

<b>AGENDA ITEM NO:</b>	<b>SUBJECT MATTER:</b> CWMS Fit for the Future Project
<b>REPORT:</b> Canterbury Water Management Strategy: Fit for the Future Project: Lower Waitaki Zone Committee Meeting	<b>DATE OF MEETING:</b> 19 September 2018
<b>REPORT BY:</b>	

1. The Fit for the Future project is looking to develop goals for 2025 and 2030 for the ten target areas in the Canterbury Water Management Strategy (CWMS).
2. Zone Committees are an important part of delivering the CWMS. They are heavily involved in both sub-regional plan-making and in championing the actions that will lead to the Strategy and the plans being achieved.
3. The Regional Water Management Committee wants Zone Committees to provide input into the draft goals for 2025 and 2030 that have been developed by Task Groups and the Goals Working Group. There is an opportunity for your Zone Committee to reflect particular zonal implementation needs, thoughts about the draft goals and your Zone Implementation Programme (ZIP), and priorities.
4. In particular, given the Zone Committee's role, we are interested in any thoughts or advice on
  - Are the draft goals on the mark, over-ambitious, or too easy? What changes should be made to them? Are there any gaps?
  - To what extent are the goals relevant to your Zone – do they provide an opportunity for local changes to be made that will make a real difference? Should there be greater recognition of sub-regional differences, and how might that happen? What would need to happen in your Zone to achieve the goals? What are the barriers and what could be done to enable more progress on the CWMS goals and targets?
  - What are the actions and work programmes that will be needed to help achieve the goals. Will your ZIP need to be refreshed?
5. The attached paper and its Appendix set out the process for developing the 2025 and 2030 goals, some issues that you might want to consider, and the draft goals developed so far in the process. The draft goals are very much 'work in progress'. Not all of the draft goals are fully developed and will need refinement by stakeholders as the engagement process advances. Many of the draft goals need sharpening. You can help shape the advice that the Regional Water Management Committee will provide to the Canterbury Mayoral Forum on the goals, and what needs to happen to achieve them.

6. If you have any views you can express them at your Zone Committee meeting or alternatively in writing to [cwmstargets@ecan.govt.nz](mailto:cwmstargets@ecan.govt.nz) by 26 September (although earlier comments would be appreciated).

## **Canterbury Water Management Strategy Fit for the Future Project: Engagement Paper, September 2018**

### **Purpose of the Paper**

1. The purpose of this paper is to enable those key groups with an interest in the Canterbury Water Management Strategy (CWMS) to engage in setting intermediary goals for 2025 and 2030, and the development of advice on CWMS implementation. This paper and associated engagement meetings are designed to:
  - Get feedback on the draft CWMS 2025 and 2030 goals
  - Get views on what will be needed in terms of implementation and workstreams to achieve the goals
  - Provide any feedback on issues that have been raised by Task Groups and Goals Working Group set up to develop and provide advice on the draft goals.

### **Process of goals development so far**

2. The Canterbury Mayoral Forum has initiated a project to develop intermediary goals for 2025 and 2030 for the CWMS (between the established goals for 2020 and 2040) to indicate whether the CWMS is being achieved. The project scope also includes development of advice on key barriers and enablers to strategy implementation, with recommendations to address these.
3. Environment Canterbury is the project lead for the project, using the following approach agreed by the Mayoral Forum:
  - While the CWMS framework is basically sound, the project needs to identify what is required to maintain and build momentum for implementation of the strategy and ensure it can be delivered, and develop intermediary goals for 2025 and 2030 to ensure the CWMS continues to provide meaningful guidance for action;
  - The establishment of six Task Groups<sup>1</sup> to focus on the ten target areas of the CWMS;
  - The establishment of a Goals Working Group to provide a forum for coordinated advice to the Regional Committee on a possible set of integrated goals for 2025 and 2030, and what mechanisms are required to support the delivery of the goals;
  - Advice to the Mayoral Forum is coordinated by the Regional Water Management Committee;
  - The project is undertaken collaboratively with territorial authorities, Zone Committees, Ngāi Tahu, community groups and sector groups;
  - Reflecting the collaborative ethos of the CWMS through bringing together a range of interests and perspectives to develop the draft goals and supporting actions.
4. Five of the six Task Groups have had the first of two workshops. The Goals Working group has met to consider the outcome of the Task Group meetings. This work is reflected in the attached material.

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<sup>1</sup> Members of the Task Groups and Goals Working Group were chosen because of their particular knowledge and water management backgrounds. They will contribute from their own mixed range of perspectives but are not representing particular interests.

## Draft Goals

5. Attached are a set of draft goals for 2025 and 2030 for comment. **The draft goals are very much ‘work in progress’ and are a collation of input from the groups to date.** For ease of reading;
  - a. A “Theme” column has been added to the table to help describe the objective of each goal.
  - b. All of the existing targets for 2020 and 2040 are underlined.
  - c. New draft targets have been noted with ‘New’ or ‘New Target’.
  - d. The 2025 and 2030 targets have been expressed in a single joined statement.
  - e. Percentage increases, or reductions for the 2025 and 2030 goals are yet to be determined so are denoted with ‘X%’ for further analysis.
6. Not all of the draft goals are fully developed and will need refinement as the engagement process advances.
7. We are particularly interested in your feedback on:
  - the draft set of goals for 2025 and 2030 that have been developed so far – what changes are needed?;
  - any gaps that you can see in the goals related to the CWMS target areas;
  - implementation and work programmes needed to ensure the goals are met;
  - any barriers to the goals being achieved, and what could be done to enable the achievement of the goals.
8. As yet there has been no meeting of the Task Group for the Regional and National Economic Indicators target area. When the Task Group meets one of the matters it will be asked to consider is whether the target areas and goals provide a clear enough picture of the impact of the management of water on the Canterbury regional economy. Any views on this would be welcome, including on how conventional economic indicators (for example, employment, contribution to GDP for agriculture and other sectors) can be supplemented by information on the value of the range of other uses that water can be put to - amenity, recreational, cultural – and how externalities can be considered in the best way.

### ***Particular Issues for goal development***

9. There are some other issues on which input would be useful, and which are set out in tables below:
  - Some suggested new target areas;
  - Suggested changes to the 2040 targets;
  - The way that common themes across a number of target areas can be addressed;
  - Implementation issues.

**Suggested new target areas**

10. The Task Groups and Goals Working Group have suggested some areas in which there could potentially be new targets and goals. These are summarised in Table A below. There are some areas that are common between target areas (for example, climate change, the recognition of Mātauranga Māori), and where there are overlaps between draft goals and implementation measures (for example, monitoring, emerging contaminants). Views on how these could best be addressed would be appreciated.

**Table A**

Target area	New target/goals
Drinking water	Groundwater source protection as a 1 <sup>st</sup> order priority Remodelling of Groundwater [Quality and Quantity] to account for impacts of Climate Change
Recreation and amenity	Mātauranga Māori – to integrate recreation and mahinga kai Climate change and implications for flow regime Meet the recreational water quality guidelines for lake and river sites used for contact recreation.
Ecosystem health, braided rivers	Need for environmental resilience in face of climate change Measurement systems that cover scientific method and Māori understandings
Environmental limits	Measuring and reporting against limits New technology and management techniques for limits implementation
Kaitiakitanga	Monitoring of restoration programmes Tikanga Māori and Mātauranga Māori – the education of values and Te Ao Māori Intergenerational knowledge – avoid loss of cultural knowledge and increase application of that knowledge
Land area and reliability	Sustainable high value primary production
<b>New target area – social capital</b> - there has been a considerable attitudinal change since the start of the CWMS but further gains must be made.	Develop a target area and goals for social capital. (Responsibility for achieving the CWMS lies not only with regulatory agencies but also with industry and the community. The engagement of youth in water management is needed. There is no target area for the social capital improvements as the result of the collaborative approach taken in the CWMS)

***Suggested changes to 2040 targets***

11. Changes were also suggested to six of the 2040 targets. These are set out in Table B below.

**Table B**

<b>Target Area – current target</b>	<b>Proposed new 2040 target and reason for change</b>
Wetlands	100% of wetlands protected and/or in the process of being restored to a self-sustaining system.
Dryland ecosystems	Land use activities do not compromise the ecosystem health of drylands
Kaitiakitanga	Maintained high quality drinking water [for all] marae Iwi Management Plans are refreshed and responded to.
Irrigated Land area (and reliability)	Query as to whether the indicative target of 850,000 hectares of irrigated land is realistic.
Irrigated Land area (and reliability)	By 2030, access to reliable water is a foundational element in driving increasingly higher value production options for the primary sector – in a primary sector whose brand recognition is tied to suitable production – especially in the use of water
Energy Security and Efficiency – maintain or increase Canterbury’s contribution to New Zealand’s security of electricity supply  Generate at least 40-45% of power used by irrigation in Canterbury from irrigation sources	Inappropriate as changes to New Zealand’s electricity industry have overtaken the underlying assumptions for this target  Inappropriate as changes to New Zealand’s electricity industry have overtaken the underlying assumptions for this target

***Themes across target areas***

12. During discussion in the Task Groups a number of themes that crossed different target areas emerged. These themes, and possible ways of addressing them in the CWMS, are set out in Table C below:

**Table C**

<b>Themes across target areas</b>	<b>Discussion</b>
<b>Cultural expression of the targets and goals</b> – can the goals be expressed in a meaningful way for tangata whenua – do they speak to ki uta ki tai? Do they measure Mauri? Can cultural values also appear for example in FEPs?	Might require a substantial rewrite of the targets and goals or be able to be addressed through some form of overarching statement, and some targeted actions.
<b>Mahinga kai</b> – concern was expressed in a number of Task Groups that there was insufficient action being taken to	This needs to be addressed in the goals in the kaitiakitanga, recreational and amenity opportunities, and environmental limits target areas.

Themes across target areas	Discussion
strengthen the commitment to mahinga kai.	One way of integrating the treatment of mahinga kai is to have its predominant treatment being in the kaitiaticanga target areas, with other target areas referring to it.
<b>Resilience</b> -related to the above, there was a general theme that the CWMS needed to recognise environmental and economic resilience (especially climate change, flooding, storms, earthquakes and economic diversity respectively)	Climate change, flooding and storms are all to a greater or lesser extent linked to climate change and variability and should be considered as per above.
<b>Climate change</b> - There is a need for all goals to recognise climate change. This is complex, it will affect a number of goals including recreational and environmental, economic, irrigated land area, energy etc. It may affect limits in plans.	There are two ways of addressing this issue. One is to recommend a separate goal that specifically deals with climate change. Such a goal might be limited to research or process. Alternatively, each target area could address climate change when goals are set. The challenge would be to do this in time, and integrate cross the different goals.
<b>Over allocation</b> – there needs to be a firm plan for addressing over-allocation. This is to ensure that recreational, biodiversity and cultural needs are met.	Implementation needs to consider a diversity of tools/approaches
<b>Flow regimes</b> – must recognise recreational as well as mahinga kai, environmental and cultural use. Need to think about in the context of climate change, and the link between flow regimes, water use efficiency, the availability of water for economic use, and storage.	This can be addressed in the goals for environmental limits, but must consider the outcomes being sought in other target areas.
<b>Urban</b> – while drinking water is covered, the impacts of urban stormwater and wastewater (including septic tanks) is not sufficiently addressed.	A separate section in the environmental limits target area could be developed. Targets might be focussed on the values/outcomes expected in urban waterways, rather than projects.
<b>Achievability of goals</b> – are all goals realistically achievable – for example, the irrigated land goal, some of the ecosystem health and biodiversity goals given environmental lag times?	This will be the subject of further analysis by the Project Team and will be considered by the next round of Task Group meetings and engagement meetings.
<b>CWMS outcomes</b> – concern/lack of trust/scepticism about whether the implementation of the CWMS so far has sufficiently considered cultural, social and environmental systems.	This can possibly be addressed through a combination of four things: <ul style="list-style-type: none"> <li>- Clear goals that are all achievable</li> <li>- Open and transparent reporting on the goals</li> </ul>

Themes across target areas	Discussion
	<ul style="list-style-type: none"> <li>- Addressing planning shortcomings when monitoring and reporting shows that goals may not be achieved</li> </ul> <p>A clear implementation pathway that includes roles, responsibilities and funding, and involves buy-in by all arms of government, sector groups, Ngāi Tahu and community groups.</p>

## Implementation Issues

13. The Task Groups and Goals Working Group have also identified a number of issues that will need to be addressed in work programmes and implementation efforts for the CWMS. These are set out below in Table D.

**Table D**

<p><b>Governance</b> – the importance of strong and balanced governance and management capability; the need for integrated action by all arms of government, sectors, and communities; a desire for Ngāi Tahu to have a larger role in decision-making – how can you act as kaitiaki without control?</p>
<p><b>Knowledge</b> – much has been learnt in the last ten years but much more knowledge is needed – for example, the cumulative nature of multiple pressures on ecosystems; the impacts of climate change.</p>
<p><b>Measurement and modelling</b> – community confidence in the CWMS will be assisted by knowing that the outcomes sought are being achieved. Measurement systems that integrate Māori and western scientific understanding are needed. There should be an independent auditor and reporter on the progress of the CWMS.</p>
<p><b>Capacity and resourcing</b> – these were raised as a concern by all groups, and in a range of different contexts. It includes resources available to tangata whenua and community groups to engage on water management issues, sector groups and land users who need to adjust to land management within a limits framework and have high debt levels, infrastructure costs, and councils' capacity</p>
<p><b>Timing</b> – two aspects were addressed – the impact of accelerating climate change, the slow pace of in-stream changes due in part to environmental lag times and scientific uncertainty, and the delays in planning responses.</p>
<p><b>Accountability and compliance</b> – there need to be mechanisms for comprehensive reporting against the CWMS goals, and accountability for carrying out implementation steps. Accountability for compliance needs to improve.</p>
<p><b>Sub-regional implementation plans</b> – there is a need for the goals to have a clear implementation pathway – there need to be zone or catchment or sub-catchment implementation plans (which should be integrated with iwi management plans). They should include non-statutory solutions, restoration programmes, funding, responsibilities and timeframes.</p>
<p><b>Emerging contaminants</b> – important for drinking water, kaitiakitanga, ecosystem health and biodiversity. Might be best addressed in the first instance by being a clear work programme to investigate.</p>
<p><b>Plan-making</b> – there are two opposing themes – plan-making is not agile enough, but there is a need for certainty provided by plans that stay in place for a while. It is unclear</p>



how this can be resolved at a regional level other than through the use of best planning practice, good monitoring and reporting, clear implementation plans, utilising a range of tools including a commitment to review plans/consents if outcomes are not being met.

### **Future Process**

14. Feedback from this round of engagement will be provided to the Regional Water Management Committee for its meeting of 9 October, and also to a further round of consideration by the Task Groups and Goals Working Group in October. The outcome of that process will be provided back to key groups with an interest in the Strategy for a further round of engagement from 12 November to 3 December.
15. Following that, the Regional Water Management Committee and Goals Working Group will consider the results of the engagement, and report to the Mayoral Forum in April 2019.

Count	Theme	2020	2025 and 2030 Targets	2040
A1	<b>Drinking Water</b>			
A11	Reduce Nitrates Levels in Groundwater	<u>A demonstrable decrease in nitrate concentrations in shallow groundwater in priority areas is achieved.</u>	Nitrate concentrations remain stable or reduce by X% in priority areas.	<u>Average annual nitrate levels in all groundwater wells* in Canterbury are below 50% of the maximum allowable value for drinking water</u>
A13	Improve Drinking Water Supplies	<u>There is an increase in the percentage of the population supplied with water that meets the New Zealand Drinking Water Standards for health-based determinants.</u>	Increase in the % of the population supplied with community water supplies that meetings Drinking Water Standards of New Zealand.	<u>Nitrate levels in community drinking water wells are below the maximum allowable values of drinking water</u>
A15	Increase Source Protection		New: (continuation of 2015 target) Prevent further decline in source water quality by increasing and enforcing protection zones.	
A16	Understand Emerging Contaminant Risks	<u>Understood any emerging contaminant risks and identified any at risk areas for targeted management and a remedial programme underway.</u>	Understood emerging contaminant risks and target management.	<u>Understood any emerging contaminant risks and identified any at risk areas for targeted management and a remedial programme underway.</u>
A18	Improve Groundwater Modelling		New: Remodelling of Groundwater to account for impacts of Climate Change	Suggested New: Develop detailed dynamic groundwater modelling to provide data that ensures policy recognises impact of climate change.
A19			New: Reduce modelled nitrate losses from all intensive farms by X% and: Review of effectiveness of Good Management Practices (GMP) in reducing Catchment Nutrient Loads	
A20	Set and Meet Good Management Practice	<u>Achieved nutrient efficiency targets for the zone on all new irrigated land and 80% of other land in major rural land uses (pasture, major arable and major horticulture crops), and have 100% of rural properties working towards those targets (and of properties within urban boundaries that apply nutrients over significant areas).</u>	Achieved nutrient efficiency targets for the zone on all new irrigated land and other land	<u>Achieved nutrient efficiency targets for the zone on all new irrigated land and 100% of other rural properties (and of properties within urban boundaries that apply nutrients over significant areas).</u>
A23	<b>Recreation and Amenity</b>			
A32	Improve Recreational Opportunities	<u>A positive trend in the availability and/or quality of recreational opportunities in each zone.</u>	A (continuing and measurable) positive trend in the availability and/or quality of recreational opportunities in each zone.	Note: No target set for 2040
A33	Restore Recreational Opportunities		New: Restored X number of freshwater recreational opportunities in each zone.	<u>Restored at least one major fresh water recreational opportunity in each zone that was not currently available in 2010.</u>
A34	Understand Emerging Contaminant Risks		New: Improve understanding of emerging threats (e.g. didymo and cyanobacteria)	
A35	Protect Fisheries	No targets set for 2020	Develop programmes in each zone for restoration and protection of fisheries	<u>Restored fishing opportunities in most lowland streams in each water management zone</u>
A36	Improve Lowland Stream Health		New: Improve health of lowland streams by X%	New: 100% of lowland streams and lakes in Canterbury have improved fishing opportunities.

Count	Theme	2020	2025 and 2030 Targets	2040
A39	Set and Meet Recreational Flows	<u>Made progress toward achieving environmental flows</u>	Achieved all flows that support recreational flow requirements.	<u>Achieved all environmental flows</u>
A41	Improve Recreational Quality	<u>Of the lake and river sites used for contact recreation, an increase in the percentage that meet recreational water quality guidelines.</u>	Meet the recreational water quality guidelines for lake and river sites used for contact recreation.	New: Improve on National Policy Statement for Freshwater Management targets for Canterbury rivers and lakes being swimmable by 2040.
A42	Reduce Cyanobacteria		New: Develop and implement bathing water standards for Canterbury rivers and streams (focus on Cyanobacteria)	
A43	Emerging Issue	New Targets Theme: Other Emerging contaminant	New: Research threat of emerging contaminants such as microbeads, pharmaceuticals, hormonal treatments, and include mitigation measures in rules.	
A44	Emerging Issue	New Targets Theme: Mātauranga maori	New: Understand the overlap between recreation and mahinga kai and have a kaitiakitanga approach to both.	
A45	Emerging Issue	New Targets Theme: Climate Change.	New: Research impact of glacial melt and rainfall pattern change on river flows.	
A53	<b>Ecosystem Health and Biodiversity</b>			
A62	Improve Lowland Stream Health		X percentage of lowland streams classified as at least good quality and showing an upward trend (using Ecosystem Health and Water Quality Indexes)	New: 100% of lowland streams classified as at least good quality and showing an upward trend.
A63	Protect Fisheries	<u>An upward trend in diversity and abundance of native fish populations.</u>	An upward trend in diversity and abundance of native fish populations.	New: 100% of rivers/streams classified as at least good quality and showing an upward trend. [Note 2]
A64	Increase Riparian Planting	<u>Increased the length of waterway with riparian management appropriate to aquatic ecosystem protection by 50% from 2010 figures.</u>	Increase area of native riparian margins by X% from 2020 figures over time.	
A66	Protect Wetlands	<u>Protected all existing wetlands.</u>	Certain proportion (e.g. 50%) of wetlands physically protected and/or are in the process of being restored to a self-sustaining system.	<u>(Protected all wetlands.) New wording proposed : 100% of wetlands protected and/or in the process of being restored to a self-sustaining system.</u>
A67	Protect Wetlands		Land use activities do not compromise the ecosystem health of wetlands.	New: Land use activities do not compromise the ecosystem health of wetlands.
A69	Lagoons and Hapua Health	<u>A significant protection and restoration programme is in place on the most ecologically significant river mouth or coastal lagoon in each management zone.</u>	Examples of thriving coastal lagoons, and lowland or spring-fed ecosystems in each water management zone	<u>Examples of thriving coastal lagoons, and lowland or spring-fed ecosystems in each water management zone.</u>
A70	Improve Lowland Stream Health	<u>Improved condition and water quality in at least 60% of lowland streams and 60% of lowland lakes in each zone.</u>	(70% to 80%) of lowland streams and lakes classified as at least good aquatic health water quality and showing an upward trend.	<u>100% of lowland and spring-fed streams with at least good aquatic ecosystem health or showing an upward trend.</u>

Count	Theme	2020	2025 and 2030 Targets	2040
A72	Improve Lowland Stream Health		New Target: Included in all planning frameworks: land use activities do not compromise the ecosystem health of lowland streams and lakes (May become an action rather than a target)	New: Land use activities do not compromise the ecosystem health of lowland streams and lakes.
A73	Improve Foothill River Health	<u>All foothill rivers and high country rivers and/or lakes either in good ecological health or better, or showing upward trend.</u>	Ecological health of all foothill rivers and high country rivers and/or lakes continues to be maintained or improved from 2020 levels.	<u>Maintained upland spring-fed streams and lakes in very good aquatic ecosystem health (no decline from 2010).</u>
A74				<u>80% of other rivers/streams and lakes with very good aquatic ecosystem health.</u>
A76	Protect Dryland Ecosystems	New: Drylands: no targets beyond 2010: Maintain existing high quality indigenous aquatic and dryland ecosystems in intermontane basins and on the plains	New Target: Included in all planning frameworks: land use activities do not compromise the ecosystem health of dryland	New: Land use activities do not compromise the ecosystem health of drylands
A80	Set and Meet Good Management Practice	<u>Achieved nutrient efficiency targets for the zone on all new irrigated land and 80% of other land in major rural uses (pasture, major arable and major horticulture crops) and have 100% of rural properties working towards those targets (and of properties within urban boundaries that apply nutrients over significant areas).</u>	Achieved nutrient efficiency targets for the zone on all new irrigated land and other land	<u>Achieved nutrient efficiency targets for the zone on all new irrigated land and 100% of other rural properties (and of properties within urban boundaries that apply nutrients over significant areas).</u>
A81	Set and Meet Good Management Practice	<u>Made progress towards achieving environmental flow and catchment load limits.</u>	Achieved all environmental flow and catchment load limits.	<u>Achieved all environmental flow and catchment load limits.</u>
A82	Understand Emerging Contaminant Risks		Understood emerging contaminant risks and target management.	<u>Understood any emerging contaminant risks and identified any at-risk areas for targeted management.</u>
A84	<b>Natural Character of Braided Rivers</b>			
A85	Protect Braided River Habitats	<u>Protected significant habitat for a full range of indigenous braided river flora and fauna.</u>	Protected significant habitat for a full range of indigenous braided river flora and fauna.	
A86	Protect Braided River Habitats	<u>Protected and enhanced the habitats in riparian wetlands, springs and the lagoons associated with braided rivers.</u>	Protected and enhanced the habitats in riparian wetlands, springs and the lagoons associated with braided rivers. Programmes in place to address threats to improve the naturally uncommon ecosystems from endangered to vulnerable.	<u>All indigenous braided river-dependent species are showing positive trends in abundance and health.</u>
A87	Set and Meet Ecological Flows	<u>Made progress towards achieving environmental flows.</u>	Made progress towards achieving environmental flows [for Braided Rivers]	<u>Achieved all environmental flows.</u>
A88	Protect Braided River Habitats		New: Increased community knowledge, awareness and guardianship of the importance of mauri within braided river systems.	
A89	Increase Braided River Bird Habitats		Increase habitat area usable by all species of braided river indigenous birds by X percent	<u>Increase habitat area usable by all species of braided river indigenous birds.</u>

Count	Theme	2020	2025 and 2030 Targets	2040
A91	Protect Braided River Habitats		All resource management decisions concerning braided river systems recognise and provide for ki uta ki tai.	<u>Canterbury's braided rivers show the dynamic, braided nature typical of such rivers.</u>
A92	<b>Emerging Themes</b>			
A93	Social Capital		The community has confidence that the CWMS process and underpinning knowledge systems, including Mātauranga Māori, will deliver on needed outcomes.	
A94	Mātauranga Maori		New: Measurement systems in place that fully integrate Mātauranga Māori and scientific methodologies and understandings.	
A96	<b>Environmental Limits</b>			
A104	Set and Meet Environmental Flows	<u>Review of environmental flows and catchment load limits in response to changing monitoring information, new understanding and technologies, and if requested by regional and zone committees</u>	Continue to revise environmental flows and catchment load limits in response to changing monitoring information	<u>Review of environmental flows and catchment load limits in response to changing monitoring information, new understanding and technologies, and if requested by regional and zone committees.</u>
A105	Set Urban Catchment Loads		New: Establish catchment loads (and flows) for urban contaminants and other rural contaminants.	
A106	Set and Meet Environmental Flows and Load Limits	<u>Established and begun to implement a programme to review existing consents where such review is necessary in order to achieve catchment load limits</u>	Implement a programme to review existing consents where such review is necessary in order to achieve catchment load limits is X% progressed	<u>Environmental flow and catchment load limits achieved in all waterbodies.</u>
A106.1	Establish Implementation Plans for Flows and Limits		New: Implementation plans are in place for all catchments to outline how environmental limits flows and catchment load limits will be managed and achieved	
A107	Monitor Effectiveness	New: measuring and reporting against environmental limits	Increasing use of the real-time monitoring and reporting framework for surface water quality by a wide range of the community. (Catchment Accounting)	
A108			Reporting annually on progress toward achieving environmental flow and catchment load limits.	
A119	<b>Kaitiakitanga</b>			
A128	<b>Marae Water supply</b>			

Count	Theme	2020	2025 and 2030 Targets	2040
A129	Assure Marae Drinking Water Supply	<u>All marae and associated papakāinga have access to high quality drinking water</u>	All marae and associated papakāinga have access to high quality drinking water (repeat of 2020 targets)	New: Maintained high quality drinking water [for all] marae (No target set for 2040 )
A130	Assure Marae Drinking Water Supply		New: Supply to marae from Community and private wells provide healthy drinking water	
A132	<b>Working together in partnership</b>			
A133	Integrate kaitiakitanga		New: (from 2040) Kaitiakitanga is a normalised and an integrated practice of water management	<u>Kaitiakitanga is a normalised and an integrated practice of water management</u>
A134	Planning Regime Reflects Ki uta ki tai	<u>Integrated Ki Uta Ki Tai environmental management philosophies into zonal and regional management planning</u>	Integrated Ki Uta Ki Tai environmental management philosophies into zonal and regional management planning	New: Iwi Management Plans are refreshed and responded to.
A135	Improve Succession Planning		New: Succession plans and rangatahi forums are in place to enable the next generation to participate	
A136	Establish New co-Governance Arrangements	<u>Further co-governance arrangements (developed in partnership by Ngāi Tahu, the Crown and Canterbury local government) for the active management of nominated waterbodies in North and South Canterbury</u>	Further co-governance arrangements (developed in partnership by Ngāi Tahu, the Crown and Canterbury local government) for the active management of nominated waterbodies in North and South Canterbury	
A137	Establish Tangata Tiakiwai	<u>At least one Ngāi Tahu tangata tiakiwai is appointed in each zone [Note 2]</u>	Maintain at least one Ngāi Tahu tangata tiakiwai is appointed in each zone	
A138	<b>Wāhi Taonga and mahinga kai</b>			
A139	Protect Waterways for Mahinga Kai		New: (from 2040 Target) Protection, in accordance with Ngāi Tahu values and practices, of wāhi taonga and mahinga kai waterways	<u>Protection, in accordance with Ngāi Tahu values and practices, of wāhi taonga and mahinga kai waterways</u>
A140	Establish Mātauranga Maori Reporting	New: Mātauranga Maori. Probably sits best in "Working Together in Partnership"	New: An annual mātauranga informed report is provided for rūnanga on the health of waterways to inform water management decision-making (by councils and Ngāi Tahu) Tikanga Maori	
A141	Protect Waterways for Mahinga Kai		New: (A or some) Freshwater taonga species (e.g. wai kākahi or wai tuna) are identified and protection zones are identified and put in place	
A142			New: Flows are returned to sustain 50% of Fenton reserves and fishing easements	

Count	Theme	2020	2025 and 2030 Targets	2040
A143	Improve Decision Making for Allocations		New: Papatipu Rūnanga are decision makers for allocations of Ngai Tahu water in each catchment	
A144	Increase Opportunities for Mahinga Kai	<u>Increased the abundance of, access to and use of mahinga kai</u>	Increased the abundance of, access to and use of mahinga kai: A region-wide mahinga kai plan is developed and implemented, that informs and influences statutory and non-statutory plans)	
A145	Protect Specific Reaches for Mahinga Kai	<u>A mahinga kai food gathering standard is confirmed and implemented as a water quality monitoring tool</u>	Specific reaches of rivers and lakes are prioritised by Papatipu Rūnanga for the protection and use of mahinga kai and/or other cultural practices	
A146	Protect Waterways for Mahinga Kai (Specific species)		New: Protection Zones are identified for longfin and short fin tuna throughout the region.	
A147	Establish Mātauranga Maori	New: Tikanga Maori and Mātauranga Maori and Te Ao Māori	New: Tikanga Maori and Mātauranga Maori - are recognised and integrated into the monitoring systems	
A149	Stop Loss of Intergenerational Knowledge	New Targets Theme: intergenerational knowledge	New: No loss of intergenerational cultural knowledge	
A152	<b>Irrigated Land Area and Water Use Efficiency</b>			
A162	<b>Infrastructure</b>			
A164	Integrated Infrastructure Approach for Reliability		Integrated Infrastructure system provides X% reliability to X% of irrigated land area while also ensuring all target area water uses (environmental (incl. MAR, drinking water, kaitiakitanga) are met as per CWMS priorities.	No Infrastructure targets set for 2040. New: Infrastructure system provides 95% reliability to 100% of irrigated land area while also ensuring all target area water uses (environmental (incl. MAR, drinking water, kaitiakitanga) are met as per CWMS priorities.
A166	Funding Integrated Infrastructure Solutions		New: (continuation of 2015 target) Decided on the mechanisms for funding infrastructure and the ongoing operation of the strategy (Integrated - both irrigation and environmental)	
A167	Improve Management and Governance		New: Business cases developed to guide public investment in public benefits of reliability improvements.	
A168	Build Agreed Integrated Infrastructure	<u>Started construction of regional storage and [improved reliability of supply for at least 50% of irrigated land]</u>	Started construction of regional storage and [improved reliability of supply for at least 50% of irrigated land]	
A169	Undertake Consents Reconfiguration		New: (continuation of 2015 target) Complete 80% (by 2030) of 'consent configuration' activity (20 year anniversary of CWMS)	

Count	Theme	2020	2025 and 2030 Targets	2040
A170	Build Agreed Integrated Infrastructure	<u>Started construction of infrastructure identified in zonal implementation programmes.</u>	Started construction of infrastructure identified in zonal implementation programmes (Integrated - both irrigation and environmental)	
A171	<b>Land area and reliability</b>			
A172	Improve Reliability	New: Improved reliability of supply for at least 50% of irrigated land (Part of Above: Build Agreed Integrated Infrastructure)	New: Irrigated land area optimised for sustainable food production by achieving 95% reliability and water use efficiency. (Mix of Storage, Piping and Scheduling Technologies)	<u>A substantial increase in the reliability of supply and the area of land irrigated in Canterbury all of which has demonstrated high standards of riparian, nutrient and water use management, and has been shown to be consistent with the principles of the strategy. An indicative target is 850,000 hectares of irrigated land with at least 95% reliability</u>
A173	Develop Storage for Irrigation Reliability		New (continuation of 2015 target) A system of regionally distributed rural water infrastructure is designed, timetabled costed and staged - enough storage to provide at least 95% reliability to existing irrigated areas	<u>Improved reliability of supply for all irrigated land.</u>
A175	Ensure Water Use for High Value Output	New: Sustainable high-value primary production and increasingly diversified sustainable land use	New: Sustainable high-value primary production; Metrics give objective information on diversified land use using irrigation enabled innovative, high value, sustainable primary production. (May be better situated under Economies Targets)	By 2030, access to reliable water is a foundational element in driving increasingly higher value production options for the primary sector – in a primary sector whose brand recognition is tied to suitable production – especially in the use of water [from workshop discussion]
A178	<b>Water use efficiency</b>			
A179	Establish Benchmarks for Water Use		New: (continuation of 2015 target) Established and reported against a benchmark of current water use: benchmarks for efficient water use are part of a Canterbury/New Zealand sustainable high value production brand.	
A180			New: Developed and reported on metrics for water use efficiency, incorporating the benefits gained from use of the water.	
A182	Establish Best Practice Standards for Water Use	<u>80% of water used for irrigation and stockwater is operating according to best practice water use</u>	100% of water used for irrigation and stockwater is operating according to best practice water use	Implemented best practice water use on all irrigation, stockwater and industrial/commercial use in Canterbury
A184	Implement Demand Management in Urban Water Use	<u>Reduced water used for community water supply by 10% (measured in litres per person for day) compared to that used in 2010</u>	Drinking water suppliers implementing demand management programmes as part of good infrastructure practices.	<u>Reduced water used for community water supply by 20% (measured in litres per person per day) compared to that used in 2010.</u>



Count	Theme	2020	2025 and 2030 Targets	2040
A185	Increase Value Benefits from Water Use	<u>Increased the benefits gained per unit of water so that the volume of water beneficially used (used in production of crops, electricity, or commercial uses) in each zone as a proportion of the volume of water take is, on average, 5% greater than that achieved in 2010.</u>	Increased the benefits gained per unit of water so that the volume of water beneficially used (used in production of crops, electricity, or commercial uses) in each zone as a proportion of the volume of water take is, on average, 5% greater than that achieved in 2010.	<u>Increased the benefits gained per unit of water so that the volume of water beneficially used (used in production of crops, electricity, or commercial uses) in each zone as a proportion of the volume of water take is, on average, 25% greater than that achieved in 2010.</u>

Count	Theme	2020	2025 and 2030 Targets	2040
A188	<b>Energy Security and Efficiency</b>			
A196	Optimise Energy Use via Improved Scheduling	<u>Increased the productivity per unit of electricity – per hectare consumption for irrigation sector and equivalent measures in other sectors.</u>	New Target: Optimised line use charges through new scheduling technology.	<u>Factored efficient use of electricity in all irrigation infrastructure</u>
A197	Measure Productivity of Energy Use		Measured and reported on productivity per unit of energy. And/or Increased the productivity per unit of energy by X from 2025 (downward trend in energy use per hectare or per unit of economic value).	<u>Reduced the energy used per hectare for irrigation in Canterbury compared to that used in the 2010/11 season</u>
A199	Measure Energy Use in irrigation		Begin to measure, monitor and manage power used by irrigation in Canterbury from irrigation infrastructure	<u>Generate at least 40-45% of the power used by irrigation in Canterbury from irrigation infrastructure (including multi-use hydro and irrigation systems) within Canterbury and other renewable on-farm sources.</u>
A201	Integrated Approach to a Dual Use for Water		Electricity distribution companies across Canterbury work engage with major water users to increase understanding and coordination of opportunities for mutual benefit (load management, capacity availability, generation options)	<u>Maintain or increase Canterbury’s contribution to New Zealand’s security of electricity supply.</u>