g. by focusing on developing response plans, as well as provide assistance in selecting or applying further tools and consolidation processes:

- 1st ranked next step (20%) underscored the significance of incorporating tool/process outputs in a **strategic** plan
- 2nd ranked (17%): complete the tool/process
- 3rd ranked (16%): incorporate tool/process outputs into a **corporate** plan
- 4th ranked (15%): continue implementing a **current** action plan

- Equal 5th ranked (11%): a) develop a **new** action plan; and b) incorporate tool/process outputs into a **community** plan

9.2 Other Steps

Open question 9b provided an opportunity to describe **other** key prompts. **Response count**: there were 16 responses to q9b. One of these other key prompts was incorporation in an Enterprize Risk process. Three other noteworthy responses were:

i. **Consolidate the development of plans including:**
   - Regional Risk Response Plans;
   - inform Local environment Plans and policies;
   - Delivery Plan under the NSW Integrated Reporting Framework, with priorities determined in consultation with the community;
   - revised Strategic Plans e.g. a large urban coastal council in South Australia was preparing to "*…commence the Resilient South project (climate change vulnerability assessments and adaptation action planning at a regional level) with adjoining Councils, so this will be an important next step in taking the focus from Council's operations to the broader community sectors.*"

ii. **Improve community consultation through social research –** e.g. in regard to coastal hazards and sea level rise. A large urban coastal council in Victoria reported *"Our next steps focus on social research to understand where (and how) our community sees climate change risk and how we can best work with them to manage the risks."*

iii. **Gather necessary information to develop new adaptation response plans** - or iteratively improve existing plans as and when further information and funding opportunities arise.

9.3 Key prompts for 1st ranked next steps

Closed question 9c drilled down into the key prompts for ranking which next steps to take:

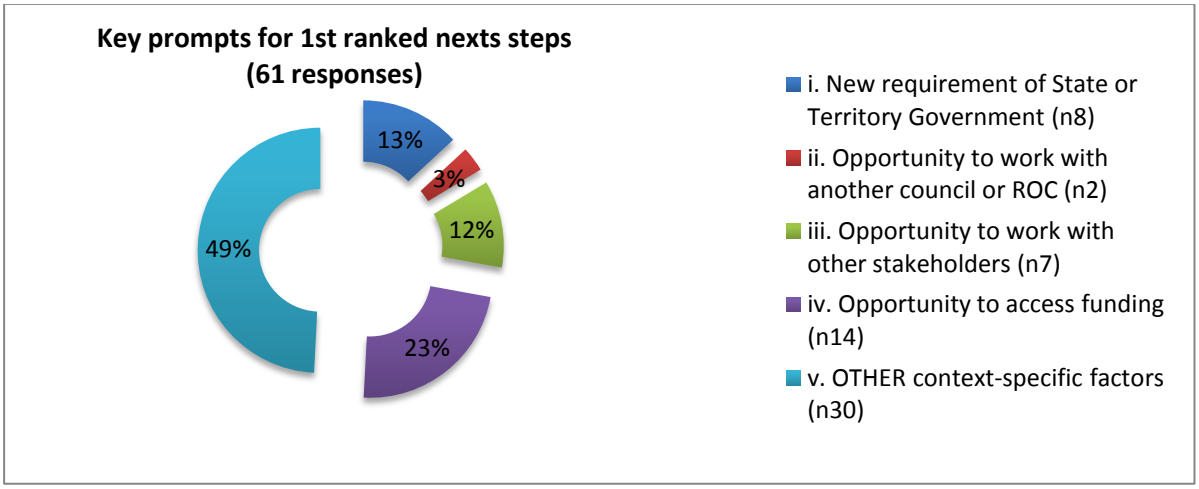


Figure 9.2: key prompts for 1st ranked next steps, in answers to q9c

Ranked key prompts from answers to q9c:

Question 9c asked respondents to indicate only the **key prompt** for their 1st ranked next step, in their answers to q9a. Consequently, only 1st priorities were summed to produce Figure 9.2 above. **Response count**: there were 61 responses to q9c. The results unambiguously show the significance of **other** context-specific factors:

- 1st ranked (49%): 'Other context-specific factor' was by far the largest category (n30). A wide range of contextual factors were at work, discussed in the thematic analyses below
- 2nd ranked (23%): 'Opportunity to access funding' was a prompt for almost a quarter of respondents (n14).
- 3rd ranked (13%): 'New state or territory government requirement' (n8)
- 4th ranked (12%): 'Opportunity to work with other stakeholders" (n7)
- Last ranked: surprisingly, 'Opportunity to work with another council or ROC' was a distant last (n2). At first glance this seems at odds with other open responses throughout the survey. A possible explanation is that this issue was covered in answers to q9b that highlighted the corporate and community benefits of regional approaches.

9.4 Other context-specific factors prompting next steps

Open question 9d was a slightly different design. It asked respondents to describe other *context-specific factors* that prompted their next steps. **Response count**: there were 30 responses to q9d.

Six respondents emphasised that their key prompt was the need to **get going** on action plans, to build on success and improve the performance of tools. Other noteworthy key prompts included:

i. Develop a new City Plan in the near future;
ii. Take up an offer from an insurance provider e.g. to facilitate a detailed corporate risk workshop;
iii. Take a next step specifically championed and supported by a ROC;
iv. Utilise critical mass from amalgamations of smaller local governments into a regional council to initiate collaborative projects;
v. Plan and prepare to maintain business continuity and service delivery. In NSW, a large urban coastal council was concerned that *"…climate change has the potential to disrupt the delivery of Council's services and operations and create resourcing and social equity challenges across the LGA. We need to plan and prepare for that."*

10. ALTERNATIVE QUESTIONS AND MEMORABLE OR REWARDING EXPERIENCES

Purpose: Closing questions 10a and 10b drew on the Appreciative Enquiry evaluation methodology to offer respondents an opportunity to:

- critique the design or wording of the survey questions;
- suggest alternative questions or further lines of enquiry that can be taken up in follow-on research and evaluation processes including the national road shows, workshops and seminars; and
- gather final reflective comments on memorable or rewarding experiences with an adaptation tool or process

10.1 Critiques of the survey questions

There were two noteworthy critiques:

i. The first raised the issue of inherent limitations that Boolean binary decisions entail (i.e. choose this or that factor but not both): "*I did find some of these questions quite challenging to answer as it was not an either/or decision with regards to our drivers, actions etc."*

ii. The second raised a related issue of over-simplification that result from spatial and word limitations in online survey questions: *"Some more context around the responses for Q1.b would have been useful, e.g. I chose 'frequently' for regularity of bushfires - in reality these are small scale grass fires (we usually have at least 1 every summer) that would not compare with a bushfire that might occur in a more wooded and hilly area such as the Adelaide Hills…"*

10.2 Alternative questions

These suggested alternative questions could be utilised as engagement triggers if raised in flow-on roadshows, seminars and other presentations planned for 2012, to garner additional information:

i. 'Should all local governments use a standardised adaptation tool, process or framework?'
ii. 'Which part of the council is currently the primary driver for climate change adaptation?'
iii. 'What is the context for your Council's adaptation plan i.e. a grant, a self-funded project, or another driver?'
iv. 'If your Council's adaptation project is incomplete, then why so – is it still underway, are there resourcing issues, have politics interfered, or other factor(s)?'
v. 'How can State and National governments best support local adaptation response planning and implementation initiatives?'

10.3 Which experience or outcome stands out as memorable or rewarding?

Purpose: concluding survey question 10b prompted respondents to reflect on their participation in an adaptation tool/process and describe an experience or outcome that stood out as the most memorable or rewarding. This Appreciative Inquiry method prompted respondents to exercise their *evaluative thinking skills* (Patton, 2010).

Response count: This final reflection elicited 34 responses including some noteworthy comments concerning practical improvements to organisational management and governance. Peak organisational learning experiences reflected on included:

i. Cross-organisational engagement

Adaptation projects provided opportunities for staff from different divisions, disciplines and mind-sets to work together or with partners including CSIRO on wicked problems in identifying risks and developing action plans. The respondent from a large, landlocked council in regional NSW reflected that "*Having our adaptation process and method attract international attention, the governments of Korea, China and France have taken advantage of our research which has been very rewarding both for the staff and the Council*"

ii. Gaining benefits from collaborating regionally

For the respondent from a medium size urban coastal council in Tasmania, the most memorable and rewarding feature of the process was *"Being able to undertake a regional approach across the Councils of Southern Tasmania that is flexible enough to enable each Council to develop its own corporate adaptation plan to meet its own governance structure and resourcing - as well as leveraging off shared community adaptation plans across key land uses: urban, peri-urban, rural and natural areas, supported overall by an regional strategy embedding a shared and consistent approach to climate adaptation planning and increasing economies of scale across collective action".*

iii. Learning experiences with tools *per se*

Some answers were focused on memorable or rewarding learning experiences with a particular tool or process, such as getting everyone to agree on the A1FI climate scenario, which provided the grounding to move on quickly. Although the respondent from a small landlocked rural Victorian council had the courage to admit *"Possibly this could be called the **least** rewarding: I am still not sure we did the right thing in scaling down the DCC2009 tool. It made it easier to complete a project output but it is less likely to be used by stakeholder councils."*

iv. Quality of workshop processes

Other answers focused on the quality of workshop facilitation e.g. the 'kick start' provided to beginners among staff by proficient external facilitators from Echelon, who ran the corporate risk assessments.

Respondents from a large Victorian urban coastal council, and a medium size, landlocked peri-urban council in Western Australia reflected on the value of facilitating community risk assessment workshops, using DCC 2009 and other professionally integrated tools, that included internal and external stakeholders and engaged the local community. The Western Australian respondent concluded "*Those community members who attended our workshops (quality not quantity of people) did assist in providing a valuable assessment of how the community feels we as Local Government should be tackling climate change."*

11. SYNTHESISING THE SURVEY FINDINGS

The two central aims of the survey have been met. Firstly, to evaluate through the ranking process which issues shortlisted in the closed questions were relevant, nationwide, to local government practitioners' experiences. Secondly, to gather reports on other salient issues raised in responses to the semi-structured and open questions, and highlight those that provide guidance to other practitioners and decision-makers in clarifying their purposes, key drivers and intended outcomes, critical success factors, adaptive learnings and next steps in undertaking climate change adaptation projects. The survey also sheds light on common challenges and barriers faced – and possible ways to resolve challenges. Additionally, the database of adaptation tools and processes used by councils and ROCS gathered from the survey can be built on in further longitudinal studies.

The final Stage 2 National Survey Report will be available on the ACCARNSI website to state, territory and national decision makers and be publicised through appropriate channels to ensure that the voice of local governments is heard in the wider community.

The final tasks of synthesising the findings and conclusions from the Stage 1 Case Studies and the Stage 2 National Survey will carry over into the *Stage 3 Synthesis Report on key learnings from the Case Studies and National Survey.* Stage 3 will involve these culminating steps:

- reassess the top 5 ranked key drivers, outcomes and measures of success, challenges and barriers, critical success factors, adaptive learnings and next steps in the closed questions, in the light of other topmost issues prioritised by respondents in answers to the correlating semi-structured and open questions;
- reframe the rankings and topmost prioritised issues, to produce **checklists** of *corporate*, *business case, response planning, technical, community and stakeholder*, and *context-specific* issues and concerns that local government practitioners would be advised to consider before embarking on a local or regional adaptation project; and
- incorporate the checklists in a Decision Support Guide.

11.1 Towards the Decision Support Guide

Three managers and a director from councils in different states who were *preparing* to use adaptation tools in the near future approached ACCARNSI with requests to do the survey as a "*reality check on what we'll need to consider*", as the director put it. Their responses were invalid since they had not yet used an adaptation tool or undertaken a vulnerability study or other process, as stipulated in the survey cover page. Nevertheless, their requests flagged important knowledge gaps and readiness needs that warrant addressing.

A user-friendly Decision Support Guide will be the central feature in the Stage 3 Synthesis Report. Frequently reported experiences, practical knowledge and advice gleaned from the case studies and the top ranked priorities analysed from the nationwide survey analyses will be condensed into a question and answer format: *What are the Top Ten Enablers, including ways to resolve anticipated challenges, that colleagues and I need to know in advance, to use climate change adaptation tools and processes effectively?* These enablers will be communicated to end-users in a web-based design that links to accompanying checklists of prioritised drivers, intended outcomes, critical success factors, barriers and challenges frequently encountered and possible ways to resolve the challenges, adaptive learnings and appropriate next steps to consider.

The condensed advice in the Decision Support Guide and accompanying checklists will assist practitioners to make informed decisions before embarking on their adaptation projects and apply climate change adaptation tools, processes and approaches more effectively to achieve organisational change, and to engage communities and stakeholders and manage their expectations.

11.1.1 Piloting the Decision Support Guide

The final draft Decision Support Guide will be 'road tested' in workshops convened with each State and Territory LGA in May 2012. ACCARNSI will also seek to collaboratively pilot the Decision Support Guide with several councils and ROCS to further test its applicability in varying contexts and fine-tune its usefulness.

REFERENCES CITED

Appreciative inquiry resource portal: http://appreciativeinquiry.case.edu/

Argyris C, 1990, *Overcoming Organizational Defenses. Facilitating organizational learning*, Allyn and Bacon, Boston

Argyris C, 1991, Teaching smart people how to learn. *Harvard Business Review,* May-June 1991

Argyris C, 1993, *Knowledge for Action: a guide to overcoming barriers to organizational change*, Jossey Bass, San Francisco.

Argyris C & Schön D, 1996, *Organizational learning II: Theory, method and practice*, Addison Wesley, Reading, Massachusetts.

Coughlan A, Preskill H & Catsambas T, 2003, 'An overview of appreciative inquiry in evaluation', *New Directions for Evaluation*, no.100: 5-22

Gunderson L & Holling C (eds), 2002, *Panarchy: Understanding transformations in human and natural systems*, Island Press, Washington D.C.

Glaser B, 2001, *The Grounded Theory Perspective: Conceptualization Contrasted with Description*. Sociology Press, Mill Valley, California.

Glaser B, 2004, 'Remodeling Grounded Theory', *Forum: Qualitative Social Research*, *5*(2), article 4, http://nbn-resolving.de/urn:nbn:de:0114-fqs040245

Grant S & Humphries M, 2006, 'Critical evaluation of appreciative inquiry', *Action Research* **4**(2): 401-418

Harding R, Hendriks C & Faruqi M, 2009, *Environmental Decision Making: Exploring Complexity and Contex*t, The Federation Press, Sydney.

Hulme M & Adger N, 2007, *Limits and barriers to adaptation: four propositions*, Tyndall Centre for Climate Change Research, London.

Patton M, 2008, *Utilization-Focused Evaluation*, 4th edn, Sage, Thousand Oaks, California.

Patton M, 2010, *Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use*. Guilford Press, USA.

Pawson R, 2002, "Nothing as Practical as a Good Theory" in *Evaluation* **9** (4): 471 http://evi.sagepub.com/content/9/4/471 Accessed 3 May 2009

Pawson R & Tilley N, 1997, *Realistic Evaluation*. London: Sage.

Preskill H & Catsambas T, 2006, *Reframing Evaluation Through Appreciative Inquiry,* Sage, Thousand Oaks, California.

Preston B, Jovicich S & Yuen E, 2010, *Social Learning in Vulnerability Assessments: The role of double loop learning in helping communities adapt to Climate change. Paper presented to the 8th World Congress of Participatory Action Research and Action Learning, 6th-9th September 2010, Melbourne.*

Reed J, 2007, *Appreciative inquiry: research for change*, Sage, Thousand Oaks, California

Rogers P, 2010, "Using purposeful program theory and logic models for evidence-based policy and practice", workshop presentation for the Australasian Evaluation Society NSW, Sydney, 27 July 2010.

Rogers P & Funnel S, 2011, *Purposeful Program Theory: Effective Use of Theories of Change and Logic Model*, John Wiley/Jossey-Bass

Schön D, 1987, *The Reflective Practitioner: How Professionals Think in Action*, Jossey-Bass, San Francisco.

Willows R & Connell R, 2003, *Climate adaptation: risk, uncertainty and decision-making*. UKCIP Technical Report, UKCIP Oxford.

APPENDIX 1: Matrix of adaptation tools and approaches in the Portfolio of Case Studies

Adaptation Tools & Processes	Case studies of Councils & Statewide synopses	Funding sources, collaborations, internal or external facilitation
'First pass' risk assessments: ○ AGO Guide to Risk Management 2006 (AGO 2006) ○ ISO Risk Assessment Frameworks: - AS/NZS 4360:2004 - superseded by AS/NZS ISO 31000:2009	○ Synopsis of 30+ LAPP funded risk assessment projects in WA councils ○ Sector-wide study of LAPP funded risk assessment 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: ○ Climate Change Adaptation Actions for Local Government (DCC 2009) ○ AS/NZS 4360:2004 & AS/NZS ISO 31000:2009	○ 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 *Climate Change Risk Assessment Workshop Program*
Coastal vulnerability & risk assessments ➔adaptation options & responses: ○ AGO 2006 ○ DCC 2009 ○ additional methodologies provided by consultants	○ 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: ○ AGO 2006 ○ AS/NZS 4360:2004 / AS/NZS ISO 31000:2009	○ Eastern Metropolitan Regional Council (ERMC): *Future Proofing Perth's Eastern Region*	LAPP funded consultancy provided by Coastal Zone Management P/L & Greensense P/L
Vulnerability assessment – development of spreadsheet tool by external consultant	○ Eyre Peninsula Natural Resource Management Board	Partnership with CSIRO, BoM, SARDI & ABARE
High level vulnerability & risk assessment	○ 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:	○ 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	○ 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	○ Gosford City Council	Tool developed in-house
Sustainability Scorecard	○ Cairns Regional Council	Adaption of a sustainability tool initially developed by ARUP

Table 1: Matrix of adaptation tools and processes used, case study councils, funding sources, collaborations and internal or external facilitation.

ACCARNSI Climate Change Adaptation 'Tools and Processes' Survey

PURPOSE

Dear Local Government Colleagues

This survey of climate change adaptation tools and processes used by local governments in States and Territories is considered a national research priority by the Australian Local Government Association, all of the state and territory LGAs, and the Local Government Managers Association. Its purpose is to explore key issues and experiences including:

* how various adaptation tools and process have, and are being utilised by different kinds of councils and ROCs - urban, peri-urban or rural; small, medium or large scale;
* applications in various operational levels e.g. decision support, risk assessment, strategic planning, community and stakeholder engagement;
* whether intended outcomes were met and how success was measured
* gaps and limitations in the design of a tool and/or facilitating the process;
* identifying critical success factors;
* challenges and barriers encountered - and whether/how these were overcome;
* strategies and techniques to engage communities and stakeholders;
* scoping future improvements; and
* clarifying next steps.

Three key points to note about this survey:

Firstly, the closed questions provide important quantitative data and you can't get to the next page without providing an answer.

Secondly, the open qualitative questions enable you to contribute 'rich data' on organisational and community/stakeholder experiences and insights on the adaption tools and their application processes.

Thirdly, the questions refer to ‘tools/processes' because it can be difficult to define a ‘tool’ that is part of an overall process and/or involves a range of targeted adaptations to hazards, risks and vulnerabilities. This is especially the case when several tools are utilized, based on one or more assessment methodologies.

Your thoughtful responses will contribute to this prioritised knowledge building and sharing endeavor. Please allocate a half hour to complete it.

Be assured that all responses will be kept strictly confidential and anonymous – no organisations or individuals will be mentioned by name or identified in any other way in the Survey Report.

PROFILING YOUR ORGANISATION

***1a. Please indicate your State/Territory.**

- ◯ ACT
- ◯ NSW
- ◯ NT
- ◯ QLD
- ◯ SA
- ◯ TAS
- ◯ VIC
- ◯ WA

1b. Please indicate the appropriate geographic/density type, population bracket, landlocked or a coastal boundary, and all applicable hazards/risks/vulnerabilities.

	Geographic/Density type	Population	Coastal/Landlocked	Regularity of coastal hazards	Regularity of storm-water/river flooding	Regularity of bushfires	Regularity of landgales, east coast lows or cyclones	Regularity of heatwaves	Regularity of droughts
Council									
ROC									

Geographic/Density type: Urban, Peri-Urban, Regional, Rural, Remote

Population: over 70,001 population, 50,001-70,000 population, 20,001-50,000 population, 5,001-20,000 population, 2,001-5000 population, up to 2,000 population

Coastal/Landlocked: Coastal Boundary/ies, Landlocked

Regularity of coastal hazards / storm-water/river flooding: Rarely (1 in 100 years), Occasionally (1 in 20 years), Frequently (1 in 5 years)

***1c. At which level was this survey response signed off? Please choose one option:**

- ◯ GM
- ◯ Director
- ◯ Manager
- ◯ Team Leader
- ◯ No sign off or specific approval process required

TOOLS AND PROCESSES USED

2a. Please choose the option(s) below that best describe(s) the climate change adaptation project(s) undertaken at your Council/ROC.

Select the tool used for each relevant project, the funding source, indicate whether the tool was used in house or by consultants, and if the project has been completed.

If your Council/ROC has undertaken more than one climate change adaptation project, please provide answers for each project, and rank the projects in terms of usefulness or success.

Tool abbreviations are as follows:
AGO 2006 – "Climate Change Impacts and Risk Management: A Guide for Business and Government"
DCC 2009 – "Climate change adaptation actions for Local Government"
AS/NZS ISO 31000:2009 – AS/NZS 4360:2004 or AS/NZS ISO 31000:2009
RAM 2000 - Rapid Appraisal Method for Floodplain Management (Vic Dept Natural Resources and Environment 2000)

	Tool used	Funding sourced from	Tool used by	Project completed?	Ranking (multiple projects only)
i. Corporate Risk Assessment & Management					
ii. Community Risk Assessment & Management	AGO 2006 AS/NZS ISO 31000:2009 AGO 2006 & AS/NZS ISO 31000:2009 DCC 2009 RAM 2000 Professionally integrated tool Other	In Council/ROC State Government Program/Grant Federal Government Program/Grant LAPP Insurance Provider	In house By Consultants Combination	Incomplete Complete	1 (most useful) 2 3 4 5
iii. Community & Corporate Risk Assessment & Management					
iv. Coastal Risk/Hazard Assessment & Adaptation Project					

v. High level Vulnerability Assessment					
vi. Detailed Flood Risk & Climate Adaptation Study					
vii. Detailed Coastal Zone Hazards Study & Coastal Zone Management Plan					
viii. Developing a Business Case for Adaptation					
ix. Sustainability Scorecard, checklist or similar tool					
x. OTHER tool/process (please describe in Q2b)					

2b. If you selected or ranked "OTHER tool/process", please briefly describe it. If not, then move on to the next question:

ALL FOLLOWING QUESTIONS REFER TO THE TOPMOST RANKED TOOL IN Q2A

NB: ANSWERS TO QUESTIONS 3-9 ARE LIMITED TO THE MOST USEFUL OR EFFECTIVE TOOL/PROCESS (i.e. 'TOPMOST TOOL') RANKED '1' IN QUESTION 2a OR 2b.

KEY DRIVERS FOR USING A TOOL/PROCESS

***3a. KEY DRIVERS for using the 'topmost tool/process': Please rank most relevant key drivers - ranking from 1 to 3 or more, starting with '1' for the most significant driver. Select from the options below:**

i. CORPORATE - Provide leadership at local and/or regional levels

ii. CORPORATE - Support development of relevant policies

iii. CORPORATE - Build internal organisational capacities

iv. CORPORATE - Initiate action plans (overcome inertias)

v. CORPORATE - Identify future research needs and directions

vi. BUSINESS CASE - Save money in the future by being proactive now

vii. BUSINESS CASE - Reduce risks to avoid litigation and liability issues

viii. STRATEGIC PLANNING - Identify and prioritise risks, hazards and vulnerabilities arising from climate change impacts

ix. STRATEGIC PLANNING - Enhance resilience through development and integration of adaptation strategies at a range of temporal and spatial scales, local to regional

x. COMMUNITY - Meet the expectations of a community that is keen to see an action plan happening

xi. COMMUNITY/STAKEHOLDER – Identify and respond to community or stakeholder issues/concerns about impacts especially in vulnerable areas

xii. OTHER key driver

3b. If you ranked "OTHER key driver", please briefly describe it. If not, then move on to the next question:

3c. Comment on a significant experience or insight that emerged regarding a key driver for your organisation, community or stakeholder(s). Otherwise, go to the next question.

EVALUATING OUTCOMES & MEASURING SUCCESS

***4a. EVALUATING OUTCOMES AND MEASURING SUCCESS of the topmost tool/process: Please rank (1 to 3+) the relevant key performance indicator(s). Select from the options below:**

i. Identifies key gaps and further needs	
ii. Resolves a difficult problem, need or gap	
iii. Enables informed decision-making	
iv. Enables development of action plans	
v. Promotes systems thinking in climate change adaptation and sustainability	
vi. Drives innovative approaches to urban and regional planning	
vii. Encourages collaboration within/across councils	
viii. Adaptable: can evolve over time to changing needs e.g. improved standards for risk assessments, improved monitoring and reporting processes	
ix. Enables meaningful engagements with communities and stakeholders	
x. Results can be readily communicated and shared with communities and stakeholders	
xi. OTHER KPI	

4b. If you ranked "Other KPI", please briefly describe it. If not, move on to the next question.

4c. Comment on a significant experience or insight that emerged in evaluating a significant outcome, KPI or measure of success. Otherwise, go to the next question.

CRITICAL SUCCESS FACTORS

***5a. CRITICAL SUCCESS FACTORS: Please rank (1 to 3+) any factors that were critical to the successful application of the topmost tool/process. Select from the organisational, planning, community/stakeholder or other options:**

i. ORGANISATIONAL - Required minimal council resources other than staff time to attend workshops

ii. ORGANISATIONAL - External consultants/facilitators brought expertise and rigour which gave staff confidence in integrating multiple assessment factors

iii. ORGANISATIONAL - Integrated scientific data from credible research organisations with liability risks from insurers' perspectives

iv. ORGANISATIONAL - Engaged staff from all departments or business units

v. ORGANISATIONAL - Senior management &/or elected representatives showed positive attitudes and supported the tool/process

vi. ORGANISATIONAL - One or more champions drove the tool/process and made things happen

vii. PLANNING - Baseline data generated by the tool/process can be updated and expanded to create a 'living document'

viii. PLANNING - Flexibility of the tool/process to suit local contexts and address local issues

ix. PLANNING - Commitment to incorporate tool/process outputs in a longer-term Strategic Plan

x. COMMUNITY/STAKEHOLDER - attitudes and preferences were assessed early on in the process

xi. COMMUNITY/STAKEHOLDER - Outputs met with expectations that Council address and respond to its perspectives and concerns

xii. OTHER critical success factor

5b. If you ranked "OTHER critical success factor", please briefly describe it. If not, then move on to the next question:

5c. Comment on a significant experience or insight that emerged regarding a critical success factor for your organisation, community or stakeholder(s). Otherwise, go to the next question.

CHALLENGES AND BARRIERS

***6a. CHALLENGES AND BARRIERS ENCOUNTERED: Please rank (1 to 3+) any relevant challenges or barriers. Select from the options below:**

i. FACILITATION - Getting the right people including planners and decision makers to participate	
ii. FACILITATION - Difficult to get workshop participants to complete assigned follow-up tasks	
iii. DISENGAGED COMMUNITY - "seems like residents don't want to know about climate change"	
iv. TECHNICAL - Risk/vulnerability assessment method(s) require external expertise to apply rigorously	
v. TECHNICAL - Local knowledge among staff and community is insufficient to deal with complex science &/or identify and assess multiple vulnerabilities and risks	
vi. TECHNICAL - CSIRO Catchment Scenarios and other national scenarios are too broadscale to be locally relevant. Need local or regional scale scenarios	
vii. PLANNING - Integrating tool/process outputs into planning processes	
viii. IMPLEMENTATION - Lack of sustained funding to implement action plans	
ix. NEXT STEPS? Unsure how to move beyond a “first pass” assessment to the next stage	
x. OTHER challenge/barrier	

6b. If you ranked “OTHER challenge/barrier”, please briefly describe it. If not, then move on to the next question.

6c.

Comment on a significant experience or insight that emerged regarding a challenge or barrier for your organisation, community or stakeholder(s). Otherwise, go to the next question.

***7. RESOLVING CHALLENGES AND BARRIERS: Please describe if/how your organisation resolved its 1st ranked challenge/barrier – or how it could be resolved in the future (e.g. with additional funding for expert assistance)**

ADAPTIVE LEARNING - KEY LESSONS FOR YOUR ORGANISATION, COMMUNITY & STAK...

8a. ADAPTIVE LEARNING: Please rank (1 to 3+) key lessons or gains in understanding that resulted from the application of the topmost tool/process. Select from the organisational and community/stakeholder options below:

i. ORGANISATIONAL - Maintaining continuity of key staff resources throughout the project is important.

ii. ORGANISATIONAL - Need to build staff ownership of adaptation processes, priorities, strategies and action plans

iii. ORGANISATIONAL - in retrospect, the scope of the "1st pass" LAPP project was too broad.

iv. ORGANISATIONAL - Vulnerability assessment generated more questions than answers, particularly the costs and benefits of potential adaptation actions

v. ORGANISATIONAL - “Climate change is something we need to build into our business.”

vi. COMMUNITY/STAKEHOLDER - Crucial to have an experienced, reputable external facilitator who is familiar with local governments and community/stakeholder engagement

vii. COMMUNITY/STAKEHOLDER - Clarify how community leadership roles and responsibilities can best contribute to assessment processes and implementation plans

viii. COMMUNITY/STAKEHOLDER - good local knowledge of hazards, risks and vulnerabilities (e.g. flooding, bushfire)was a crucial input

ix. COMMUNITY/STAKEHOLDER - Summarise key information in simplified, non-scientific language to improve communication and general comprehension.

x. COMMUNITY/STAKEHOLDER - trusts its Local Government to provide high quality products e.g. hazards maps, reports on local vulnerabilities, action plans

xi. OTHER adaptive learning

8b. If you ranked “OTHER adaptive learning”, please briefly describe it. If not, then move on to the next question:

8c. Comment on a significant experience or insight that emerged regarding an adaptive learning for your organisation, community or stakeholder(s). Otherwise, go to the next question.

NEXT STEPS

***9a. NEXT STEPS? Where to from here - will the topmost tool/process outputs be integrated into adaptation processes &/or plans? Please rank any of the relevant steps suggested below:**

i. Complete the tool/process (if still uncompleted)	
ii. Continue implementing a current Action Plan	
iii. Develop a NEW Action Plan	
iv. Incorporate the tool/process outputs into an existing or new STRATEGIC Plan	
v. Incorporate the tool/process outputs into an existing or new COMMUNITY Plan	
vi. Incorporate the tool/process outputs in an existing or new CORPORATE Plan	
vii. No further steps in the short to medium term.	
viii. OTHER step	

9b. If you ranked "OTHER step", please briefly describe it. If not, then move on to the next question:

***9c. What was the KEY PROMPT for your 1st ranked 'next step'? Please indicate one of the prompts suggested below:**

- [ ] i. New requirement of State/NT Government
- [ ] ii. Opportunity to work with another council or ROC
- [ ] iii. Opportunity to work with other stakeholder(s)
- [ ] iv. Opportunity to access funding
- [ ] v. OTHER context-specific factor(s)

9d. If you selected "OTHER context-specific factor(s)", please briefly describe them. If not, then move on to the next question:

ACCARNSI Climate Change Adaptation 'Tools and Processes' Survey

FINAL REFLECTIONS

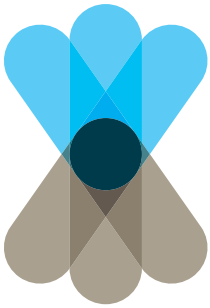
10a. Do you have in mind another survey question that could or should have been asked? If so, please pose it and answer briefly. Otherwise, go to the next question.

10b. Looking back on your participation in an adaptation tool/process, which experience or outcome stands out as the most memorable or rewarding?

THANK YOU FOR COMPLETING THIS IMPORTANT SURVEY. WE VALUE YOUR INPUT.

PLEASE PRESS SUBMIT
(AT THE BOTTOM OF THE SCREEN)

FOR FURTHER INFORMATION PLEASE CONTACT
ACCARNSI
accarnsi@unsw.edu.au
(02) 9385 5084
Room 111, Level 1, Civil Engineering Building
The University of New South Wales
SYDNEY NSW 2052
AUSTRALIA



NCCARF
National
Climate Change Adaptation
Research Facility
Adaptation Research Network
SETTLEMENTS AND INFRASTRUCTURE