ATTACHMENTS OCTOBER 2011

Adapting to a Low Water Future: Climate Change Risk Assessment and Adaptation Plan

Attachments

A report prepared for the
North East Greenhouse Alliance

MARSDEN JACOB ASSOCIATES

The Regional Development Company

Authors: Peter Kinrade, Nadja Arold (MJA); Susan Benedyka, Rob Carolane (RDC)

This report may be cited as: Marsden Jacob Associates, Regional Development Company, 2011. Adapting to a Low Water Future Climate Change Risk Assessment, North East Greenhouse Alliance.

Cover photos Lake Hume, Tim Keegan, Wolfgang Berger

Acknowledgements
This report has been prepared with the assistance of a range of people and organisations. Thanks go to the Executive Officer of the North East Greenhouse Alliance, the Technical Team and Steering Committee for the project and staff of the member and partner organisations of the North East Greenhouse Alliance.

Attachments: workshop output

The following pages contain outputs from regional 'adaptation planning' workshops held over two days in February 2011, at Beechworth. Approximately 40 people from NEGHA member and partner organisations attended the workshops over the two days.

The first day of workshops addressed surface and ground water supply and quality, stormwater and flood management and climate change planning issues. The second day of workshops addressed economic development, recreation & amenity, emergency services and environmental management issues.

A full list of issues at addressed at the workshop is contained in Table 12 of the main report. An overview of the process followed to elicit workshop outputs is set out in section 5.3 of the main report.

Workshop outputs have not been edited.

Group: Surface Water Supply & quality
Subset: A – Surface Water Supply

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 MD Basin CAP	Not allow over allocation across MD Basin	CR P	All	All
2 Allocations Rosters	Prolong resource availability	IP P	All	All
3 Bulk entitlements	Ensures flows in waterways Manages extractions , ensures BE holders supply reliability	P CR State legislation	All	All
4 Sustainable Diversion limits	Protection of environment entitlement within systems Manage over allocated systems	P CR State legislation	All	All
5 Registration of stock & domestic dams	Protection of catchment in peri-urban areas	S CR	All	All
6 Alternative supplies	Provide fit-for purpose water	P S IP	All	New GMW
7 Town water restrictions	Reduce demand	P S IP	All	New
8 Water trading	More water to higher demand areas/ crops/ etc	Federal legislation State	-	NEW GMW CMA
9 Carry over of entitlements	To allow forward water planning	Federal legislation	-	NEW GMW CMA
10 Infrastructure upgrade	Water saving – reduced demand Increased security of supply	W	All	All
11 Loss management	Reduced demand	P IP E	All	All
12				
13				
14				

Group: Surface Water Supply & Quality

Subset: A – Surface Water Supply

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Overall controls address stated objectives but requires interaction between controls to achieve greatness Most controls are adaptable to resource changes Only one that might not meet objectives is infrastructure	**Controls need to work collectively and can't be used in isolation** **Effectiveness of control is seen differently depending on stakeholder priorities** **Not enought understanding of controls outside agencies who use them. Eg why people get 5% allocation this yr vs 50% previous years** **Understanding of constraints** **Controls work very well but it's making sure that they are working**
Council Differences:	
Resources **Education about controls is not resourced in co-ordinated manner** **Constraints on infrastructure upgrades** **Ability to update models with climate change scenarios aren't always resourced**	
Council Differences:	
Roles and responsibilities **Is defined within legislation but not all stakeholders can interpret legislation**	
Council Differences:	
Council Differences:	

Regional approach / framework **Northern Sustainable Water strategy** **All under National Water Commision** **NEW’s Sustainable Water Delivery Strategy**	

Group: Surface Water Supply & Quality

Risk Subset: A - Surface water supply

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Inter agency workshops** **Sharing of decision making processes and use of controls** - **Who gets water** - **Eg allocations , loss calculations**	Working collectively Having common understanding of controls	All with GMW & NEW driving	St	Mion	N	Very	Resource sharing Network development Compliance with controls	Institutional – protecting their patch Political – making information available can influence public opinion both –ve and +ve
2	**Dissemination of information to public and inside agencies** **Councils is central point for public contact** **Provide info – level of sharing** **Redirect to other agencies**	Having common understanding of who does what and how water is shared	Everyone	ST	Min	N	Very	Resource sharing Public perception/ Improved reputation Social behaviour change	
3	**Inclusion of water supply demand in town planning schemes** **Initial focus on peri-urban and rural areas**	Ensuring all agencies share responsibilities for control	All Councils	MT	Mod	N	Risk of mal-adaption (already occurs)	Public Perception / improved reputation	Institutional – not councils responsibility Water corps can't tell council what to do
4									

Group: Surface Water Supply & Quality
Subset: B – Water Quality

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 release extra water (environmental)	Mix flows , provide system flushing	CR P IP		New GMW CMA
2 Selection of water released	Have highest quality water in systems	IP P		New GMW
3 Programs to reduce erosion (catchment)	Reduce contaminants entering waterways	CR IP P E W S	All	All
4 Treatment systems in towns	Treat water to meet standards	W	-	All
5 Emergency supplies (e.g. groundwater)	To provide alternate supply	D	All	All
6 Protected catchments	As for 3			
7 Land use planning	As for 3			
8 Drinking water quality Management system	To ensure treated water meets standards	P IP		New
9 NEW's Corporate licence	To ensure that water released from NEW sites won't impact on WQ	S		NEW
10				
11				
12				
13				
14				

Group: Surface Water Supply & Quality

Subset: B - Water Quality

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) To a fairly high extent but not as effective as controls for supply as quality is often secondary consideration Have potential to but need developments to be meet future issues	**Agencies who are repsonsible for controls need to work collectively to improve the effectiveness of controls**
Council Differences:	
Resources **Some are well resourced but others aren't – eg enviro flows well funded**	
Council Differences:	
Roles and responsibilities **Not clearly defined due to different legislation governing responsibilities**	
Council Differences:	
Council Differences:	
Regional approach / framework **Northern Sustainable Water Strategy** **NECMA?? MDBA** **Co-ordinated approach to BGA**	

Group: Surface Water Supply & Quality

Risk Subset: B - Water Quality

Step 3 – Regional Responses

	Proposed new measure	**Objective(s)** (gaps & deficiencies addressed)	**Councils / agencies**	**Timeframe** (ST/MT/LT)	**Budgetary impacts** (min/mod/sub)	**Administrative burden?** (Y/N)	**Flexible?**	**Other benefits?** (non-climate)	**Barriers?** (institutional, social, political)
1	**6 monthly meetings between agencies -Requires gap analysis -Sharing issues and trends EG high turbidity**	To increase understanding of issues and objectives for water quality and share info	DSE, NEW, CMAs , GMW, DPI and DH?	ST	Min	N	Yes	Network development Resource sharing	Political – conflicting priorities
2	**Blackwater , salinity , algal blooms , algal blooms, nutrient enrichment**	Knowing what other agencies are doing							

Group: Groundwater Supply & Quality
Subset: Groundwater Access & Supply

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Extraction licence	Limit value of extraction Sets condition about use	S		G-MW NEW
2 Statutory plans	Managing resource risk Superimposes conditions on licence agreements	P S	All councils (emergency supply)	G-MW NEW
3 Emergency bores	Access to water in emergencies Drought . stock & domestic	W	All councils	G-MW NEW
4 Groundwater data collection	Monitoring yields Monitoring bores	R		G-MW NEW DSE
5 Water modelling	Setting sustainable yield crops Management decisions on seasonal allocations	R		G-MW DSE
6 Community Education	Provide information to the Community –Newsletters, forums	E		G-MW
7 Compliance / Enforcement	Ensure compliance with extraction licence	S		G-MW
8				
9				
10				
11				
12				
13				
14				

Group: Groundwater Supply & Quality

Subset: Groundwater Access & Supply

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Observation bores are critical in understanding levels/ yields Modelling is only as good as the data going into them Community education may not be effective , relationship with different agencies. Water resource issues , sustainable yields Statutory Plans effective but quite rigid and expensive to develop - Minutes sign-off, linked to sign off - Difficult to change throughout the life of the Plan A lot of controls rely on data Compliance/ Enforcement restricted by resources	**Resourcing for monitoring infratructure and collection is essesntial in developing controls** **Groundwate generally not resource effectively** **Need data in dry and wet years to fully understand recharges of the system** **Need for greater educaiton**
Resources **Important to have resources to instil bores and to monitor bores. Having data from observational bores is critical**	
Roles and responsibilities **G_MW main agency involved** **Roles established throught state government**	
Regional approach / framework **Need to enhance relationship / recognition of water cycle between agencies.** **More input from CMA / LG (referrals**	

Group: Groundwater Supply & Quality

Risk Subset: C - Groundwater Access & Supply

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Development of a North East Regional Groundwater Monitoring Partnership**	- Bring partners together to consolidate data & resources Review of existing bores and roles & responsibilities, purpose of bore	GMW DSE NEW BOM All Councils NECMA DPI EPA	ST- MT	Development minor Implementation Moderate	N	The role of the partnership and use of the data is very flexible Data could be divide or misinterpreted	Use of data for land use planning Better and more effective decisions between agencies	Political will to set up and maintain
		- Captures what are the drivers of each organisation , what is the data being used for - Model structure on NE Surface Water Monitoring P'ship Take learning fm existing groups - DSE to act as lead agencies , other partner agencies would need to make a proposal to state Govt - Incorporate access and Supply and water quality							
2	**Integrated and co-ordinated groundwater resource education program**	- Inform community (includes agencies) on water resource issues - Would need a lead agency to co-ordinate - Would require an officer in lead agency to work with other agencies - Running forums, workshops , field days developing newsletter - Different ways to	GMW NEW NECMA DSE All councils	MT Maybe ST	Moderate	Y	Very flexible in terms of topic delivery and timeframes on delivery	Costs saving for agencies community engagement Build relationships between agencies	Pressure on agency reputation Political will to set up

		provide information to stakeholders							

Group: Groundwater Supply & Quality
Subset: Ground Water Quality

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1. Sample Monitoring	Gather data on water quality	R		GMW Licence holders
2 Groundwater monitoring	Determine any contamination	R	All council (Landfills)	NEW (Waste Water plans) EPA
3 Irrigation development guidelines	Manages how water is applied to land	S		G-MW
4 Treatment facilities	Treat water to potable standards	W		NEW
5 Alternative supply	Emergency supply when treatment plants cannot effectively treat water (smaller settlements)			NEW
6 Domestic wastewater Management plan	Minimise impacts of septics in unregulated areas	P	All councils	EPA GMW NEW
7				
8				
9				
10				
11				
12				
13				
14				

Group: Groundwater Supply & Quality

Subset: Groundwater Quality

Step 2

Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Sample monitoring from G-MW is for long term trends /management planning Groundwater monitoring from Wastewater / landfill not considered overly effective in use of data Alternative supplies effective in smaller settlements however greater risks/issues for larger settlements (trucking in water) **Domestic wastewater management plans aren't considered highly effective in monitoring impacts on groundwater**	**Data being collected by a number of agencies however may not be being used effectively** **Lack of resources (priorities in other areas) for monitoring groundeater quality** **Level of uncertainty on impacts on septic systems in groundwater quality** **Treatment Plants can cope with most water quality issues , however controls (not) in place to provide alternative supplies. Some concern if water quality impacts in larger settlements (eg Wangaratta)**
Council Differences:	
Resources **Logistics and costs of providing alternative water supplies is high.** **DSE / State Govt resource emergency supplies , mechanisms in place in water act**	
Council Differences:	
Roles and responsibilities **Dry inflows Contingency Committee inplace to respond to supply impacts. This is considered to be effective in communication between agencies** **Procedures are in place**	
Council Differences:	
Regional approach / framework **Regional channels of communication are in place and work effectively.** **Dry inflow contingency Committee**	
Council Differences:	

Group: Groundwater Supply & Quality

Risk Subset: D - Groundwater Quality

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Review and update domestic wastewater management plans to incorporate groundwater monitoring**	-Ensure groundwater contamination issues are identified and appropriately addressed -Data could be used by other agencies for more informed management decisions – Pesticide contamination , heavy metal contamination ,Ecoli	All councils (Env. Heath) EPA NECMA	?	Mod-Sub	Y	Not overly flexible		
2	**Connect un-sewered townships to reticulated supplies (for wastewater treatment)**	Minimise impacts on groundwater	NEW, councils	LT	Sub	Y	N		Political costs
3	**Co-ordinated access to Emergency supplies**	Mapping of all emergency supply points - providing information on how to access emergency bores - Data on bore yields to determine level of supply - Have a lead agency who co-ordinated management	All Councils GMW DSE	MT	Mod	Y	Y		

Group: Stormwater & Flood Management
Subset: E - Stormwater Management

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Drainage Plans	Knowledge to make informed decisions on existing and proposed infrastructure both private and public	P	All	NECMA GMW Federal Govt
2 (SW) Drainage strategies	As above	P	All	NECMA GMW
3 Planning schemes (regulatory) Building controls	Note existing legacies but minimise impacts on future developments	S	All	As 2 above
4 Works (Infrastructure)	Manage and mitigate storm water flows	W	All	NECMA Vic roads DSe
5 Trunk (infrastructure)	As 4 above but larger scale	W	All	Fed/State DSE Vic roads NECMA
6 Education (Internal & external)	Raising awareness of storm water issues in order for everyone to take action where necessary (in an ethical manner)	E & IP	All	NECMA GMW DSE
7 Enforcement (Regulatory)	Ensure illegal building activity doesn't occur within designated flood plains to avoid impacts (current & futures) on themselves and others	S	All	GMW NECMA DSE
8 Australian Standards & guidelines	To provide best available knowledge to provide a standardised approach across all organisations	S & R	All	ISO
9 Maintenance (infrastructure) – public	To Ensure stormwater systems work as designed	IP W S E	All	NECMA DSE
10 Maintenance (Private infrastructure)	A 9 above	IP/W/S/E	All	Individual Property owners
11 Maintenance of flow patterns	As 10 above	IP/W/S E	All	DSE Property owners NECMA
12				
13				
14				

Group: Stormwater & Flood Management

Subset: E - Stormwater management

Step 2

Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) 1. Adequacy of existing, policy, procedures. Plans & strategies 2. Adequacy of existing infrastructures to cope with changing environmental condition 3. Identifies upgrades and remedial works required to maintain and mitigation of existing and future issues GAPS Budget & resources Education needs to be increased Coping / resilience and recovery Effectiveness : Currently for normal events quite effectiveness fro larger councils, piecemeal at best for smaller councils / settlements	**No Immediate actions** **Will be an evolution** **Chaneg from reactive to proactive** **By having appropriate resources allocated by Govt** **Facilities change in cultures** **Entered ERm processed is all areas/ organisation**
Council Differences:NECMA – seen as not having correct balance ie – between river health , flood management and development pressure. Tradeoff btween flood capacity vs social & environment (community values)	
Resources **Noome is funded for floodway maintenance** **Budget fro maintenance/remedial works/upgrades – completely reactive** **Flood management funding only comes after event. Nomoney given to prevent events**	
Council Differences:No generally. Difference b/t NECMA and Councils (Council views NECMA should be resourced . NECMA agrees	
Roles and responsibilities **1 Smaller councils – need to do some of the strategy / flood studies up front** **(cannot afford it)** **Expertise not always available** **2. Govt needs to allocate resources and responsibility**	

Council Differences :Classification of roles & responsibilites NECMA only funded for Riverine health	
Regional approach / framework **Needs to be network an accepted standards both regional and statewide** **Legislation needs to be reviewed to ensure all councils have equal oppurtunities and resources**	
Council Differences:	
Regional approach / framewor	

Group: Stormwater & Flood management

Risk Subset: E - Stormwater Management

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Each NEGHA Council to individually consolidate, ensure currency of , and integrate overlays into their own planning scheme**	To implement the overlays Raises community awareness Enables regulatory and statutory control of future developments	All councils	2<.> 3 years (5 Max)	Minor	Y	Process – Yes Changing of infrastructure – no	Increased reputation Community claims on council More certainty for planning outcomes Reduced need for remedial works Better decisions	Political – councillors own agenda Budget/resources
2	**Review existing studies** **Ensure studies contain additional data on minor tributaries and localised flash flooding** **Greater validity of climate change should be catered for in flood study /planning**	As above	All councils	5 years + Long term	Dependant on size and resource base of council and size of study area	Y	Y	As above Potential increased relationship B/W stakeholders	Lack of resources Willingness of other agencies to assist
3	**Councils that don't have flood studies to do them**	As above							
4	**Implement actions / infrastructure as recommended through flood studies** **Community engagements (stakeholders) and consultation**	To reduce risk of flood damage and to minimise impact to community (ie through loss of life/ assets etc) Ethical approach	All councils	Long term 5-30 years	Substantial	Y	Some/little flexibility once infrastructure in place	Potentially take advantage of other technologies and for re-use of water Sense of security protection in the community Economic development Less reactivity from council (ie more productivity)	Community acceptance

								Increased reputation if works	
5	**Investigate innovative projects – opportunistic ag race course – Wodonga Roof rare harvesting**	Take advantage of water opportunities	All councils External agencies	On going	Dependant of project	Y	Y	As above & increased amenity during drought	Budget Community acceptance Council agenda
6	**Co-ordinated lobbying to fix/maintain key transport infrastructure**	To ensure key infrastructure damaged/destroyed during flood events are or repaired to a high standard and in a timely fashion	Councils Vic roads Parks Vic DSE	2-5 years	Substantial	Y	N	As above	Vic roads (other agencies Priorities)
7	**Lobbying Look at funding arrangements (anomalies) for disaster recovery eg Staff vs contractors, timeliness of funding**	To ensure councils are appropriately reimbursed and can use own staff and expertise who have more local knowledge/ contacts than contractors	Councils	a-3 years	Med- Sub	Y	N		

Group: Stormwater & Flood management
Subset: F- Flood management

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Flood Study (Regional seat) (review of older flood studies)	Knowledge to make informed decisions in existing and proposed infrastructure both public & private	P	All	NECMA GMW DSE State/Fed Govt
2 SW1		P		
3 SW2		P		
4 SW3		S		
5 SW4		W		
6 SW5		W		
7 SW6		E & IP		
8 SW7		S		
9 SW8		S/R		
10 SW9		IP/W/S/E		
11 SW10		IP/W/S/E		
12 SW11		IP/W/S/E		
13 Emergency management (response and recovery)	To manage and recover from emergencies (inc stormwater involvement)	CR/S/IP/W/E/R/D	All	All
14				

Group: **Stormwater and Flood management**

Subset: **F- Flood management**

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Only difference between flood & stormwater management Is the scale (ie regional) and the need for a co-ordinated regional / statewide approach. Potential involvement of additional agencies	
Council Differences:	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	
Council Differences:	
Regional approach / framework	

Group: Stormwater & Flood Management

Risk Subset: F- Flood management

Step 3 – Regional Responses

	Proposed new measure	**Objective(s)** (gaps & deficiencies addressed)	**Councils / agencies**	**Timeframe** (ST/MT/LT)	**Budgetary impacts** (min/mod/sub)	**Administrative burden?** (Y/N)	**Flexible?**	**Other benefits?** (non-climate)	**Barriers?** (institutional, social, political)
1	**Stormwater pipe network – review standard, data and parameters**	To assess adequacy for current and future environment	All	3-5 years	Study – minor Implementation of changes – substantial	Y	Y- timing Limited Changing existing infrastructure	Less likelihood of local flooding Less complaints/ claims Less loss of money Increased community satisfaction	Budget Political/ community resistance due to differences in perception
2									

Group: Economic Development
Subset: G – Viability of Industry

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Bushfire development overlay	Restrictions on local build, type development	P		
2 develop alternative water				
3Plan to allow sufficient water	Referral to ensure water is available			
4 Changing Govt leg – re water	Better management of g/w bores			
5 Water restrictions	- Communicate to NE Water impact re nursery , market gardens , other businesses	S		
6 Cutting our power supplies	Reduce load req. impact on business			
7 reduce risk in business	Use of power generators for industry			
8 Labour force contingencies due to flood etc	Have business have staff transport contingency			
9 Impact of emergencies on transport	Staff availability e.g. hospital and medical & council – expand pool of labour			
10	Inability to collect goods e.g. supply , milk – (groceries)			
11 Change size and location of mills	Fires wipe out (timber) stock volume for manufacturing (in mills)			
12 Support more diversified (smaller) businesses	E.g. food markets			
13	Start buy-local campaign to cut transport costs, encourage local			
14				

Group: Economic Development

Subset: G – Viability of industry

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) See also tourism Check eco-development industry plans – eg Wodonga Code red might stop some activities – cancel sporting events over temperature, harvest	**(Cover) impacts already identified** **Council could be proactive re analysis of risk and supply for business to identify threat** **Teach business to be adaptive** **to reduce water usage , energy efficiency** **-provide support to business – increased efficiencies** **Impact of carbon price will damage industries** **Identify opportunities energy new carbon contained regions (solar farms etc)** **Supplies need to be sufficient – council to encourage alternatives** **Regional plan – Hume Strategy need to help drive more energy prod'n** **Low water usage processes** **Increase capacity of councils and councillors to increase co-ordination** **Eg regional plan / co-ordination** **Broader skills in economic dev** **Business continuity plans for heat days code red days** **Small & medium businesses may not plan for low water** **Lack of infrastructure eg real impact on roads & rail**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	
Council Differences:	
Regional approach / framework	

Group: Economic Development

Risk Subset: G - Industry

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Proactive in supply claim risk analysis for businesses in community**	-reduce dependency Understand reliance on external alternative sourcing – imports/exports -increasing business resilience and attracting business	Council RDV Industry capability network Fed/State Govt	ST	Mod	Yes	Yes Could also result in maladaptation	Increased sustainability and value adding	Lack of capability
2	**Alternative energy approaches and long term sustainability**	To identify and reduce business dependency on single sources of energy & increasing efficiency	Council state govt Fed Govt	MT LT	Substantial	Yes	Yes	Reduced costs Increased profitability	Structural issues Energy sector Inertia (lack of incentive political
3	**Increased capacity in council Increased co-ordination of councillors and /councils Closing gap btw council workers resources and councillor understanding**		Council	St	Mod	Yes	Yes	High quality decision making	Demographic & skill base
4	**Business continuity planning**	See tourism point 4							

Group: Economic Development
Subset: H – Viability of tourism

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Tourism plans – alternative plans	Within council strategies Find other things to do to diversify risk	P		
2 Communication	Do not do certain things that increase danger	E		
3 Live risk emphasis	State govt creating alarm	E		
4 Awareness campaign re fire	Fire risk info – accommodation providers eg code red what to do	E	Alpine & other	
5 Better inform campers etc	Reduce risk for visitors – identify own responsibility			
6 reduce road blockages	Keep roads clear for vehicles transport	IP		
7 Tourism business management	Educating business about business interruption strategies (back off strategies)	D		
8 Collect information	Identify cost through survey of code reds – quantify (eg floods and fires)	R		
9 Contingency plans as part of approval	Plan for event – contingency – re flood & fire emergencies	E , B ,D		RDV
10 Put grid references on rails etc	Produce assistance to educate tourists to identify locations			
11 Business planning	Business planning to include insurance risk management e.g. when tours close down	D/E	Councils facilitate	RDV
12 Educate & identify	Health risk via insects e.g. encephalitis e.g. via education	E		
13 Effective communications for tourism industry	Provide vehicle for communicate, analysis			
14				

Group: Economic Development

Subset: H – Viability of tourism

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Needs to be much clearer outline of risks eg as in central Australia do all own risk - Need for more co-ordinated approach Improve effectiveness of regional tourism board Large scale regional impacts not only gee tourists up but keep them safe Need more education of tourism operators - Tourism plans not bad – working to an extent , but from now cc needs to be effective in the " what if" reference - Communication – out there	**Regional toursim boards need different skill set to anticipate & co-ordinate responses to events** **Need to have more info over time and see what chnages with profit and things of the tourists** **Balanced communicate & reliability – re risks as for fire & floods** - **More messages re campers and their responsibility** - **Need more multi-language information / pictoral signage** - **Need to ramp up tourism business contingency planning (eg Indigo model)** - **Lot of work needed re contingency planning** - **Expand grid references** - **Need better educaiotn communication ? can be taken – including media** - **Bigger deficiency in speed of council response – eg communication strategies in advance , eg respond to false communication** - **Plan – deficiency in stream must plans about water availability** - **Maintaining amenity of tress in councils esp shade tress** - **Wait to set up a tourism caravan park to take up impact of less water**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	

Council Differences	
Regional approach / framework	

Group: Economic Development

Risk Subset: Viability of tourism

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Regional tourism Group – Broad skills**	Ensure broader skills of regional tourism board	Councils Tourism Vic	ST	Min/Mod	No	Yes	Increased tourism & more environmental involvement other industries identified	Cultural / organisational
2	**Tourism Contingency of events & / tourism plan Ie signs and trees**	Ensuring contingency planning is taken into consideration fro all tourism strategies & events	Policy up to state govt	St	Min/Mod	Yes Increased input from broader dep's	Yes	Economic benefits & more tourists & future return tourists & diversification of tourism	Skills in contingency planning Political Inflexibility of govt
3	**Balanced communication re – fire & floods**	To ensure correct message is reaching tourists in a timely fashion	All groups working together	ST	MOD	Yes	Objective of this is to be flexible	Economic benefit from a reduction in fear & loss of trade	Deifferent focis from various agencies eg emergency services/ fire/ Parksvic/ DSE
4	**Business continuity planning**	To educate tourism business to in contingency planning to be sustainability	Councils RDV Tourism vic	ST	Min/Mod	Yes	Object is to be flexible	Avoid business closure Increase profitability	Agencies competing & not consulting

Group: Recreation & Amenity
Subset: Recreation

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Install pools	Provide alternative activities – eg pools Diversification of risk	W	All	
2 Sustained water use plans	ID where water is being used so can manage & minimise	P	ALL	
3 Raw Water	Alternative water sources		Wod Wan Towong	
4 Recreation Activities	Broaden range of recreation options available		All	
5 Fields using different surfaces	Reducing amount water req'd by replacing with low tolerant species or synthetic	W		
6 Automated water systems	Reduced evaporation and amount req'd Improved efficiency	W		
7 Underground water systems		W	Towong	
8 Alternate water sources" Fit for purpose"	Reduce use of Bio-security			
9 Share use facilities	Better use existing facilities to reduce water needs			
10 Masterplanning		P		
11 Education Programs	Improved water use planning & practice	E		
12				
13				
14				

Group: Recreation & amenity

Subset: I1 - Recreation

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Pools – Effective for councils that have this option, some communities may not have them eg Bright River Pools Sustainable water use plans - ,may have gaps in effectiveness Need to integrate in to higher levels Alternate water resources may not now e an effective control as trusted? YUK factor? High energy on some methods. Economically viable? Lacking knowledge & understanding by community – needs more education delivery Alternate surfaces – effective in reducing water use but is expensive & planting species land requires replacement – effective however should be managed eg reduce irrigation. Improved irrigation methods are effective but need to be incorporated into management & development	**Technologies are existing, stakeholders need to work together more effectiveley,** **There are information gaps that neeed to be addressed in relation to alterbate water sources for example: blueprint for prioritising oppurtunities for " fit for purpose" use accross the region and also an understanding of the suite of alternate resources.** **Co-ordinated response to drive better outcomes with improved and identified leadership**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources **Concern about whether recent incentives will continue as the drought situation decreases.** **Funding resource deficiencies that are viable for respective measures and requires a blueprint to follow**	
Council Differences:	
Roles and responsibilities **Roles & responsibilities are clearly defined but is considerable dysfunctinla because of communciation & co-ordination difficulties .** **Needs leadership to drive better outcomes**	

Group: Group 5 – Recreation & amenity

Risk Subset: I1 - recreation

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Information gap** **Develop a planning tool. eg water resource map of region** **Plotting existing & potential water resources**	-inform planning & development decision & identify opportunities -improved leadership & city channels	All councils NE water DSE GMW NECMA	MT	MOD	Not great NE water could be the co-ordinating body Contract position	Flexible in what it can achieve Can be arranged as necessary & updated	Output – inform blueprint Formalised & smoother process between developers & organization behaviour Openness to change Use easily be LGA , industry , local people when planning	Ongoing maintenance but could be done as part of existing processor Past cultures within organisations
2	**Community engagement** **Expand city planning to include low water availability for parks and gardens** **This information will assist to understand how city values water**	To review current strategies ie water use strategic open spaces plans to identify & prioritise areas to manage in times of low water availability	Council Community	ST	Minor	N	Y	Better linkages with city	
3	**Action research project** **Perhaps sustainability street model** **Eg Electricity audit model need a relationship with people**	Better understanding of how people value water Stage 2 not know action res Long term goal 1.Build capacity thru raised awareness so they have purpose 2. Fill information gaps – lays foundation so you can continue to deliver program in that sphere	NE Water LGA/State	MT	Mod	Y/N depending on how engaged partners want to be	Y	Commitment to continue to operate in the Speher Rel Building Education	Institutional convincing people to be involved

Group: recreation & amenity
Subset: I2 - Amenity

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Strategies & plans	Provide a strategic response to priorities	P		
2 Alternative water uses	Minimise water use Look at priorities for use	W		
3 Education & engagement	Raise awareness & engagement in water restrictions & alternatives water options	E		
4 Guidelines around planting species	Ensure sustainable & low risk species planted	P		
5 Water sensitive urban design	Greater control over storm water management, surfaces & drainage	W		
6 reduce watering of landscapes	Reduce use of high quality water	W		
7 Prioritization of which parks to water				
8Water supply planning	Water supply demand strategy, managing demand & looking at projected needs Key needs to be consultative			
9 Pricing	Access to resources			
10 Water restrictions / social marketing	Minimization of waste , education , & setting of expectations around how much to use			
11 Shower head exchange	Getting residents to reduce water use			
12				
13				
14				

Group: **Recreation & Amenity**

Subset: **I 2 - Amenity**

Step 2

Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Prioritising of watering (hierarchy) there will always be some community that loses amenity Water restrictions – can have social impacts (pride, pleasure etc) - Has been an effective education process and made people aware Engagement & education- needs to be more effective and delivered in various ways Water supply planning – effective control in meeting demand Wter sensitive urban design – requires expertise , infrastructure How do we expand these applications? Future development planning to incorporate these designs	**Community needs to be taken along with new technologies, practices and applicaiton. This will create , informed decisions.** **Partnership & collaboraiton with all stakeholders & agencies**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	

Council Differences:	
Regional approach / framework	

Group: Emergency Services

Subset: J1 - Preparation

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Emergency Management plans	Integrated and Coordinated response to an emergency situation	CR/P/S/IP	All	All emergency Services State government
2 Designated response & recovery staff (trained & experienced)	**Have staff that can appropriately respond to code-red days**	**IP/CR/P/S**	**All**	All emergency Services State government
3 Developed systems with emergency services	Integrated and Coordinated response to an emergency situation	**IP/CR/P/S**	All	All emergency Services State government
4 Developed protocols(for notification of code red days	Integrated and Coordinated response to an emergency situation	**IP/CR/P/S**	All	All emergency Services State government
5 Internal procedures for preparation and response for code red notification	**Have procedures to ensure 1 above**	**IP**	**All**	All emergency Services State government
6 Reasonable level of general understanding of (incommunity0 of requirement for code red days	To help the community be aware of what code red means and to make appropriate preparations	E	**All**	All emergency Services State government
7 Neighbourhood safe places established Township protection plans	Inform communities and response agencies of options/prep/escape routes and to reinforce to emergency services to plan/actions for township	E/P/CR	**All**	All emergency Services State government
8 Municipal fire prevention plan	Strategy / plan to protect community from fire (human life / asset loss) and how to control fire when it occurs	S/P	**All**	All emergency Services State government
9 State Government management/involvement	- Over arching framework for emergency preparation	S/P/CR	**All**	All emergency Services State government
10 Code-red day	To advise community to prepare for coming fire	CR/S/E	**All**	All emergency Services State government
11 EAP Services offered to help manage before stress during/post event	Manage stress/disruption and emotional effect on staff who continually have to prepare for code-red days	I.P	**All**	All emergency Services State government
12 BCPs should cater for loss of service and absent personnel	Ensure Continuity of service	IP	No every council have DCP that are advanced to this point	
13				
14				

Group: Emergency Services

Subset: J1 - Preparation

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) NSP's , township protection plans have been developed due to more recent events which have been developed due to more recent events which somewhat address the consequences of increased frequencies of code-red days Not high priority for some councils due to current weather and lower consequences On code red day, currently , demand for council services has been minimal, but believe this will increase We do believe people are more likely to move during code-red days More work should be done on BCP – survey staff to find out likely consequences on staff for code-red days to understand the import on the occasion	**GAP : Existing plans / strategies dont' specifically take into account risks associated increased frequency of code-red days**
Council Differences:	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	

Group: Emergency Services

Risk Subset: J1 - Preparation

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Extend BCP to determine inputs on staff resources if an increase in the No of Code red days**	Making sure that organisations coping strategies are in place	Councils	ST	Minor	Insignificant	Yes		
2	**Review existing plans / Strategies to determine how they can be amended to control the consequences of # of code red days**	Plans are able to deal with / address the consequences of # of code red days	ALL	ST	Minor	Some	Yes		
3	**Educate Customer service and visitor info staff on options for dealing with persons relocating to councils on code red days – Develop Q & A template**	To provide correct & consistent advice to persons relocating	Councils	ST			Yes		

Group: Emergency services

Subset: J2 - Response

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Fire fighting agencies	Co-ordinated movement of water to where it is required	?	All	CFA - All
2 Councils will co-ordinate provision of water through MEC	To support emergency response agencies	CR	All	-
3 Emergency services will use water on private properties where required (source water where available)	Fight fire in best way possible	?	-	CFA/DSE
4 Victorian FIR Risk Register (VFRR)	Prioritize actions/ focus attention in response to wildfires	P CR	All	
5				
6				
7				
8				
9				
10				
11				

Group: **Emergency Services**

Subset: **J2 - Response**

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) GAP : If low water future , will need to decide on priority of what will be saved. VFRR will inform the establishment of priority action	**GAP – VFRR does not consider depletion of water supplies**
Council Differences:	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	
Council Differences:	
Regional approach / framework	

Group: Emergency Services

Risk Subset: J2 - Response

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Identify existing or establishing new water supply sources quarantined for response purposes only**	To reduce the consequences associated with a decrease in available water	Council DSE GMW NECMA	MT	FAR $(2:1) New Static suppliers (7:1 new roads) (1:1 Maintenance)	Y	Yes	Reputation benefits Limiting lossed & litigation Decrease $ burden	Location Securing land
2	**Develop alternatives to water for sire suppression activities**	To reduce reliance on water for suppression	Various	LT			Yes	Less reliance on water Improved response to incidents	
3	**Revisit Victorian Fire Risk Register (VFRR) to address impacts on low water availability**	Reprioritise risk management to aid in decision making responses	Councils and Agencies	ST	Min	Some	Yes		
4	**Review Funding ratios for FARS program**	Increase funding ratio for State water Supply sources	CFA Councils	M-T	Min	Min	Yes	Reduced financial burden on council	

Group: Group 7 _ environment

Subset: K – Catchment health

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Regional River Health Strategy	Identifies actions fro river health	Strategy P		
2 Flora & Fauna Guarantee Act	Lists & identifies threatened species	P S		
3Native veg Framework	Arresting native veg loss & identifying offsets	S		
4 Regional Catchment Strategy	Co-ordination of NRM activity across the region	P		
5 Agency EMP's	Identifies and prioritises local land issues	P/IP		
6 Hume Strategy	Whole of govt approach to co-ordination of multiple areas inc environment	CR/P		
7 Mapping & research on single agency level of native veg & weeds	Data collection for knowledge and measuring success	R		
8 Incentives	Improve reliance of best practise outcomes	E		
9 Supporting improving land manager capability & compliance	Improve performance and allocating responsibility to land owners to ensure outcomes	E		
10 Monitoring	Ongoing data collection to identify change in catchment health	R		
11 Landcare Programs	Co-ordinated regional response building community capacity to achieve environmental outcomes	CR/E		
12				
13				
14				

Group: **Group 7 Environment**

Subset: **K – Catchment Health**

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Large & Complex number of programs and strategies Lack of incentives / funding economic drivers to support private land owners to improve environmental issues Lack of emphasis on mitigation, reactive policy Fundamental market failure , doesn't pay to protect environment , economic issues	**Still losing native vegetation and increasing invasive species signifies limited success to overall objectives** **Gap between knowledge and practice change due to economics and behaviour** **Gap in ongoing scientific knowledge for longtems monitoring** **Implement processes that consider and integrate environment with economic and social values**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	
Council Differences:	

Group: Group 7 Environment

Risk Subset: K – Catchment health

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Persist with ongoing govt agencies to work together on Hume strategy**	Greater efficiency streamlined approach and influence	ALL RMF	MT Ongoing	Min	N	?		Significant institutional barriers Aligning state agencies & councils working with original processes
2	**RMF to lobby state govt agencies to allocate resources to Hume Strategy Implementation**	Greater efficiency streamlined approach and influence	RMF	ST	Mod	N			Institutional intention
3	**Investigate co-ordinated environmental monitoring program (multi - agency) targeting species sensitive to climate change**	Baseline & Info on catchment health	DSE/CMA	LT	SUB	Y			Funding. Risk of getting bogged down in complexity

Group: Group 7 Environment
Subset: L – aquatic ecosystems water availability and quality

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Allocation Framework	To ensure sufficient water allocation to environment	S/P		
2 Water trading	To enable water to go to highest value use	Market instrument		
3 Stormwater management plans		P/W		
4 Construction enviro structures	To maximise benefit of water allocation	W		
5 Monitoring	To ensure environmental outcomes being achieved			
6 Compliance	To ensure environmental outcomes being achieved	S/E		
7 Northern Sustainable Water strategy	Optimise enviro , economic and social benefits of available water	CR		
8 ie Waterwatch community education	To educate the community to water use issues	E		
9 Murray Darling Cap	To limit water extraction from river systems	S		
10 Scheduled extraction rosters	To prolong environmental flows	S/IP		
11 Environmental releases	To improve quality and deliver environmental outcomes	S/IP		
12 EC Credits	Manage salinity within river system (consult CMA)			
13				
14				

Group: Group 7 - Environment

Subset: L - Aquatic ecosystems water availability & quality

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Northern Sustainable Water Strategy provides good basis fro definition of water allocations to environment vs use Fine tuning current controls to ensure maximum environmental benefit	**Futehr develop specific environemntal objectives fro individual water systems and measure outcomes** **While current measures are generaly effective some fine tuning of current contrl eg timing of water releases such as Barmah, drying as important as watering / flooding**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	
Council Differences:	
Regional approach / framework	

Group: Group 7 – Environment

Risk Subset: L - aquatic ecosystems

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Investigate X – agency working group to optimise triple bottom line outcomes from water use**	Improved alignment and efficiency Identify gaps & opportunities	GMW LGA DSE NEW DPI (Lead – DSE or GMW)	MT	MIN	Y	Y	Maybe	
2	**Investigate developing specific environmental objectives & indications for aquatic ecosystem health**	Better understanding and tracking of water use for the environment – guide infrastructure	DSE	MT	SUB	Y			
3	**Investigate need / for infrastructure options fro water development & recycling that would distribute to aquatic ecosystem health**	Replace outdated infrastructure & improve environmental outcomes (eg Wonga Wetlands)		MT	Min				
4	**Investigate co-ordinated aquatic monitoring program (multi agency) targeting species sensitive to climate change**	Provide baseline & develop info on aquatic ecosystem health	DSE CMA Water Auth	MT & LT	Sub	Y			Funding. Risk of getting bogged down in complexity

Group: Climate change response
Subset: M – Climate change planning

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Hume Strategy	Deliver actions in Hume Strategy	Cr	All Hume Councils	All agencies
2 Council environment strategies	Guide councils focus on delivering environmental outcomes	P	All	-
3 Agency Environment Strategies	Guide Agencies focus on delivering environmental outcomes	P		NEW GWM CMA
4 Data Collection research	Capture all information	R	All	All
5 NRSWS	Deliver NRSWS – develop regional plan	P/Cr	All	All
6 Education	Lack of	E		
7 Planning Instruments	Utilise better opportunities available in the planning system	S	All	All affected by
8				
9				
10				
11				

Group: Group 4 – Climate change response

Subset: M – Climate change planning

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Hume (Environmental strategies) Lots of data available eg Hume Strategy Material in individual councils, However , not about / accessible – poor penetration Trend towards reinventing the wheel Not clear that organizations have commitment to climate change and water issues Lack of ownership of water / cc issues within councils Lack of certainty re weather or	**Clearer driver for discussion on CC** **Lack of leadership at community & council level** **Therefore no commitment to ???? or implementation** **Attitude reactive rather than proactive** **_ Need to bridge communication gap betwee grass roots and orgaization and within organization** **This is not a data limted issue or tool limited** **Need to change discussion from climate change to more proactive terms , such as energy efficiency**
Council Differences:	
Resources **Note that there is no shortage of data, planning, strategies , instruments , but not talking to each other constructively** **Utilization of planning system offers signifigant opportunites for change and adaptation measures. However it is currently underutilised**	
Council Differences:	
Roles and responsibilities **Rural press highly reactive, not conducive tobalanced discussion**	
Council Differences:	
Regional approach / framework **Note that in urban service waer delivery no water has a regional leadership note** **Regional managers needs to contniue to lead , lobby , implement and advocate and co-ordinate regianl approach**	

Group 4 – Climate change response

Risk Subset: M - Climate change planning

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Creation of Hume Strategy Regional leadership group (ie state & local Govt reps & key community reps Purpose: Adaptation Action Group – focus is leverage networks & connections to deliver action**	Improve communication Providing leadership Bridging discussion gap Provide informed regional decision Which result in action Knowledge sharing Leveraging existing opportunities	Reps form State & local govt & key community reps	ST	Moderate	No seeking to make more efficient already existing services	Yes Shared ownership results in shared benefits	Improved r'ships between members Provide access to multiple opportunities Moe co-ordination Sharing info an tools Identify opp's	Lack of shared vision Local vs regional priorities Inequality of resources ie varied resource base big vs small shires
2	**Developing a co-ordinated approach to urban water service delivery DELIVER – eg Development of MOVS**	Co-ordinated approach to water delivery Set strategic goals Underpinning sustainable water service delivery ie TBL/QBL Better r'ships in the key players in water management	Local Govt CMA's GV Water GMW NEW DSE	ST	Minor	No (Minor)	- Very flexible	Better r'ships with the key players in water mgt	Not understanding benefits Cultural barriers doing business better
3	**Develop a network map i.e. to exploit existing networks to advance climate change education/communication social justice / behavioural**	Human Capital map	Reps from state & local govt & key community reps	ST	Expected to be minor	NO	Very Self generating and transferable	- Sharing of info utilising - Better co-ordination	

Group: Climate change response
Subset: N – Carbon Pricing

Step 1				
Control (e.g. Program, Strategy or Measure)	**Objective(s)**	**Control type**	**Relevant Councils**	**External Agencies**
1 Data collection	Assess impact of CPRS	R		
2 Hume strategy	Deliver carbon pricing actions in strategy	Cr/P	All	All
3 Building standards	Maximise advantages available in existing standards	S	All	ALL
4 Energy Efficiency alternatives	Exploit opportunities	D/E/W/R	All	All
5				
6				
7				
8				
9				
10				
11				
12				

Group: Climate change response

Subset: N – Carbon pricing

Step 2	
Review Criteria & Comments (Noting any differences between individual Councils)	**Overall conclusions** (Are there deficiencies or gaps with existing measures or approach? Are those deficiencies applicable to all Councils?)
Effectiveness of controls (considering different categories) Councils and organisation currently vulnerable already to increased costs. Carbon pricing will accelerate that trend Need organisations to be proactive re energy efficiency and source alternative energy Currently a wait & see attitude to what the feds are doing	**Significant opportunities available to region & council re energy when price goes up** **See also subset "M"**
Council Differences:Ther has been a lot of work in water sectors re impact of a carbon price	
Resources **Government report, green paper, white paper provides data & modelling of potential impacts** **Work by NE Water**	
Council Differences:	
Roles and responsibilities	
Council Differences:	
Flexibility	
Council Differences:	

Group: Policy & planning

Risk Subset: N – carbon pricing

Step 3 – Regional Responses

	Proposed new measure	Objective(s) (gaps & deficiencies addressed)	Councils / agencies	Timeframe (ST/MT/LT)	Budgetary impacts (min/mod/sub)	Administrative burden? (Y/N)	Flexible?	Other benefits? (non-climate)	Barriers? (institutional, social, political)
1	**Conduct a review of existing information on carbon pricing** **How it relates to Govt** **Ie scan of what is out there**	-Snapshot of tools already existing - Be proactive - Inform	All	ST/MT	Minor	No	Yes	-Not reinventing the wheel - Action to respond to increasing energy costs	Leadership Cultural
2	**Exploit alternative energy sources**	- Develop alternative energy solutions - Improve sustainability of the region - Decrease energy costs - Utilise existing regional strategies – Eg Hume strategy	All	MT	Substantial	Yes	- Yes - Multiple options	Financial Employment Greater skills	-Social/cultural Eg opposition to wind farms - Availability of land
3	**Require councils economic development staff to better consider a changing climate & variable weather patterns**	- More efficient business of LGAs - More informed economic decision making - Proactive economic planning eg in anticipation of increases in energy costs - Sharing of info	All	ST	Minor	Yes	Yes	- Proactive business - Lessening risk - Sustainable regional growth	Cultural change Lack of leadership Political aganda

4									