

Mid-Term Evaluation of the Murray-Darling Water and Environmental Research Program

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Final report

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Acknowledgement of Traditional Owners

The authors pay respect to the Traditional Owners and their Nations of the Murray–Darling Basin including the lands and waterways in which we live and work. We acknowledge their ongoing stewardship of their lands and waters. We pay our respects to Elders past, present and emerging, and note the contributions of several First Nations people to this evaluation.

Other acknowledgements

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Disclaimer

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EXECUTIVE SUMMARY

This mid-term evaluation (MTE) of the Murray-Darling Water and Environmental Research Program (MD-WERP, here after referred to simply as WERP) found that overall, the Program was effectively planned, is being effectively implemented and has a generally robust governance and program and project management systems in place. Progress with the implementation of the strategic research projects appears generally on schedule, but there is a lack of clarity about how the research outputs will be synthesised and packaged into forms that can be used by the main end users.

The MTE found that WERP is definitely not a researcher- or manager-driven research program, but one that is well balanced and likely to produce new knowledge of relevance to the Basin Plan Review and other Australian government policy and management needs. However, more will need to be done in the remaining two years of the Program to ensure that the research outputs and new knowledge are synthesised and packaged into products that meet the needs of end users such as the Murray-Darling Basin Authority (MDBA) and the Commonwealth Environmental Water Holder (CEWH).

The MTE sought to answer a number of key evaluation question set by the WERP Governing Panel (these are listed below) using the following program level process indicators: governance processes; program design and planning (co-design activities); program implementation (collaboration, project management, communications and engagement); outputs and outcomes (progress, likely outcomes/impacts). This evaluation has not reviewed in any detail the actual research projects being undertaken, but rather focused on high level program processes. Detailed review of the research will be a task for the end of program evaluation of WERP.

Evidence for this MTE was obtained in two ways: review of relevant documents and semi-structured interviews with 33 stakeholders including representatives of: Governing Panel; Executive Leadership Team; Science Leadership Team; MDBA Implementation Team; Commonwealth theme leads; Consortium leads and Theme leads; Policy end-users; First Nations; and End-User Advisory Groups.

A summary of the key findings for each of the program level indicators is provided below.

Governance processes

A robust and largely effective governance structure has been established for WERP, involving a Governing Panel, an Executive Leadership Team (ELT), a Science Leadership Team (SLT) with support from an MDBA Implementation Team. The interactions between the Governing Panel, ELT and SLT are moderately effective and efficient.

Overall, the operation of the *Governing Panel* was judged as having processes that are moderately efficient and effective. It is generally well-coordinated with the ELT, SLT and consortia leads and its processes are well documented, although not very transparent. However, the Governing Panel should consider possible improvements to the diversity of the Panel, particularly with regard to First Nations expertise.

The operation of the *Executive Leadership Team* was found to be moderately efficient and effective. Its operations could be more effective with: more frequent meetings and less time dealing with administrative processes; greater focus on the integration of the research outputs; and greater focus on ensuring project outputs are in a form that assists with the adoption of the new knowledge (i.e., synthesis).

The *Science Leadership Team* has been moderately effective in its major tasks - science leadership, cross-Theme collaboration and useful knowledge outputs. Modifications to the team's operations that could increase effectiveness include: more frequent meetings (bi-monthly) with less time handling the administrative details; greater focus on the review of research project outputs so they are ready for release; and more time on the integration of the research outputs and a greater focus on ensuring project outputs are in a form that assists with the adoption of the new knowledge.

The MTE considers that there could be gains in both efficiency and effectiveness of governance if the ELT and SLT were merged.

The MDBA *Implementation Team* has been moderately efficient and moderately effective. They have effective administrative and project management systems in place with each project deliverable well monitored and with detailed records available. Effectiveness has been reduced due to the constant changing of staff. Additionally, there is some concern that too much administration is required of the Theme leads and that the approval process for project deliverables (and particularly research outputs) could be streamlined and made more efficient.

Design and planning

The *initial planning* of the strategic research program was moderately efficient and effective. The scope of the strategic research program was largely set by the establishment of the four Themes which reflected the thinking at the time regarding the broad areas for which new knowledge would be required for the Basin Plan Review, namely: climate change adaptation; upgraded hydrology given that water flow is the major driver of the Basin Plan; environmental outcomes; and social, economic and cultural outcomes. A Research Prospectus based on the four Themes was prepared and identified 14 key research questions. The Prospectus was then used with a tender process to select two consortia (CSIRO for Themes 1 and 2 and La Trobe University for Themes 3 and 4). The following issues were identified with this process that should be considered in any future research program:

- A government tender (procurement) process is not necessarily the best way to contract transdisciplinary research that needs to be built on partnerships and having discipline expertise in each project/theme and preparedness to interact across projects/themes
- Failure to engage First Nations people in the initial design of the research questions may limit the effectiveness of adoption of the research outputs into policy relating to First Nations
- The selection of two consortia has made it difficult to achieve integration between the Themes - WERP is a multidisciplinary but not transdisciplinary research program.

Program level documentation was found to be appropriate and moderately effective. An overarching Program Plan or Framework document which details the stages, structure and activities being undertaken, relationship and content of the key program documents, in the one document would be beneficial. All the pieces are present but are disjointed and lack integration.

The initial planning of WERP saw the need for a Monitoring, Evaluation, Reporting and Improvement (MERI) Plan to evaluate performance at two levels: the overall Program level and at the Theme level - the former has been done, but MERI plans at the Theme level have still to be developed.

A *co-design process for each Theme* undertaken to produce Research Implementation Plans (RIP) for each key research question followed the selection of the two consortia. This process occurred over a six-month period, was well planned and executed, and was moderately effective to effective. End-user (particularly MDBA, CEWH and DCCEEW) needs for the research were well considered in the development of the RIPs. It is regrettable that First Nations involvement in Theme 3 and 4 (and perhaps also Theme 1) has not yet been achieved, but it is not too late. It is clear that the current approach is not working effectively and that perhaps a more flexible, adaptive and partnership approach is needed to achieve First Nations involvement.

Implementation

Collaboration: WERP was established to address key research questions relating to environmental, economic, social and cultural aspects of Australian government water policy and programs, and particularly the Murray-Darling Basin Plan Review. It was to be a *transdisciplinary* research program by *integrating* the research outputs from the four Themes. Collaboration between the Theme leads (both research and MDBA) has been very effective, and generally, collaboration within each Theme has also been effective. However, collaboration between the Themes has been poor. There appears good collaboration between Themes 1 and 2, and some possible collaboration between Theme 2 and Theme 3, but Theme 4 seems largely isolated from the other Themes.

This ineffective collaboration between the Themes means that opportunities to better integrate research across the environmental, economic, social and cultural areas are being missed. The Governing Panel should consider implementing a process (perhaps the appointment of one or more 'knowledge brokers', via the Synthesis Activities investment stream) to assist in identifying and organising integration opportunities between the Themes.

Project management: Each Theme has an effective process in place for the management of their research projects. The relevant MDBA Theme leads are closely involved in these processes. Additionally, each Theme has a process for considering the progress of all projects in the Theme on a less regular basis (3-6 monthly). The efficiency of the processes could be improved if there was greater clarity about the deliverable and perhaps a more streamlined report approvals process.

Communication and engagement: The Communication, Adoption, Transparency and Evaluation (CATE) Framework is the overarching guidance for communication and engagement for WERP. The engagement between the research Themes and the MDBA Theme leads has been very effective. Also, engagement with the other Commonwealth agencies (CEWH and DCCEEW) has been effective. However, communications and engagement with other potential end-users (through the End User Advisory Groups) has been less effective and is an area in which improvements are required. It is understood that an update to the Engagement and Adoption Plan (EAP) is being developed that will incorporate integration and synthesis of research findings and communication to target audiences, and will also focus on engagement between WERP and the Basin Plan Review team that has been lacking to date.

Outputs and outcomes

Engagement and adoption: The path to adoption of the new knowledge being generated by WERP is being guided by the EAP. This is highly appropriate as effective engagement and increased adoption of the knowledge generated are crucial to ensuring the WERP objectives are met. However, the current plan is heavily focused on engagement with key stakeholders with little detail on how this engagement will result in useful knowledge products and adoption of the new knowledge. Additionally, it is required that the Plan's *effectiveness, efficiency and appropriateness* is evaluated 6-monthly in line with the WERP MERI Plan. However, there is no evidence that this is occurring and the Governing Panel is urged to update the processes to address this deficiency.

There is concern that too much administration is required of the Theme leads and that the approval process for project deliverables could be streamlined and made more efficient. For example, the flowsheet showing the number of personnel involved in the review and approval of contracted Theme deliverables seems inordinately complex and inefficient. An efficient and effective process for the approval of final reports will become increasingly important in the next two-years as research projects are completed.

Progress: Progress of the strategic research projects within each Theme is being very effectively being tracked, especially via the tracking of progress deliverables and the regular update reports to the Governing Panel. Broadly, there appears to be good progress with Themes 1, 2 and 3 with confidence that their research projects will be completed on time. However, there are considerable concerns with the progress of the First Nations projects in Theme 4, and some concern expressed that the research in this Theme is too academic. The First Nations projects in Theme 4 are being developed by the La Trobe University consortium in partnership with MLDRIN. It appears that the relationship between MLDRIN and La Trobe University are good, but that they are somewhat strained between MLDRIN and the MDBA and the WERP Governing Panel. The other concern with progress is the apparent lack of a transparent process for adoption - the translating, synthesising and 'packaging' research outputs into forms that can assist with water policy and management generally and be specifically used in the Basin Plan Review.

Likely outcomes: It has only been possible to provide a high-level assessment of likely outcomes. End users (MDBA, CEWH, DCCEEW) seem confident that the Program's outputs will be of use to them.

However, as indicated above there are two areas that need attention if WERP's outcomes are to be achieved:

- There needs to be a process developed to synthesise research outputs into useable products, and particularly products focused on quadruple bottom line decision making (i.e., environmental, economic, social and cultural)
- The adoption of these products needs to be 'driven' rather than occur organically. It appears that at present, relationships established by the research teams with end users are the causal link between outputs and adoption. There is also a need to account for legacy and processes for adoption to take place beyond the completion of WERP in 2025.

Key evaluation questions

Do the program artefacts (documents) provide a sound description of how MD-WERP is designed and being managed?

In general, the WERP documentation is comprehensive and thorough, and provides a good description of the planning and implementation of the Program, but much of the detail is not publicly available. Following good management practice WERP has a MERI Plan which requires evaluation mid-term (this report) and at the end of the Program. However, this Plan has a number of deficiencies including: a lack of attention to the collection of information related to the evaluation indicators; a requirement that the EAP be evaluated at 6-monthly intervals which does not seem to be occurring; a requirement that each Theme prepares and actions a MERI Plan - again this has not occurred; and no guidance on a culturally appropriate evaluative approach for the review of the social, economic and cultural Theme 4. The current WERP MERI Plan needs to be urgently updated and fully implemented.

Is the management and governance of the program rigorous?

A robust governance structure has been established for WERP with direction and oversight provided by a high-level Governing Panel. Overall, the operation of the Governing Panel was judged as having processes that are moderately efficient and effective involving well documented processes, although these do not appear to be particularly transparent. The Governing Panel should consider possible improvements to the diversity of the Panel, particularly the addition of First Nations expertise.

WERP has an effective administrative and project management system which tracks the deliverables of each project and with detailed records available, although an improved document management system would aide in finding such material more quickly. Additionally, each research Theme has an effective management process in place for their research projects and with the relevant MDBA Theme leads closely involved. The efficiency of the project management system could be improved by greater clarity about the project deliverables and a more streamlined report approvals process.

To date, engagement with key stakeholder (MDBA, CEWH and DCCEEW) has been quite effective and the continued application of the WERP EAP should ensure this engagement continues. However, engagement with the EUAGs has been less effective. In particular, their advisory role is not fully appreciated by some and needs to be reinforced. Some state representatives feel less engaged because of the rather infrequent meetings. Some more regular progress updates to EUAG members may help.

Is there clarity on what is being delivered by the program?

Clarity on what is being delivered by WERP is patchy. The Theme leads (research and MDBA) and the governing groups (Governing Panel, ELT, SLT) have a clear view of the research projects and what they are intended to deliver. However, the interviews made it apparent that many involved with WERP (particularly some members of the EUAGs) only really gained an understanding of what was being done after attending the recent Symposium. Suggestions from the interviews that could assist in improving the clarity of the Program outputs include:

- Preparation of a document that provides a simple explanation of each project (the research question, likely outputs, how the knowledge will be used and by whom) - the information in the RIPS is too detailed
- The interrelations between projects where relevant - it should be possible to prepare a graphic showing the research projects and their interrelationships
- Some indication of how the knowledge from different research projects will be synthesised into transdisciplinary products that can be used for quadruple bottom-line decision making involving some or all of environmental, economic, social and cultural aspects.

Is reasonable progress being made and is the program on track to deliver its promises?

Progress

As noted above, progress of the strategic research projects within each Theme is being effectively tracked, with regular updates provided to the Governing Panel. Broadly, there appears to be good progress with Themes 1, 2 and 3 and confidence that the research projects will be completed on time. However, there are considerable concerns with the progress of the First Nations projects in Theme 4. It appears that relationship between MLDRIN and the La Trobe University consortium are good, but that they are somewhat strained between MLDRIN and MDBA and the Governing Panel. The other concern with progress is the apparent lack of a transparent process for the synthesis and 'packaging' of the research outputs into forms that can assist with water policy and management generally and be specifically used for the Basin Plan Review.

On track to deliver promises?

WERP has two sets of outcomes/objectives that could be the 'promises' referred to in the question, these being:

- The three high level outcomes: improved water policy, with respect to achieving Basin Plan objectives; improved capacity to manage risks with respect to water availability and water use; and improved river operations and water management outcomes.
- The five strategic objectives: maximise the value to water reform and management from investment; leverage co-investment with research providers and key stakeholders; facilitate adoption of research by advancing cooperation between users and researchers; invest in applied research that delivers better informed environmental water management decisions by Commonwealth agencies and improved outcomes for communities; and be a platform from which to launch a more enduring research program.

The MTE found that there has been considerable thought and discussion about the outputs of the strategic research and their usefulness to the main end-users (MDBA, CEWH and DCCEEW) via the 'benefits realisation mapping' process. Whilst each of the Themes has mapped the expected outputs from each project to medium-term outcomes and then to benefits/impacts (economic, environmental, social and First Nations)¹ and finally to the three WERP outcomes (listed above), the realisation pathways are not fully articulated in the draft material available to the MTE. The relationship to the Risk Management Plan and MERI Plan also needs to be clarified. Also, there is little to no information on how benefits will be measured, or when, and what the benefits reporting mechanism might look like - there are critical considerations relating to the effectiveness of benefits realisation².

It would have been useful for answering this question if there was some reporting on the medium-term outcomes identified in the benefit mapping. This appears not to have been done. It is recommended that a process for regular (say 6-monthly) updating of the expected *outcomes* from

¹ There is no consistency - some Theme benefits maps have three endpoints and some four.

² Williams et al. 2020, 2023).

each project be developed - regular reporting on the *outputs* from each project is currently undertaken via the progress updates and the system for tracking project deliverable.

Is it likely that the program outputs will be utilised by end users and create a positive impact?

Again, it is difficult to answer this question at this stage of the Program. This is particularly so given the lack of clarity on how the project outputs will feed specifically into management and policy needs. This may become clearer, at least for the needs of MDBA, as WERP links more closely with the Basin Plan Review team. Finalisation of the benefits mapping will potentially help inform this question. It was noted that most interview participants were positive about the progress and potential impact.

Evaluative judgement - summary statement

The WERP is of significant value and merit. Overall, the processes used to conceive, design and implement the Program are largely effective and efficient. WERP documentation is comprehensive, thorough, and mostly effective in providing a good description of the planning and implementation of the Program. Governance processes, including operation of the Program structure and Program management, are moderately effective to effective. The co-design activities were largely appropriate, with some exceptions, and collaboration is considered to be largely effective although improved interaction with the EUAGs is needed.

Overall clarity on what is being delivered needs some work, again mostly with the end users. Most of the research is on track, with a few exceptions, however the packaging of the outputs for adoption needs to be addressed further. Realisation of benefits is a work in progress, but requires detail on how benefits will be measured, and when they will be assessed as being delivered.

Recommendations for improving the Program

Several areas of concern and possible improvements have been identified that if addressed over the next year or so would assist the Program to meet its objectives.

It is recommended that:

- 1 The Governing Panel consider changes to improve diversity in membership, particularly through the inclusion of First Nations expertise
- 2 Consideration be given to merging the ELT and SLT, and including key members of the MDBA Basin Plan Review team – going forward their efforts should be focused more on the end products from WERP and their adoption, particularly for the Basin Plan Review
- 3 The Program and project management administrative requirements be reviewed to make them more streamlined and efficient - this should include development of an improved document archiving system and streamlining of the process for approval of deliverables and final reports
- 4 The Program Plan be updated or a new document prepared - this is a high-level description of WERP, including the vision, objectives, all the relevant process, key documents, structure, staging, roles and responsibilities - it is a map of the complete program
- 5 A new document or an updated version of the EAP be prepared that clearly identifies the research (knowledge) outputs and how they will be used – this should include an updating of the Theme benefits maps to include detail on the products that will be produced and how they link to the benefits and Program objectives
- 6 Consideration be given to appointing one or more 'knowledge brokers' to assist in integrating and synthesising the research outputs into 'knowledge packages' to improve the likelihood of adoption in both the policy and management space and to help 'drive' the adoption process (Note: a clearer distinction between what is an output, outcome, impact and benefit is needed as these terms are frequently used interchangeably)
- 7 The MERI Plan be updated as a priority to focus on the end of program evaluation including:

- 7.1 Outline the preferred approach and design of the end of program evaluation with reference to benefits realisation/change management outcomes; either designed by the evaluators or shared with the evaluators prior to commencing the outcome evaluation
- 7.2 Include explicit consideration of how to undertake evaluation of First Nations projects in a culturally appropriate manner including closing the loop in an appropriate fashion
- 7.3 Refine the key evaluation questions to ensure they better align to the Program objectives, intended outcomes and Basin Plan Review needs
- 7.4 Update of the Theory of Change, if retained, to include assumptions (causal connections, events, and conditions) and feedback loops³; alternatively refine the Program logic – neither are considered currently fit for purpose
- 7.5 Provide clarity on the relationship to the benefit realisation mapping and measures of success
- 7.6 Produce and implement the MERI Plans for each Theme - include sub-program logics (updated impact pathways may be fit for purpose) and cross reference/align to benefits realisation mapping
- 7.7 Confirm the performance indicators to be monitored at Program, Theme and project level - identify and collect data to addresses performance measures and ensure data and reports are accessible to evaluators (database/document storage system)
- 7.8 Clarify the audience needs for the evaluation and report
- 7.9 The end of program evaluation be undertaken by independent evaluators
- 8 The CATE Framework is updated to explicitly state what are the Synthesis Activities (third investment stream) planned, how they will be targeted at appropriate end users, and who has responsibility for their creation and delivery
- 9 The Governing Panel seek further advice on ways to better engage with First Nations groups to ensure the current First Nations-led projects in Themes 3 and 4 are initiated and successfully completed
- 10 The Governing Panel give specific consideration to a process to action the Program objective: '*be a platform from which to launch a more enduring research program*'. This could include: making the case for a continuing research program to support Basin Plan implementation into the future; consideration of the best model for such research (e.g., the current procurement, consultancy type model vs other models such as the National Environmental Science Program model); links to the One Basin CRC and other water research initiatives; how the lessons from the WERP experience may be used to better focus an enduring water research program as part of the renewal of the National Water Initiative
- 11 The benefit realisation maps include the Tactical projects and Synthesis Activities outputs, and be updated to address realisation across the quadruple bottom line (environmental, economic, social and cultural)
- 12 A 'lessons learned' document be developed to provide an enduring legacy focusing on leadership at all levels, interface between science-policy-management, and benefits - closing the loop. Further, the Governing Panel should consider how the WERP data and documents are 'housed' so it is available in the future.

³ See Mayne 2023 and references therein

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1 INTRODUCTION

This report provides a Mid-term Evaluation (MTE) of the Murray-Darling Water and Environment Research Program (hereafter WERP) conducted by Prof Barry Hart (Director, Water Science Pty Ltd) and Dr Rhonda Butcher (Principal Consultant, Water's Edge Consulting).

WERP is a \$20 million investment by the Australian Government to improve water management across the Murray–Darling Basin in response to the fish deaths in the lower Darling River in December 2018 and 2019 (Vertessy et al. 2019). Specifically, WERP seeks to address knowledge gaps specific to water management and ongoing Basin Plan implementation and to provide new knowledge relevant to the 2026 Basin Plan Review. Further detail on WERP is provided in Section 3 below.

The key evaluation questions set by the WERP Governing Panel are:

1. Do the program artefacts provide a sound description of how MD-WERP is designed and being managed?
2. Is the management and governance of the program rigorous?
3. Is there clarity on what is being delivered by the program?
4. Is reasonable progress being made and is the program on track to deliver its promises?
5. Is it likely that the program outputs will be utilised by end users and create a positive impact?
6. How would you recommend we improve the delivery of the program?

In answering these questions, we sought to evaluate the program use the following program level indicators:

- Governance processes
- Activities - Co-design
- Activities - Collaboration
- Outputs – Communication and adoption
- Progress towards outcomes
- Likely Impact of the program

This evaluation has not reviewed in any detail the actual research projects being undertaken. This will be a task for the end of program evaluation of WERP.

The report is structured as follows: the aims and objectives of WERP are first described; then the evaluation process undertaken; followed by the results of the MTE process. The last two sections then address the key evaluation questions and recommendations for possible changes to WERP.

1.1 Scope limitations

The MTE is an independent evaluation and has been constructive and formative in nature where possible with the intent of assisting the MDBA to make improvements to the program processes where appropriate. However, the scope of this MTE was extremely limited and does not reflect what the evaluators would consider a comprehensive MTE. The MTE includes all current WERP projects as of June 2023, but was constrained to an estimated two-week timeframe for document review and interviews, which was considerably exceeded. Note that the limited number of Program outputs available somewhat constrained this evaluation, although Program outputs will begin to increase considerably from June 2023. The number of interviewees engaged in the MTE was a limiting factor but was somewhat alleviated via snowballing. Key scope issues are outlined in Table 1.

Table 1. Constraints limiting the scope of the MTE.

| Constraint | Explanation of the Constraints' Influence on the Project |
|--|---|
| <i>Time</i> | The customer (MDBA) required the evaluation be limited in time. This constrained the project to a small number of interviews and will influence the evaluation findings. The funding was limited and precluded an in-depth technical evaluation with the main focus on governance processes. |
| <i>Limited document review and select interviews</i> | A full technical compliance review was not feasible within the budget or timeline - thus the MTE was limited to a high-level program process review. The number of interviews was constrained by the budget initially to 13 interviews with 19 participants. This however was expanded to 22 interviews and 33 participants through snowballing. Of particular concern is the limited number of state representatives and End User Advisory Group members that were able to be interviewed. |
| <i>Alignment to MERI plan and MTE Terms of Reference</i> | Neither the WERP MERI Plan nor Terms of Reference were provided prior to commencement of the evaluation and as such this MTE does not fully align with the expected outcomes specified in both documents. Additionally, questions stipulated by the Governing Panel to be addressed in the MTE do not directly align with the approach in the WERP MERI Plan, nor were they expressed as evaluative questions. |
| <i>Lack of culturally appropriate evaluative questions/approach</i> | The MERI Plan does not provide guidance on a culturally appropriate evaluative approach for the review of the social, economic and cultural Theme 4 – in particular, the participation and contribution of First Nations peoples. The MDBA First Nations Protocol and Style Guide and ICIP requirements were considered where relevant to the evaluation. |

1.2 WERP

As noted above, the WERP is a \$20 million investment by the Australian Government to improve water management across the Murray–Darling Basin and specifically to provide new knowledge relevant to the 2026 review of the Basin Plan.

The main stakeholders for the WERP outputs are the Murray-Darling Basin Authority (MDBA), the Commonwealth Environmental Water Holder (CEWH) and the Department of Climate Change, Energy, Environment and Water (DCCEEW) as the Commonwealth clients and the researchers associated with the two research consortia. We understand the Basin states were invited to become partners in the Program but declined. However, the states are involved in the WERP through membership of the End User Advisory Groups (EUAGs) discussed later in this report.

The WERP has three high level outcomes (MDBA 2021):

- Improved water policy, with respect to achieving Basin Plan objectives

- Improved capacity to manage risks with respect to water availability and water use
- Improved river operations and water management outcomes.

Additionally, there are five strategic objectives (MDBA 2021):

1. Maximise value to water reform and management from investment
2. Leverage co-investment with research providers and key stakeholders
3. Facilitate adoption of research by advancing cooperation between users and researchers
4. Invest in applied research that delivers better informed environmental water management decisions by Commonwealth agencies and improved outcomes for communities
5. Be a platform from which to launch a more enduring research program.

Aligned with the outcomes and objectives, WERP has three streams of investment (activities): *strategic research*, *tactical investments* and *synthesis (adoption) activities* as part of the communication, engagement, adoption and transparency (CATE) stream of investment.

The indicative budget for the Program is:

| | |
|--|-------------|
| • Strategic research | \$14,200,00 |
| • Tactical investments | \$800,00 |
| • Communication, Engagement and Adoption | \$2,000,000 |
| • Administration | \$2,000,000 |
| • Contingency | \$1,000,000 |

Within each stream of investment there are a range of projects and activities proposed. WERP has been established to deliver research activities from 2020 to 2025 with most of the activities commencing in the financial year 2021-2022 and occur over four years. The program is partly *transdisciplinary* in that it is intended to integrate knowledge from different science disciplines and (non-academic) stakeholder communities, to help address complex societal challenges (OECD 2020), in this case improved water management and informing the Basin Plan Review.⁴ However, it was not designed as a transdisciplinary program as the research questions are not all transdisciplinary in nature, nor are the themes comprised of researchers from each discipline. In this sense the communications, engagement and adoption component of the project is equally important as the strategic and tactical components (introduced below).

Four themes were identified as the focus of the strategic research component of the program, each addressing a series of research questions.

- **Theme 1: Climate adaptation** is addressing five research questions intended to synthesise current knowledge, deliver new modelling methods, and generate projections of plausible futures of water availability in the Basin. Adaptation options will be identified and evaluated for their efficacy across economic, environmental, social and First Nations' values.
- **Theme 2: Hydrology** is focussing on low flows and floodplain flows. The low flow component is aimed at improving the simulation of low flows and the floodplain component on improving prediction capabilities relating to flood inundation extent, depth and duration and floodplain volumes.
- **Theme 3: Environmental outcomes** is focusing on improving understanding of low flow requirements of environmental assets and values under a changing climate; prioritisation of

⁴ There are important differences between *transdisciplinary research* and other types of research programs which can influence how an evaluation is designed. Most notably there are clear distinctions between interdisciplinary and transdisciplinary research that are evident in the program logic and theory of change of programs (Wright Morton et al. 2015, OECD, 2020).

environmental assets, values and functions for conservation and restoration; and improving predictive ecological modelling in relation to water management outcomes.

- **Theme 4: Social, economic and cultural outcomes** is focused on the relationship between riverine health and social, emotional, and economic well-being. Three areas of investigation include; the relationship between ecological outcomes and social, economic, and cultural benefits of environmental water; how the cultural, economic and social outcomes for First Nations people can be improved; and what makes community adaptable and resilient to a future with less water.

1.2.1 Strategic Research

Purpose: Applied research investments delivered by a collaboration between the Australian Government and the WERP Research Consortia (see below) to co-design, co-invest and deliver applied research by mid-2025.

The initial planning: Preparation of a *Research Prospectus* which provided a series of 14 research questions listed under four broad research Themes: Climate adaptation; Hydrology; Environmental outcomes; and Social, economic and cultural outcomes (Australian Government 2020). Prof Ian Prosser was contracted by the MDBA as Science Advisor⁵ to consult with staff in the three relevant Commonwealth agencies (MDBA, CEWH and DCCEEW) to identify key research questions. This information was then synthesised by Prof Prosser in collaboration with key MDBA staff to produce the Research Prospectus, which was subsequently agreed to by the Governing Panel.

MDBA then conducted a *Tender Process* to procure the research expertise for WERP. The Request for Quote was circulated widely and sought bids from research organisations (preferably consortia) seeking to undertake research in one, two, three or all four of the Themes.

Selection process: Five bids were received - three sought to address all four themes; one sought to address two themes; and one sought to address one theme. A rigorous selection process was then undertaken by a committee of four (Prof Prosser plus representatives of MDBA and DCCEEW) guided by a detailed Evaluation Plan⁶.

Research consortia: Two consortia were recommended by the selection panel and approved by the Governing Panel - CSIRO for Themes 1 and 2, and La Trobe University for Themes 3 and 4. Each consortium was required to make a 40% co-contribution for each Theme for which they were contracted. The two consortia subsequently undertook an extensive co-design process to produce Research Implementation Plans (RIPs) for each Theme (see Section 2.2.2 for details).

1.2.2 Tactical investment

Purpose: Short and responsive investments delivered by a range of research and delivery partners, with each project likely to be completed within a six to 12 months timeframe. Tactical projects are proposed by the MDBA staff associated with WERP. They develop the scope, plan and outcomes for the project and submit the proposal to the Governing Panel for approval. If accepted the proposal is run by the MDBA team that proposed it. They report and provide updates to the Governing Panel. The ELT and SLT have visibility of these Tactical projects, but do not have any capacity to approve or reject them.

Projects:

A number of tactical projects have been funded as indicated below. For further details see <https://getinvolved.mdba.gov.au/md-werp-tactical/widgets/365902/faqs#87570>.

- Explaining the causes of reduced flow through the Northern Basin (completed)
- Innovative sweep, scoping and development of drone-based waterbird monitoring (completed)

⁵ WERP Governing Panel meeting number 17, 6 March 2023.

⁶ MDBA (2020). Evaluation Plan for the request for tender for the provision of strategic research services under the Murray-Darling Water and Environment Research Program, RFT Number: 2020-01

- Hydroclimate storylines (completed)
- Waterbirds foraging habitat (ongoing)
- What is happening with riverbank stability along the River Murray (ongoing)
- Knowledge synthesis of the latest science on blue green algae and an assessment of whether blooms are becoming more frequent and severe (ongoing).

The Governing Panel have also recently agreed to two additional tactical projects⁷:

- Operational range of River Murray fishways
- Social, Economic and Cultural values – condition, trends, drivers of change and future risks.

1.2.3 Synthesis activities

This investment stream is variably described in the documents reviewed, including as Synthesis activities^{8,9}, Practical information for water managers¹⁰ and as Communication, Engagement, Adoption and Transparency¹¹. Many of the Tactical projects include synthesis of knowledge specific to the project, but these are considered separately to this investment stream. The Communication, Adoption, Transparency and Engagement (CATE) Framework (see Section 2.2.2) describes this investment stream as synthesis and explainer products and activities which synthesise new and existing science for a variety of audiences, which includes communication and adoption support.

There is no information on what synthesis products are being produced.

1.3 Evaluation process

Program evaluation is an assessment, conducted as systematically and impartially as possible, that analyses the level of achievement of both expected and unexpected results by examining the results chain, processes, contextual factors and causality using appropriate criteria such as relevance, effectiveness, efficiency, impact and sustainability (UNDP 2019).

The purpose of an evaluation is to provide credible, useful and evidence-based information that enables the timely incorporation of its findings, recommendations and lessons into decision-making processes. This MTE aims to provide an assessment of the WERPs achievements against Key Evaluation Question relating to the efficiency and effectiveness of the program with the outcomes being used to inform program improvement and to demonstrate program successes as specified by the Governing Panel and in the Request for Quote (RFQ).

Theory of Change (ToC) is a method that can be used for designing and undertaking evaluations by mapping the assumed relationships between activities and short, medium and long-term outcomes of an intervention. This should be done at program inception and should make explicit the assumptions regarding why and how change occurs (Kny et al. 2023; Claus et al. 2023). ToC should detail the assumptions behind the causal steps in the sequence of moving from process to outcome. In a simplified linear form, it can be used as a framework which outlines how the inputs, activities and outputs of a program connect to the desired outcomes of the program in order to deliver on the objectives of the program (United Nations Environment Program 2017).

The design of this MTE was built around a simplified ToC (Figure 1) and included governance processes, co-design activities, collaboration activities, outputs (progress check) and likelihood of outcomes

⁷ MD-WERP Governing Panel meeting number 2, Agenda Item 3, 11 December 2019

⁸ MD-WERP Annual Progress Report 2020-2021

⁹ MD-WERP CATE Framework, January 2023

¹⁰ MD-WERP Annual Progress Report 2021-2022

¹¹ MD-WERP Overview & Progress April 2023, ppt presentation

being achieved for policy and management end users (i.e., to what extent will the desired impact be achieved).

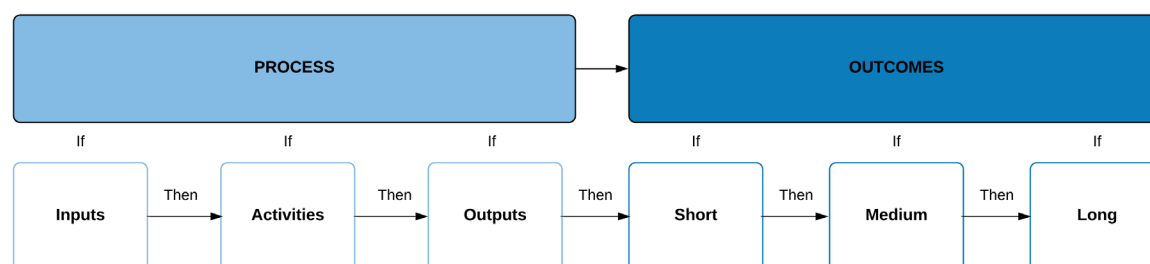


Figure 1. Simplified linear Theory of Change. Left side of the graphic relates to process evaluation, the right-side relates to outcome evaluation.

The WERP MERI Plan includes a program logic (referred to as a Theory of Change) (MDBA 2021) along with a specified set of high-level evaluation questions (see Section 2.2.2 and Appendix B). The WERP MERI Plan was to be further developed to provide additional detail on the mid-term and final evaluations but has not occurred to date. The MTE was to address the six questions specified in the RFQ and in Terms of Reference for the MTE¹².

A structure for the MTE that evaluated components of process according to a simplified ToC was adopted given the evolving nature of the WERP MERI Plan and to align the objectives, activities, and outcomes with the set of six MTE key questions specified by Governing Panel, and the high level KEQs specified in the WERP MERI Plan.

Evidence for the MTE was obtained in two ways as outlined below.

1.3.1 Document review

The WERP is very well documented, with the items reviewed organised into groups corresponding with the main areas of the evaluation:

1. Governance documents - included Governing Panel meeting agendas and minutes; minutes of the ELT and the SLT meetings; risk assessments; committee terms of reference; and program level documentation including the Program Plan, Risk Management Plan and guiding documents such as MERI Plan and the CATE Framework
2. Co-design and planning documents - included documents relevant to the pre-contract stage (Research Prospectus) and the co-design of the strategic research projects in each Theme; RIPs and Work Orders
3. Outputs - included Theme progress reports; Annual Progress Reports; Health Check report; CATE plans and processes; WERP symposiums; web site information
4. Outcomes - included final project reports for work completed by June 2023 and which had gone through the release process (this was a limited subset of the products that will ultimately be delivered).

A list of the documents reviewed is included in Appendix A.

1.3.2 Semi structured interviews

These were undertaken with 33 stakeholders selected to cover: internal stakeholders (e.g., Governing Panel, members of ELT and SLT, Implementation Team, Commonwealth theme leads) and external stakeholders (e.g., Consortium leads, Consortium theme leads, First Nations, Policy end users, and

¹² The Terms of Reference were not discussed with the authors and were not supplied until post the contract being signed. The existence of the MERI Plan was also not in the RFQ.

EUAG members). The initial list of participants suggested by the WERP Implementation team was expanded via snowballing and the need to seek clarification around certain processes.

The interview questions were organised into five categories: governance processes; co-design and planning; collaboration; progress towards outcomes; and likely impact reflecting the major components of a simplified Theory of Change (see Appendix B and Figure 1). All interviews were recorded after seeking approval from participants, with audio files transcribed and brief notes of the main points sent to each interviewee with an invitation to modify if needed and to respond to additional questions of clarification.

More detail on the evaluation design is presented in Appendix B.

2 EVALUATION RESULTS

2.1 Governance processes

A robust governance structure has been established for WERP as shown in Figure 2 with the interaction between the various leadership teams and groups illustrated in Figure 3.

The function of each level of governance and an evaluation of performance is provided below.

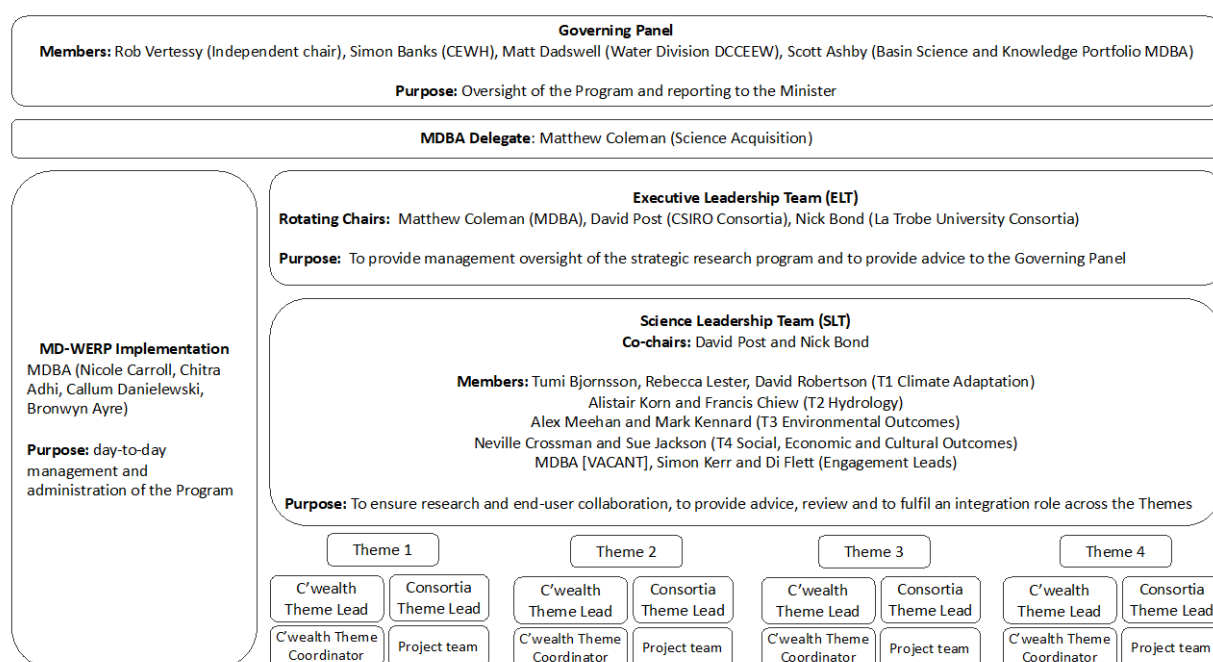


Figure 2. Governance structure for MD-WERP as of 15/10/2023 (Source: Document obtained from the Implementation Team).

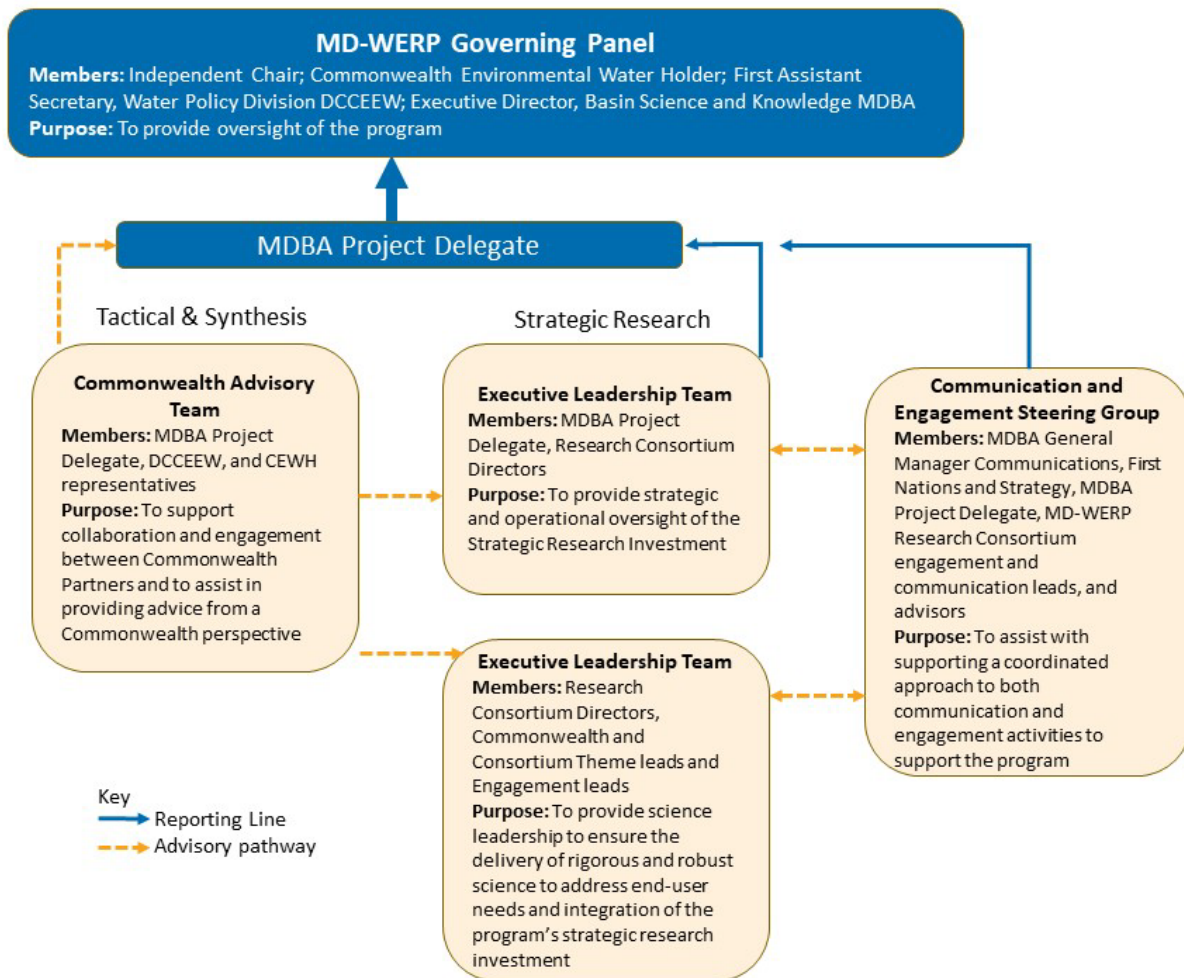


Figure 3. Interaction between leadership teams/groups and the Governing Panel at 30 June 2023 (Source: MDBA Implementation Team).

2.1.1 Governing Panel

The Governing Panel was established in August 2019 with membership including Prof Rob Vertessy (Independent Chair) and members from MDBA, CEWH and Department of Agriculture and Water (now DCCEEW). The Governing Panel is still chaired by Prof Vertessy with members (and delegates) from MDBA, CEWH and DCCEEW although there has been considerable change in the members representing MDBA, CEWH and DCCEEW. The First Assistant Secretary of DCCEEW's Water Policy Division represents both First Nation's Branch and Basin and Science Policy Branch interests, and the MDBA has senior representation on Governing Panel that represents and reflects the MDBA's First Nation's expertise.

The Governing Panel meets approximately four times per year and has the following Terms of Reference:

- **Leadership:** provide guidance on knowledge priorities; provide science advice and leadership; raise profile and importance of water research, including increasing research investments; facilitate Minister and government briefings and engagement
- **Program oversight:** approve research prospectus and program design; monitor program operation and performance; approve knowledge products and activities; facilitate processes that connect researchers with end users (policy makers and water management decision makers)
- **Budget:** confirm budget and investment development process; approve annual budget

- *Reporting*: contribute to an annual Program Evaluation and progress reporting; provide an annual report to Commonwealth Minister responsible for water

Evaluation

Document review

This evaluation has reviewed all Governing Panel agenda items and meeting minutes (See Appendix A), which provide a good record of the discussions and decisions in planning and implementing WERP.

Interviews

Most of the participants, who had interaction with the Governing Panel, indicated it was operating moderately effectively, particularly in providing effective leadership. Having Governing Panel representatives from each of the key agencies who are the primary end users of the outputs from WERP ensures consideration of the science needs for both the Basin Plan Review and other Australian Government needs. However, the Panel may not be able to fully represent the skill set required to provide guidance of the science across all four Themes.

The turnover of membership was mentioned numerous times by interviewees, but at this high level of the decision making and oversight of the program, the impacts of frequent membership turnover was not considered to be problematic. It was noted that the independent Chair Prof Vertessy had been maintained since inception, and his leadership is considered very important, particularly given the turnover of other members.

Membership composition options were discussed with participants to gauge if it was felt a different composition would be more appropriate, effective and efficient. Participation and/or involvement of the Consortia leads was discussed with varying responses. Some thought their involvement would be beneficial, whilst others felt it was not necessary. Currently, the inclusion of the Consortia leads in Governing Panel meetings occurs on an as-needed basis, their inclusion is traded-off in terms of providing scientific expertise and leadership while the Governing Panel retains the authority of the funding agencies.

The other major issue identified by numerous participants was the lack of diversity within the Governing Panel both by gender and First Nations representation. While it was reported that the Governing Panel acknowledged this as an issue at the recent WERP symposium, it is possible that having a more diverse membership with skill sets reflecting the research themes being undertaken in WERP may be more effective and more appropriately meet the ToR for the Governing Panel.

There was also comment about the detail of the documentation considered by the Governing Panel at each quarterly meeting. It was suggested that efficiencies could possibly be made if the key papers were first considered by the ELT with shortened papers and recommendations made for the Governing Panel's consideration.

Findings

As the oversight body for WERP, it is crucial that the Governing Panel is both effective and efficient. Interactions between the Panel and the other leadership teams (e.g., consortia, ELT, SLT) appears to be moderately effective. The Implementation Team act as an efficient and effective Secretariat to the Panel. Overall, the operation of the Governing Panel was judged as having processes that are moderately efficient and effective. Governing Panel processes are well documented, but do not appear to be particularly transparent.

The Governing Panel should consider possible improvements to the diversity of the Panel, particularly the addition of independent First Nation expertise.

2.1.2 Executive Leadership Team (ELT)

The ELT's main role is to provide management oversight of the Strategic Research investments and advice to the Governing Panel. The ToR include (from Annual Progress Report 2020-21):

- Provide strategic and operational oversight on development and delivery of the Program

- Provide recommendations on investments and/or opportunities
- Provide oversight on progress reporting, including any escalation of Program risks
- Review of strategic research outputs to ensure alignment with agreed investments and program objectives.

Membership includes the MDBA Delegate, CSIRO consortia lead and La Trobe University consortia lead, plus observers.¹³ They meet every 2 to 3 months.

Evaluation

Document review

We reviewed minutes from the last four ELT meetings - these appear very procedural and in line with their role in providing management oversight of the strategic research program. The ELT has links to the Governing Panel through two mechanisms: the Governing Panel Chair attends ELT meetings for consortium update and risk agenda items; and the ELT discuss and escalate issues and release of deliverables to the Governing Panel as necessary.

Interviews

There was comment that the ELT meet too infrequently with the suggestion that they should meet monthly. It was considered that shorter monthly meetings with more targeted agendas would increase both efficiency and effectiveness of the ELT. Another reason suggested for more frequent meetings was that number of deliverables (outputs) from the research projects will increase in the next year and the task of reviewing these so they are ready for release will require more frequent contact (and possibly a different mode of operation for the ELT).

Findings

This evaluation found the operation of the ELT is moderately efficient and effective. Modifications to the operations that could increase the efficiency and effectiveness include:

- More frequent meetings with less time dealing with administrative processes
- Greater focus on the integration of the research outputs
- Greater focus on ensuring project outputs are in a form that assists with the adoption of the new knowledge
- Giving consideration to merging the ELT and SLT.

2.1.3 Science Leadership Team (SLT)

The SLT's 'main role is to provide leadership to ensure the delivery of rigorous and robust science to address end-user needs and integration of the Program's investment in strategic research' (WERP Annual Report 2020-2021). The ToR include (Annual Progress Report 2020-21):

- Review and discuss strategic and operational matters associated with the strategic research program
- Provide advice on arising science issues and risks for the program
- Ensure interdependencies between the themes are managed and new opportunities identified
- Review of strategic research outputs, as identified by the ELT
- Identify opportunities for communication, engagement and adoption and ensure research and end-user engagement.

¹³ WERP Director (Deranie Jackson, Program Manager (Kirsty Youngman), Engagement & Adoption Lead (Siobhán Leslie), Simon Kerr (La Trobe comms and engagement/program support), Di Flett (CSIRO comms and engagement), DCCEEW Water Policy team (Marcus Finn)

Membership includes: Research consortium directors, Theme leads (consortium and Commonwealth), engagement leads and observers.¹⁴ The SLT meets quarterly with the meetings chaired by either of the consortium directors.

Evaluation

Document review

Minutes of the last four SLT meetings were reviewed. The agenda's covered: update of key outcomes of Governing Panel meetings; overview of Program status; stakeholder interactions; and detailed discussions on each of the Themes. The SLT appears to be well linked with the ELT, as (according to the SLT Terms of Reference) the SLT reports to the ELT and ELT members attend the SLT meetings.

There is a good record of the Theme discussions covering progress and issues with particular research projects. There was also some discussion of possible linkages between projects¹⁵, but little indication that this led to any integration between particular Theme projects.

Interviews

Interviewees commented that the intent of the SLT - science leadership, cross-Theme collaboration and useful knowledge outputs - was good, but the effectiveness of the group is less than expected. It was recognised that the effective collaboration of researchers from different organisations and different disciplines is challenging, but the SLT was in a good position to make this work. It was suggested that the SLTs ToR could be tightened for the remainder of WERP and that meetings might be more focused if the key discussions were facilitated.

Additionally, it was noted that the SLT has a role in 'integration of the program's investment in strategic research' but does not appear that this body actually seeks to or has achieved any integration. Given that the program will start to produce many research outputs in the next year or so, there was support for the SLT focusing more on the integration of the research outputs into knowledge packages of relevance to the end-user needs. This integration could be assisted by the appointment on one or more 'knowledge brokers' (see Section 2.4 for more detail).

Findings

This MTE finds that the SLT has been moderately effective in its major tasks - science leadership, cross-Theme collaboration and useful knowledge outputs. Modifications to the group's operations in the next year or so that could increase effectiveness include:

- More frequent meetings (bi-monthly) with less time handling the administrative details
- More focus on the review of research project outputs so they are ready for release
- More time on the integration of the research outputs and a greater focus on ensuring project outputs are in a form that assists with the adoption of the new knowledge
- Giving consideration to merging the ELT and SLT.

2.1.4 Implementation Team

The WERP Implementation Team is located within the MDBA Science Acquisition Program (General Manager) and consists of a Director, Program Manager (currently by contract) and a project officer¹⁶. The role of the Implementation Team is to provide day to day management and administration of the Program. We note with concern that two important positions - Senior Communication Officer and Senior Engagement and Adoption Officer - are currently vacant with recruitment unsuccessful to date. In the interim, the Implementation Team is sharing the roles across 3.5FTE staff.

¹⁴ First Nations representative; MDBA Project Delegate; WERP Administration team; CEWO representative; DCCEE representative

¹⁵ For example, Theme 2 input into Theme 3 project 9.3 (SLT Minutes 4 July 2023)

¹⁶ The Team also has positions for a Senior Communications Officer and Senior Engagement and Adoption Officer (both currently vacant)

Evaluation

Document review

The MDBA Implementation Team have a robust project management system in place to monitor the progress of each strategic research project. We have viewed many of these documents including: templates used by the consortia to develop RIPs and other documents (e.g., WERP deliverable description template; Theme Work Orders for year 1 and year 3; the Contract Deliverable Tracker; the flow sheet for review and approval of contracted deliverables).

The MTE relied on the Implementation Team to source and provide documents to be included in the evaluation, and we note their responsiveness was excellent. There are a large number of documents generated by WERP which were in scope for the MTE, ranging from agendas, meeting notes, attachments, various frameworks, strategies, plans, progress reports and many others. However, from an external perspective it is not apparent that a document management system is in place and a logical nomenclature or file naming system appears to be lacking. This made the document review process somewhat challenging as there was no logical connection between documents evident in the document file name.

Interviews

Comments specifically on the essential tasks of the Implementation Team in the management and administration of the Program were few; however, one participant indicated interactions had been somewhat opaque. Most participants focused on aspects of the administration that could be improved or streamlined to make processes more efficient and effective, namely:

- The large number of staff changes that occurred with the Implementation Team, which has led to inefficiencies and divergent views on how to approach a number of issues
- What are believed to be excessive project monitoring and reporting requirements that cut into research time
- A lack of flexibility with the timelines for some of the research activities that have been influenced by floods causing delays in fieldwork and community interviews.

At the time of the MTE the Implementation Team had a role in delivering the CATE Framework due to staff vacancies. Their role is fairly broad and includes the management of various plans, frameworks, and templates, and identifying which deliverables are to be published or promoted. This team is responsible for ensuring appropriate reviews and approvals processes have been undertaken (ICIP, sensitive information, risk, Media Team, ELT, etc.), and to provide guidance to Theme teams and Tactical Project managers on next steps. Overall, the Implementation Team tracks the publishing workflow. The Implementation Team is also instrumental in organising and running events such as the annual symposium and summits. In anticipation of increased activity in the communication and engagement space as the Program progresses, improvements to processes such as tranching deliverables for review and publication are being established. Avenues to improve streamlining of processes are also being considered.

Findings

The Implementation Team has been moderately efficient and moderately effective. They have effective administrative and project management systems in place, however there are still areas in which improvements could be made. The deliverables and timelines of each project are effectively monitored with detailed records available, although an improved document management system would aid in finding such material more quickly. The number of staff changes that have occurred over the life of WERP is an issue regarding the continuity of approach by the Implementation Team. This may also have affected the efficiency of the Implementation Team regarding document management. Staff turnover was also identified as a potential barrier to adoption of WERP outcomes through the loss of relationships and also loss of corporate/Program knowledge, although this is not necessarily restricted to the Implementation Team.

There is concern that too much administration is required of the Theme leads and that the approval process for project deliverables could be streamlined and made more efficient. For example, the flowsheet showing the number of personnel involved in the review and approval of contracted Theme deliverables seems inordinately complex and inefficient.

The MTE considers there would be advantage in the Director of the Implementation Team, consortium leads and Theme leads meeting to discuss changes that could streamline some processes and improve the efficiency of the administrative processes, although it is noted that some effort to streamline processes has occurred already. The role of the Implementation Team in the communication and engagement space is likely to be short lived, however they will continue their role in supporting the organisation of communication activities such as the symposium. Further comments on communication, engagement and adoption are presented in Section 2.3.3.

2.2 Program design and planning

2.2.1 Initial planning (co-design) process

The initial planning and design of the WERP included the preparation of a Research Prospectus (4 Themes with 14 key research questions), a tender process, and the selection of two consortia (CSIRO for Themes 1 and 2 and La Trobe University for Themes 3 and 4).

Interestingly, the Governing Panel did consider whether the Basin Science Platform produced for the Basin Officials Committee¹⁷ (BOC) would provide a useful reference for setting research priorities.¹⁸ However, there is no evidence that the Platform was ever used in the planning of WERP. It should be noted that the Basin Science Platform was developed from a policy and Basin jurisdiction perspective focusing on a risk-based prioritisation of science needs for Basin Plan implementation, not from the research perspective as WERP has been developed. The overlap in timing of the Platform and WERP may contribute to expectation issues from WERP EUAGs.

A Working Group consisting of members from MDBA, CEWH, and the Department of Agriculture, Water and Environment (now DCCEEW) was established in November 2019 to support the engagement activities within and between Commonwealth partners and provide advice and contribute to the administration of the Program (WERP Annual Progress Report, 2019-20).

Evaluation

Document review

Key documents that record the initial planning of WERP were reviewed, namely: the Research Prospectus and the associated co-design process; tender documents; the selection process (including the Evaluation Plan); and relevant Governing Panel minutes.

Some indication of the planning of the Tactical Investment program and the Communication, Engagement and Adoption Framework is provided in the 2019-20 WERP Annual Progress Report. It was acknowledged that the latter Framework would be further progressed once the research consortia were appointed.

A draft MERI Framework was developed in the early stages of WERP and was intended to be used to evaluate the effectiveness of the overall Program (to be undertaken by MDBA) and also at the Theme level (to be undertaken by the consortia) (WERP Annual Progress Report, 2019-20). The Program-level MERI Plan was further developed (MDBA 2021) and provided guidance for the MTE, but there is no evidence that the Theme-level MERI plans were ever developed. Note that the WERP MERI Plan (2021) does not include the key questions identified by the Governing Panel for the MTE; the need for an

¹⁷ Butcher, R., Hart, B. and Barratt, D., (2019). Basin Science Platform Framework. Consultancy report by Alluvium Consulting Australia for MDBA, Level 6, 33 Allara St Canberra ACT 2600.

¹⁸ MD-WERP Governing Panel Minutes Meeting No. 1, 23 August, 2019

updated WERP MERI Plan is discussed in Sections 3 and 4 (see the previous section 2.1.5 for further comment on the WERP MERI Plan).

Interviews

Despite the considerable turnover of staff involved with WERP, it was possible to discuss initial planning processes with a number of people who had been involved from the start of WERP.

The scope of the strategic research program was largely set by the establishment of the four Themes. These reflected the thinking at the time regarding the broad areas for which new knowledge would be required for the Basin Plan Review, namely: climate change adaptation; upgraded hydrology as water management is the major driver of the Basin Plan; environmental outcomes associated with water management; and social, economic and cultural outcomes.

The four Themes were established before Prof Prosser commenced. The MDBA defined a set of specific research questions within each Theme to make the program more manageable as the client and to provide more direction to consortia from the beginning.

Prof Prosser was engaged by MDBA to obtain input on key research questions from a range of MDBA managers and river operations staff and with some CEWH and DCCEE staff. There was little discussion with MDBA policy people. The Basin Plan Review team had not been established at this stage and there was little information on how the review would be undertaken. States were not involved in these discussions, nor was there much interaction with researchers (and other 'thought leaders') because of the potential conflict of interest issues with the subsequent procurement process. No interaction with First Nations peoples or organisations occurred in this process. No workshops were held to garner a more collective view of the research needs. The final Research Prospectus was a joint product of Prof Prosser and MDBA staff.

Interviewees noted that the way the program was designed (four themes, 14 research questions, 2 consortia) meant that integration was difficult to achieve; additionally, integration was not mandated by the Governing Panel. It was observed by a number of those interviewed that the strategic research program is multidisciplinary but not interdisciplinary or transdisciplinary in nature. The result is that to date it is not providing integrated research into quadruple bottom line packages of knowledge for policy and management adoption.

Given that the initial input to the research questions was largely provided by MDBA science staff (and river operators), with a lack of input from policy people, it was suggested by some that the research questions could have been more management and policy targeted. However, interviewees from CEWH and DECEE indicated that they felt they had ample opportunity to influence the initial objectives and direction of WERP.

Some interviewees were of the opinion that a government tender process, with its procurement, legal and risk management requirements, is not necessarily the best way to contract transdisciplinary research since they are somewhat contrary to the ethos of such research which needs to be built on partnerships. It was suggested that research teams can tend to see MDBA as their 'employer' and not as partners. Additionally, it was observed that the selection of two consortia has made it difficult to achieve integration between the Themes.

From a First Nations perspective, this process was not one of co-design. The key research questions were established without consultation and therefore not reflective of the needs or priorities of the First Nations peoples involved in the program. This was a flaw in the co-design process and is not considered best practice. Best practise of co-design with First Nations is more than consultation, it involves equal input to decision making, in this case regarding the direction of the research.

Findings

The initial planning of the strategic research program was moderately efficient and effective. The scope of the strategic research program was largely set by the establishment of the four Themes - these reflected the thinking at the time regarding the broad areas for which new knowledge would be

required for the Basin Plan Review, namely: climate change adaptation; upgraded hydrology given that water flow is the major driver of the Basin Plan; environmental outcomes; and social, economic and cultural outcomes.

The Research Prospectus was jointly produced by Prof Prosser and Dr Gawne (MDBA). The four research themes were established before the process to produce the Research Prospectus started because MDBA wanted a defined set of specific research questions within each Theme to make the program more manageable as a client and to provide more direction to researchers from the beginning.

Prof Prosser obtained information from a range of MDBA managers and river operations staff and with some interaction with CEWH and DCCEE staff, but there was little discussion with MDBA policy people. States were not involved in these discussions. Also, there was little interaction with researchers (and other 'thought leaders') because of the potential issues with the subsequent procurement process.

If the Basin Plan Review process had been further advanced at the time of this initial planning some additional and possibly more relevant policy question may have been identified.

Overall, many interviewees commented that the initial planning, the tender process and appointment of the two consortia was a moderately effective process. However, the following issues have been identified with this process:

- A government tender process is not necessarily the best way to contract transdisciplinary research since they are somewhat contrary to the ethos of such research which needs to be built on partnerships and having discipline expertise in each project/theme not across projects/themes
- Failure to engage First Nations in the design of the research questions may limit the effectiveness of adoption into policy relating to First Nations
- The selection of two consortia has made it difficult to achieve integration between the Themes. WERP is multidisciplinary but not transdisciplinary.

The initial planning of WERP saw the need for a MERI Plan to evaluate performance at two levels: the overall Program level and at the Theme level. The former has been done but MERI plans at the Theme level have still to be developed.

2.2.2 Program level documentation

This section focuses on the appropriateness, or fit for purpose, of program level documents including the WERP Program Plan¹⁹, Risk Management Plan, and program guideline documents which include the WERP MERI Plan, CATE Framework, and Engagement and Adoption Strategy. The Research Prospectus, Research Implementation Plans and Impact and Benefits Realisation mapping is dealt with in Section 2.2.1.

Evaluation

Document review

All the documents reviewed appear to be either updates, or are in the process of being updated, reflecting an adaptive management approach and intent of continuous improvement. A list or document map of control versions was not requested, or supplied, however this would be highly beneficial for the end of program evaluation.

Only a single early version of the Program Plan was sourced with a *working document* watermark, suggesting an updated document should be available. Program updates are included at Governing Panel meetings; however, an overarching Program Plan would be useful; to detail and illustrate the

¹⁹ MD-WERP Program Plan, version 4, August 2020

various stages of the program, program objectives and key program level documents. This type of information is in the Annual Progress Report 2020-2021.

The Risk Management Plan was endorsed by the Governing Panel in December 2021, updated in November 2022 and underwent a light risk review in February 2023. The Risk Management Plan appears to be appropriate and fit for purpose, including a regular six-monthly review process and identification of mitigation options.

The MERI Plan was endorsed by the Governing Panel in November 2021, with additional changes requested in March 2023²⁰. These changes have not been identified in the documentation reviewed, and it is assumed that recommendations from the MTE will inform that update (see Recommendation 6). As pointed out in Section 1.1 the evaluation questions supplied for the MTE by the Governing Panel (as per the RFQ; see Introduction and Appendix B) are not included in the MERI Plan nor are they evaluative in nature. More significantly, neither the MERI Plan nor the MTE Terms of Reference were supplied with the RFQ despite being approved by the Governing Panel in March 2023²¹ which had implications for the MTE.

Within the MTE ToR there is a list of ‘evaluation and internal reviews’ activities listed which are not all considered evaluative in nature, but do provide indications of communication activities (i.e., the Symposium) and the progress of the Program.

The CATE Framework is being delivered in partnership with science communication providers to deliver existing knowledge in forms easily adopted by water manager, policy makers and Basin communities. A template for project level communication and engagement plans was developed and resulted in short summary plans for each project.

Adoption is defined in the CATE Framework (Figure 4) as the uptake of information, concepts, tools or practices (innovations) that have been generated predominantly through research. Underpinning adoption is the program benefits mapping and realisation work within the EAP (see Section 3.4.1).

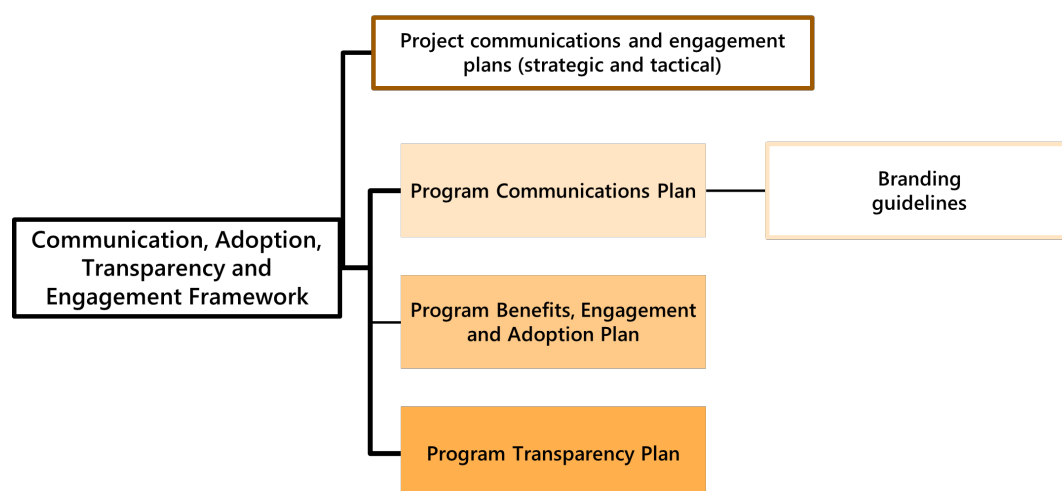


Figure 4. CATE Framework (version 3, Feb 2023). Project communication and engagement plans for strategic and tactical projects to be developed by each project.

²⁰ MD-WERP Mid-term evaluation: Terms of Reference

²¹ MD-WERP Governing Panel Out of Session 30 March 2023. Governing Panel #18 AI01 – Attachment C

The CATE Framework aims to define the purpose and audience in the context of WERP, specifically the difference between program and project level activities, define roles and responsibilities, whilst allowing flexibility to tailor particular activities.

In support of achieving the WERP program objectives, the CATE Framework will provide (modified from MDBA 2023a):

- Effective, timely and accurate information sharing and engagement with relevant users which should result in the greatest possible use of research outcomes and therefore maximise the value from investment
- Carefully planned communications to ensure the reputation of the WERP brand is protected and showcased which, in turn, assists to leverage co-investment
- Early and transparent engagement with end users and researchers which leads to effective adoption and contributes to the tailoring of research to the needs of users
- Strategic communications planning and implementation ensuring relevant water managers and decision makers are informed by using the most effective channels at the right time to successfully share the research findings
- Program confidence from funding partners, consortia and the wider scientific community is supported by mapping program benefits and effective, targeted communications, contributing to the potential for a more enduring research program.

Interviews

The main program level documentation was not specifically addressed in the interviews, however reference to program level documents such as the CATE Framework featured in the comments around collaboration and progress. Impact pathway analysis was mentioned by several participants, which is assumed to be reference to the benefits mapping, as a very positive process.

Findings

An updated Program Plan as an overarching single point of reference would be highly useful, ideally capturing the program logic, structure of the program, governance and development processes and brief description of the program level documents and how they relate to each other. It may be that this exists, however it was not reviewed. Findings relating to the Research Prospectus and other early planning processes (i.e., co-design) and documents are discussed in Section 2.2

The Risk Management Plan appears to be comprehensive and appropriate; it captures the risk associated with the underlying, but not stated, assumptions in the theory of change. Having a more overt link between the Program Plan, Risk Management Plan and the logic model (called a theory of change in the MERI Plan) would be useful.

The MERI Plan needs to be updated in several areas, most notably it lacks a process for dealing with First Nations project outcomes in a culturally appropriate manner. Criteria relating to effectiveness, efficiency and appropriateness may not be suited to evaluating First Nations projects. Part of the co-design process should include discussion and agreement on how the First Nations outcomes will be evaluated. As discussed in Section 2.2.1 the MERI process is at two levels, Program and Theme, but the Theme level MERI Plans have not been developed.

The other key area that could be improved within the MERI Plan is the theory of change. Theory of Change should clearly detail the change process within a program, include the sequence of events that link activities to the outcomes, but also make explicit the conditions and assumptions that will affect the process. There are no assumptions listed and very little detail presented in terms of the activities, outputs, and outcomes in the MERI Plan – this is captured to some extent in the benefits mapping in the EAP, but benefits mapping is a separate process and should be integrated with program evaluation. This is not yet evident in the documentation reviewed (neither the EAP or the MERI Plan).

2.2.3 Co-design process for each Theme

Following the selection of the two consortia, a co-design process was undertaken by each of the Themes to produce RIPs for each key research question. This co-design process occurred over a 6-month period in early 2021 and involved the Theme researchers, the Commonwealth Theme lead and relevant CEWH and DCCEE staff.

Each RIP was subsequently approved by the Governing Panel and the consortia were then officially contracted for each Theme through a Work Order (refer Work Orders for year 1 and for year 2023-2024). Each research project is monitored by the MDBA Implementation Team as noted in Section 2.1.4 above.

Evaluation

Document review

A range of documents have been reviewed that record the progress of the co-design process, including: early workshops that scoped how the process would occur; stakeholders to be involved; what needed to be included in the RIPs; a Co-Design Plan endorsed by the Governing Panel in March 2021.²² Also viewed were several RIPs²³ noting that they document: the research activities; communication and engagement activities; interdependencies with other WERP activities; risk analysis; key personnel involved; and key deliverable and timelines.

Interviews

The general comment from those interviewees was that the co-design process undertaken by each Theme was extensive and effective. All Themes undertook a comprehensive consultation process over a 3 to 6 months period that included researchers and end users from MDBA, CEWH and DCCEE. Comment was made that the process was hampered to some extent by COVID which restricted the number of face-to-face meetings. Specific comment was made by a number of interviewees that there was very effective involvement of MDBA staff in the process.

Most felt that the period of the Theme co-design process was adequate, although one interviewee suggested the process was too short on the basis that it takes time to work through the research ideas and to link them to the knowledge needs of the MDBA (and others) to make a coherent research program.

Most Themes developed projects within the initial research questions, although Theme 1 changed considerably from the original research questions. A number commented that there was enough flexibility to permit many of the projects to be modified or adapted to changing circumstances. An example was Project RQ9.1 which was to investigate low flows but by the time the project commenced the rains had come and the project needed to be modified.

The states were not involved in the Theme co-design process and First Nations were involved in co-design of Themes 3 and 4 but not Themes 1 and 2 (MLDRIN is member of the La Trobe University consortium).

A number of interviewees commented that an opportunity was missed in not better linking (e.g., integration, data dependencies) the research being done in the four Themes and that the Themes are too siloed. WERP is not really an integrated multi-disciplinary (or transdisciplinary) research program. Many interviewed felt that there is still a need for more integration between the Themes and that the Governing Panel should give this greater priority.

Specific mention was made concerning the Theme 4 program in addition to the First Nations issues noted below. It was suggested that the 6-month delay in starting was due to an initial lack of support for the Theme 4 research plans by the Governing Panel. The Governing Panel commissioned an

²² Governing Panel meeting No 8, March 2021 - Attachment B: Co-design Plan.

²³ RQ1 Climate Adaptation Science Applications & Assessment Toolkit; RQ6: Enhancing low flow prediction to support water resources planning; RQ9.1: Project 9.1: Drivers of ecological resilience and persistence during low and cease-to-flow conditions in the northern MDB; RQ 12.1: The mental health benefits of improvements to riverine ecosystem health.

external review of the Theme 4 research plans which reported that the plans were sound subject to some minor improvement but this delayed the Theme start.

Some of the issues with the First Nations involvement were suggested to be:

- First Nations people were not involved in the process of producing the initial Research Prospectus, so the process undertaken by WERP did not meet the expectations of some participants.
- First Nations involvement in WERP is through MLDRIN's participation as a partner in the La Trobe University consortium - initially four activities were identified to be done as a 'package', with First Nations leading the research, but costs exceeded available funds. DAWE (now DCCEEW) committed to investigating the potential eligibility of RQ13 activities 3 and 4 proposed by MLDRIN to be funded out of existing program and project funds. DAWE advised that no opportunities were identified.
- MLDRIN is a small organisation with limited capacity to develop and run research projects and to take on the risks associated with contracted research (lack of legal and project management support compared to larger organisations). The Governing Panel did seek assurances from the Implementation Team and the La Trobe University consortium that MLDRIN would be able to deliver on their research proposal (RQ13 activities 1 and 2). However, in seeking this assurance MLDRIN were concerned that their integrity and ability to deliver the work was being questioned and that this project was being subject to disproportionate scrutiny.
- An additional comment was that perhaps First Nations involvement should have been driven from the top (e.g., Governing Panel) rather than within individual themes) and that the First Nations interaction should have been with more than just MLDRIN.

A number commented that there was good intent for First Nations to be involved in WERP research but perhaps a more flexible, adaptive and partnership approach is needed to achieve that involvement. And that more resources (not just money) should be devoted to these projects.

Findings

The Theme co-design process was very effective. It was very well planned and executed. The process took time (approximately 6 months) but this was worthwhile as it produced detailed RIPs for each research question, and involved consideration and documentation of the impact pathways for each research question, i.e., how the knowledge (outputs) will be applied.²⁴

It is also clear from both the documentation and the interviews that the end-user needs for the research were well considered in the development of the RIPs. WERP is definitely not a researcher- or manager-driven research program but one that is well balanced and should produce new knowledge of relevance to the Basin Plan Review and other Australian Government policy and management needs.

Although as discussed in Section 3.4, we recommend that more needs to be done in remaining two years of the Program to ensure that the research outputs and knowledge are synthesised and packaged into products that meet the needs of end users such as the MDBA and CEWH.

It is regrettable that First Nations involvement in Theme 3 and 4 (and perhaps also Theme 1) has not yet been achieved, but it is not too late. It is clear that the current approach is not working effectively and that perhaps a more flexible, adaptive and partnership approach is needed to achieve First Nations involvement.

²⁴ See MDBA (2020). Murray-Darling Water and Environment Research Program, Theme Information Material, March 2021, MDBA, Canberra, 24p.

2.3 Program implementation

2.3.1 Collaboration

WERP was established to address key research questions relating to environmental, economic, social and cultural aspects of Australian Government water policy and programs, and particularly the Basin Plan Review. It was to be a *transdisciplinary* research program by *integrating* the research outputs from these four areas to answer the key research questions. To achieve this integration requires effective collaboration between researchers and the Commonwealth end-users (MDBA, CEWH, DCCEEW) within and between Themes.

Evaluation

Document review

The Governing Panel recognised that effective and ongoing collaboration and co-design are fundamental to the success of WERP, and the Program has been designed to facilitate this as much as possible, both during development and the ongoing implementation of the Program²⁵.

Interviews

In general, interviewees commented that there is very effective collaboration within Themes and with the MDBA leads. However, between Themes collaboration is only occurring where researcher see an obvious link, e.g., between Themes 1 and 3 where the links is common data and Toolbox and Predictive models, and between Themes 2 and 3 on the low flow hydrology work. It was suggested that cross-Theme collaboration may be assisted by nominating a single person to help with identifying and developing integration opportunities.

At a higher level, collaboration between MDBA and consortia leads (via the ELT) was assessed to be now effective, although it took some time to achieve this, with the process for approving reports a particular sticking point.

It was also commented that there does not appear to be integration yet between WERP and other sources of knowledge (e.g., Flow-MER, LTIM/EWKR, One-Basin CRC) where there could be an opportunity to synthesise all relevant information (e.g., Basin Plan evaluation, state monitoring programs, Flow-MER and WERP) to produce more complete knowledge 'packages'.

Collaboration with the EUAGs is reported to be patchy. There is a lack of clarity regarding the role and influence of Basin state representatives. EUAGs are an opportunity for Basin states to provide input to the research, seek opportunities for collaboration and application of the research in their context, and share information and data, but ultimately, they are advisory groups and they do not have decision making powers to direct or compel WERP to produce outputs that are policy ready at the state level as some members would like. One interviewee noted it would be useful to capture how and to what degree the EUAGs advice influenced the research as a performance measure to inform the end of program evaluation.

It was noted that Theme 4 has set up a social and economics 'Community of Practice' (rather than an EUAG) focused on improving the science-policy interface broadly, not just WERP. It considers other MDBA priorities and includes MDBA policy people and representatives from the CEWH and DCCEEW, some researchers, consultants and NGOs.

Collaboration between WERP and First Nations groups is fractious. First Nations interviewees believe the objectives of collaboration should be to:

- Work towards bringing together relevant cultural and western knowledge (science), focusing on two-way learning
- Build enduring relationships involving mutual trust and recognise that these will take time
- Invest in the next generation of First Nations researchers where appropriate.

²⁵ MD-WERP Program Engagement and Adoption plan V0.3 March 2023

Additionally, it was suggested that a *partnership approach* to research projects is likely to be the most productive, where:

- Projects are co-designed by involving both First Nations and western researchers from inception
- Other stakeholders are involved where appropriate, e.g., Traditional Owner groups, local First Nations groups, local government, local farmers and local schools
- These partnerships are adequately resourced to ensure that culturally appropriate processes are employed.

One interviewee in summarising WERP's collaboration and engagement processes commented that the Program appears to be well governed for research delivery (as it should be, given its primary purpose) and also well set up for delivery to end users, but its research structure is also 'siloed' and bureaucratic, making cross-Theme linkages and broader engagement opportunities difficult to access and capitalise upon. This has implications for adoption and impact/benefits mapping.

Findings

The discussions with the Research and Commonwealth Theme leads indicated that collaboration between them has been very effective and should result in research outputs that are both high quality and focused on end-user needs.

While it appears that some collaboration occurs between the Research Theme Leads in ensuring the various projects are progressing well (through the SLT and ELT), it has been only moderately effective. There appears good collaboration between Themes 1 and 2, and some possible collaboration between Themes 2 and 3. Theme 4 seems largely isolated from the other Themes.

This ineffective collaboration between the research Themes means that opportunities to better integrate research across the environmental, economic, social and cultural areas are being missed.

2.3.2 Program and Project management

Detailed and consistent management of the WERP research projects is essential for their success. Project management processes include the use of a range of templates for consistent tracking of deliverables, communication activities, progress reports and undertaking an internal project health check²⁶. As discussed in Section 3.2.2 a comprehensive Risk Management Plan and risk register is in place, as is a MERI Plan. Financial aspects of project management were not in scope of the MTE. Broadly, the Implementation Team has oversight of program management with a Director and Project Manager leading the team. Staff turnover in these roles has potentially affected the efficiency of program level management processes. The roles and responsibilities of the other leadership teams (ELT, SLT) are discussed in Section 3.1. The remainder of this section focuses on project level management.

Evaluation

Document review

All project RIPs and Works Orders were reviewed. These are very detailed and contain very specific deliverables and timelines. The Progress Reports for each Theme for the period December 2022 to May 2023 were also reviewed, together with the Annual Progress Reports for 2020-21 and 2021-22.

Interviews

The four research Theme leads were interviewed for information on the project management process they have in place and for their views on the effectiveness and efficiency of these processes. All research project teams meet regularly (each 2-4 weeks) to discuss progress and to address any issues. These meetings also involve the Commonwealth Theme lead ensuring there is good collaboration

²⁶ MD-WERP Program Internal Health Check/Periodic Review, Deliver the Capabilities Phase

between the researchers and the end-users. Additionally, both consortia have individuals with specific skills in project management²⁷.

All research leads thought that generally the project management processes were effective. However, two issues were noted:

- There is a need with some RIPs to make the deliverable clearer (i.e., what is being delivered, in what format and what stage of final development) which would help to clarify when a deliverable obligation has been fully discharged
- The internal MDBA approvals process for reports, particularly final reports, is rather complex and is reliant on a number of people, which add to the time of approval. This may become a greater issue closer to the finalisation of WERP when a larger number of reports are submitted and need approval, and when staff who wrote the report may have left and not be available for final edits.

Findings

Each Theme has an effective process in place for the management of their research projects. The relevant Commonwealth Theme leads are closely involved in these processes. Additionally, each Theme has a process for considering the progress of all projects on a less regular basis (3-6 monthly). The efficiency of the processes could be improved with greater clarity about the deliverable and perhaps a more streamlined report approvals process.

2.3.3 Communications and engagement

The CATE Framework is the overarching guidance for communication and engagement for WERP. The Deed of Communication Requirements and Obligations for each consortia outlines the roles and responsibilities of the communications and engagement processes required of them. The WERP EAP²⁸ requires that each consortium develop communication and engagement plans for each project, with a focus on research development and academic engagement. These plans are to be consistent with the WERP CATE Framework, the program Communications Plan, and the EAP. The plans used a template provided by the MDBA to ensure consistency. Both the consortia have a dedicated stakeholder engagement person. However, at the time of this MTE the WERP Implementation Team were in the process of filling vacant positions for a Senior Communication officer and a Senior Engagement and Adoption Officer.

Evaluation

Document review

The CATE Framework²⁹ (CATE - January 2023) and the MD-WERP EAP have been reviewed. The project level communication and engagement plan template and a single example of a project plan were supplied and reviewed. In addition, the Communication Requirements, and Obligations for one of the consortia was reviewed³⁰ which constitutes the “Communications Plan” described in clause 6.3 of the Deed of Agreement. The Communications Plan describes the processes to approve the public dissemination of Contract Material and articulates the requirements and obligations for the MDBA consortia (including all members and subcontractors).

The communication and engagement processes for WERP are somewhat complex:

- MDBA Communication, Engagement and Strategic Policy section had oversight of the development of the CATE Framework; the General Manager Chairs the Communications and Engagement Steering Group

²⁷ CSIRO - Theme 1 lead; La Trobe University - specific project/program manager

²⁸ MD-WERP Engagement and Adoption Plan, MDBA. Endorsed by the Governing Panel at Meeting No. 17, March 2023

²⁹ The CATE Framework was endorsed by the Governing Panel at Meeting No. 11 (December 2021)

³⁰ MD-WERP Communication requirements and obligations – CSIRO, Informing strategic research services, November 2021

- Each consortia have a Communication and Engagement officer who are members of the Communications and Engagement Steering Group
- ELT approves the release of deliverables and reviews contract materials
- The WERP Implementation Team have responsibility for the receipt, approvals and release of contract materials
- STEM Matters are an external (to MDBA and WERP) communications provider that was managed by the WERP Communication Team. However, the contract was cancelled after STEM Matters failed to meet the first deliverable. It is not clear what STEM Matters role was.

Importantly, what is not clear in the documentation reviewed is who has responsibility for the synthesis of outputs leading to adoption.

Interviews

Unfortunately, it was not possible to interview communication and/or engagement officers in the Implementation Team due to scope limitations and the facts that these positions are currently vacant. Interview participants indicated that the Stakeholder Engagement and Communication Working Group established by MDBA has been effective. Initially, this Working Group met regularly and set the ground rules and sorted out processes such as branding and approval of reports. The Working Group now only meeting each 6 months, and there was a period of 12 months when it apparently did not meet.

It was noted that MDBA has a person embedded in each Theme (Commonwealth lead) which is a very effective engagement process that ensures a two-way flow of information and comment between the research Themes and the MDBA.

However, it was suggested that while the Annual Symposia are very effective engagement tools for many stakeholders, more could be done to promote broader engagement with stakeholders, especially within the MDBA. Communication among and between the EUAGs varied both in terms of effectiveness and efficiency. Several interview participants noted that there was poor interaction and communication in some, and between EUAGs.

At the time of undertaking interviews, it was not possible to investigate the internal MDBA processes for linkages to the Basin Plan Review team. Those participants that were aware of the Basin Plan Review team being established had not yet engaged with them, but all participants who were aware of the Basin Plan Review team within the MDBA noted the misalignment with the start of WERP as problematic.

Project level communication and engagement plans were to be developed for each strategic and tactical project (see Figure 4 above), however project or Thematic communication and engagement plans from the consortia, whilst contracted deliverables, have been of mixed levels in development and implementation.

Most interview participants expressed either concern or confusion over the process for review of outputs and report publication. In some instances, participants thought that the EUAG had responsibility in this process, others did not. Despite clarity in the Deed of Communication and the CATE Framework regarding roles and responsibilities the level of awareness and understanding of the process is variable, and in many cases poor.

In terms of adoption, the process for packaging research outputs into a form that can be used, for the Basin Plan Review and or by other end users, is not clear. Synthesis is more than combining outputs into consolidated document or product, it often requires further analysis for the intended use and audience (Andrews 2012), both of which will vary. It is apparent that there still needs to be work done within the MDBA to help with the translation of the research outputs into a form that can assist with policy and management. Several participants noted the ongoing challenge of bridging the science-policy gap.

This is considered an essential component of WERP which needs to be addressed for the Program to be evaluated as successful and of merit. A fundamental objective of the program is to improve water policy and management via targeted and applied research (see Section 2.4).

Findings

The engagement between the research Themes and the Commonwealth Theme leads has been effective. Also, engagement with the other Australian Government agencies (CEWH and DCCEEW) has been effective. However, communications and engagement with other potential end-users has been less effective and is an area in which improvements are required.

It is noted that an expenditure plan for the remaining unallocated CATE budget (~\$800,000) is being developed which will incorporate integration and synthesis of research findings and communication to target audiences. This plan will be brought to Governing Panel for endorsement through Governing Panel meeting 19 or 20.³¹ Interaction between WERP and the Basin Plan Review team is seen as an essential necessity moving forward.

2.4 Outputs and outcomes

2.4.1 Engagement and adoption

WERP has been designed to achieve a set of strategic objectives agreed by the Governing Panel. These objectives inform policy and decision making about the Program's implementation, shape its operation and form the basis of evaluating its success. Effective *engagement* and increased *adoption* are crucial to ensuring the Program objectives are met. Cooperation and engagement between end users and researchers to achieve adoption of the new knowledge underpins the success of the Program and is critical to the achievements of the Program objectives.

Adoption is the uptake of knowledge (research findings, information, concepts, tools or practices) that have been generated predominantly through research. It is likely that the best way to synthesis or package this knowledge will vary with the knowledge and the users.

Engagement has the aim of increasing the likelihood of the research outcomes being adopted by policy makers and water managers at the Australian Government and state levels and also to obtain advice on best way to package the knowledge to allow the adoption to best occur.

Links between communications, engagement and adoption shown in Figure 5.

³¹ MD-WERP Governing Panel Meeting 18, Agenda item 3, 28.07.2022

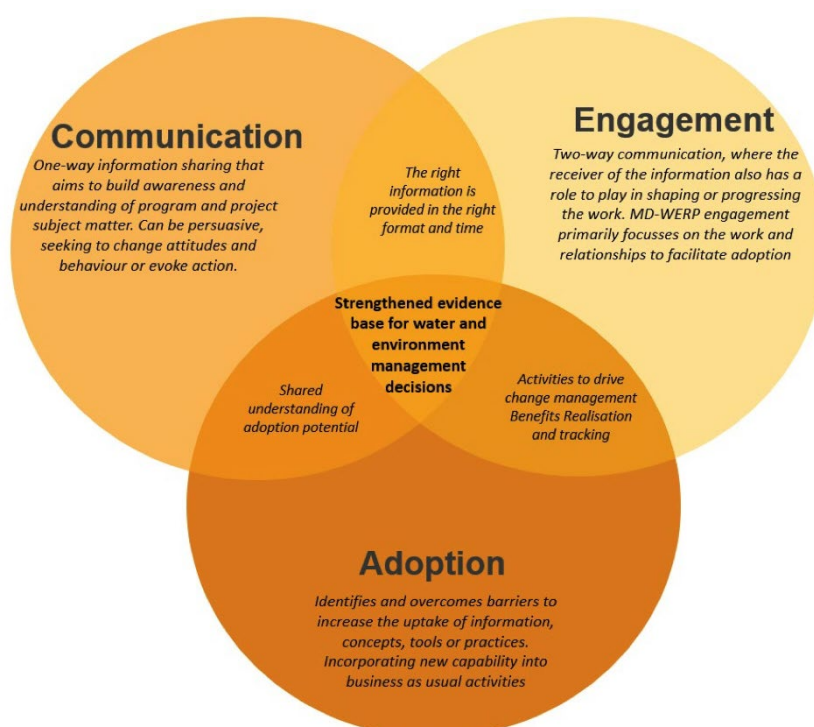


Figure 5. Links between communication, engagement and adoption in MD-WERP (Source: Engagement and Adoption Plan, March 2023).

Evaluation

Document review

The Governing Panel endorsed the WERP CATE Framework in 2021³². Subsequently, a separate EAP was developed and endorsed by the Governing Panel³³. This latter document seeks to provide an overarching plan focused on complementary engagement and adoption activities for the remainder of the research program to ensure adoption of the research outputs and outcomes.

The EAP presents a program of engagement of the research Themes with Commonwealth Theme leads and EUAGs for 2023. This plan is heavy on process and schedules but appears to have little focus on how the science knowledge is to be packaged to promote adoption. It states program engagement will focus on awareness building, increasing possible adoption, and finding synergies across the four Themes.

A useful start on the latter was the preparation of *benefit maps* by each Theme to increase the likelihood of the research outputs being adopted by end users. These benefit maps were a one-page summary of the connections between project outputs/deliverables, outcomes, benefits, objectives, the WERP vision, and connections to the Basin Plan objectives (these are documented in the MD-WERP Annual Progress Update 2021-22).

The EAP also envisaged that there would be 6-monthly evaluation of the effectiveness of the adoption plan with this evaluation aligning with the WERP MERI Plan. Monitoring was to include: measuring the level of Program uptake and expressions of interest received (noting the communications planning will also impact this); engagement HQ feedback mechanism, allowing for survey data to be collected at key program milestones (once established); and stakeholder feedback at or following events, including public and media commentary. However, there is no evidence that this monitoring has been

³² Governing Panel Meeting No. 11, December, 2021 - note the current CATE document is dated January 2023

³³ Governing Panel at Meeting No. 17, March 2023

planned or is being done, or any documentation to indicate how this information will be used to evaluate the success of the engagement and/or adoption of the Program's outputs and outcomes.

Interviews

Most of those interviewed were satisfied with the level of engagement with stakeholders, particularly with MDBA, CEWH and DCCEEW. As noted previously, a number of interviewees felt that the engagement with the EUAGs could be improved. There was less confidence that the engagement will necessarily translate to adoption of the new knowledge.

The MTE was told that there was work occurring within MDBA to align the research (from all Themes) with policy needs of the Basin Plan Review, e.g., there was a recent internal MDBA workshop involving all four Commonwealth Theme leads and the Basin Plan Review team to discuss science-policy linkages. This is a welcome move as the MTE was also told that there are gaps in the application of the research outputs to policy and that there is perhaps too much focus on project outputs and not enough on the use and usefulness of these research outputs.

The MTE was also told that there is a need for work within MDBA to help with the translation of the research outputs into a form that can assist with policy and management. Perhaps a new position established in MDBA to improve the science-policy needs of the Basin Plan Review can assist with this task.

The MTE found considerable difference in the capacity of each Theme to articulate clearly how the research in their Theme will make a difference. Theme 1 has a particularly well focused program with three areas they expect to make a difference, these being: the Toolkit - a model that takes output from the hydrologic models and uses ecological and other response models to assess how outcomes in the Basin will be affected; foundational science - aimed at increasing the understanding of the indirect impacts of climate change on hydrology, e.g., farm dams and bushfires; showcasing different types of climate change adaptation.

Several interviewees suggested there is a need to appoint one or more 'knowledge brokers' to work between MDBA and the four research Themes to identify 'packages of knowledge' (research outputs) tailored to meet the needs of the Basin Plan Review team.

Findings

It is highly *appropriate* that the Project has an adoption (and associated engagement) plan and that the plan's *effectiveness, efficiency and appropriateness* is evaluated 6-monthly in line with the Program's MERI Plan. However, the current plan is heavily focused on the engagement with key stakeholders with little detail on how this engagement will result in useful knowledge products and adoption of the new knowledge.

To date, engagement with key stakeholder (MDBA, CEWH and DCCEEW) has been quite effective and this plan should ensure this engagement continues. However, it is clear that engagement to date with the EUAGs has been less effective. Their role is not fully appreciated by some and needs to be continually reinforced. In brief, EUAG's have been established to assist with:

- Informing the development and delivery of research from an end-user perspective
- Improving the translation of project outputs to inform policy and/or management outcomes
- Building and communicating an understanding of the new knowledge
- Building connectivity and capacity between researchers and end-users
- Communicating the research implications within their organisation.

The requirement that the EAP be evaluated at 6-monthly intervals is supported. However, there is no evidence that this is occurring and the Governing Panel is urged to update the processes to address this deficiency (see recommendation relating to updating the MERI Plan in Section 6.1).

It is too early to evaluate the effectiveness of the adoption of the research as there are few research outputs at this stage. However, the experience of Theme 1 in getting the *Impact of Farm Dams* report accepted is a lesson for the future. This report provided an assessment of how climate change may influence inflows and demands beyond changes in rainfall-runoff relationships. The work illustrates that farm dams will exacerbate the impact of climate change in dry periods by about 10%. This result challenged some state policies on farm dams and there was pressure by some in the EUAGs to modify the report, clearly an example where the EUAG exceeded their advice role. Two papers on this work have now been published in the peer reviewed literature with acknowledgement to WERP (Pena-Arancibia et al. 2023; Robertson et al. 2023).

2.4.2 Progress

WERP was envisaged as a four-year program (July 2019-June 2024), but has now been extended for another year to June 2025. As discussed earlier the Program has three stages: initial research co-design and engagement of two consortia (2019-2020); research project co-design within the four Themes (July 2020-June 2021); and project implementation and delivery (July 2021-June 2025).

The MTE evaluation of progress of WERP to June 2023 has focused on the strategic research projects and the processes to ensure adoption of the research results.

Evaluation

Document review

The documentation reviewed relating to the progress of the strategic research projects included: MD-WERP Program Deliverable Trackerv2; Annual progress reports; Theme and project progress reports; and updates in Governing Panel meetings.

Interviews

Interviewees reported that the research projects are generally making good progress and that they will be completed on time. One interviewee's assessment was that around 70% of the research is aligned with the policy needs of the Basin Plan Review, and around 30% is aspirational research.

Progress with projects within Themes 1 and 2 has been very good; they have already had some impacts, e.g., project on farm dams has been taken up by NSW and fed into policy decisions, and there have been two publications on this work in the peer reviewed literature. It was suggested that there is still work to be done to more clearly articulate how the research outputs from Theme 2 will influence policy and actions in the Basin Plan Review.

Interviewee's assessed progress in Theme 3 as generally good despite some delays caused by flooding and staff changes. It was noted that the two research projects in this Theme involving First Nations people (Project 9.3b: Barkandji fish traps; Project 10.3: Indigenous perspectives in conservation planning) have taken time to develop and are yet to commence.

A number of interviewees commented on Theme 4 noting particularly the continuing issues with the First Nations projects and concerns about the relevance of the social science research, which it was suggested is perhaps too fundamental for WERP.

A number of interviewees expressed particular concern over Project 13.1 (First Nations water-based outcomes in the southern Basin) noting that despite the general desire for this and other First Nations led projects to be developed and funded, the project has not yet started³⁴. It was suggested that while relations between MLDRIN and the La Trobe University consortium are good, the problem with delays lies in MDBA's interaction with MLDRIN in setting up the project (e.g., insensitive and delayed feedback), and with MLDRIN's current capacity to run research projects.

It was also suggested by one interviewee that the Governing Panel seemed to subject the First Nations work to much greater scrutiny than other projects, possibly because they did not have sufficient

³⁴ Although the evaluation team was told that it is close to the contract with MLDRIN being signed.

familiarity with the work to feel confident in approving it without requiring a considerable number of amendments. Several interviewees suggested that a new First Nations partnership model is needed, one perhaps that could involve MLDRIN but also partnerships with other First Nations groups. Apparently, both MDBA and DCCEEW are exploring such modified models³⁵.

The other issue raised by a number of those interviewed was in relation to the adoption process - the process for translating and 'packaging' the research outputs into forms that can assist with policy and management and be used for the Basin Plan Review. Concern was raised that the high turnover of staff in the Implementation Team may be a barrier to adoption due to loss of relationships. It was suggested that the impact pathways/benefits work done by each of the Themes, while very useful in mapping the likely research outputs to their adoption by end users, appeared to have little being done to develop processes to ensure these impact pathways were being followed.

Findings

Progress of the strategic research projects within each Theme is being very effectively tracked, especially via the tracking of project deliverables and the regular update reports provided to the Governing Panel³⁶.

Broadly, there appears to be good progress with Themes 1, 2 and 3 with confidence that their research projects will be completed on time. However, there are considerable concerns with the progress of the First Nations projects in Theme 4, and some concern expressed that the research in this Theme is too academic. The First Nations projects in Theme 4 are being developed by the La Trobe University consortium in partnership with MLDRIN. It appears that relationship between MLDRIN and La Trobe University are good, but that they are somewhat strained between MLDRIN and MDBA and the Governing Panel.

The other concern with progress is the apparent lack of a transparent process for the adoption process - translating and 'packaging' the research outputs into forms that can assist with water policy and management generally, and be specifically used for the Basin Plan Review. In relation to the adoption of the research, the impact pathways work done by each of the Themes was good first step in mapping the likely research outputs to their adoption by end users, but there appeared to be little being done to further develop this adoption processes.

2.4.3 Likely outcomes

It has only been possible to provide a high-level assessment of likely outcomes. End users (MDBA, CEWH, DCCEEW) seem confident that the Program's outputs will be of use to them. However, as indicated above there are two areas that need attention if WERP's outcomes are to be achieved:

- There needs to be a process developed to synthesise research outputs into useable products, and particularly products focused on quadruple bottom line decision making (i.e., environmental, economic, social and cultural)
- The adoption of these products needs to be 'driven' rather than as appears now to be left to the research teams.

3 SUMMARY OF FINDINGS

The findings relating to effectiveness, efficiency and appropriateness are presented graphically in Figure 6 to Figure 9 below for each of the process indicators assessed: governing processes; co-design and collaboration activities; program management; communications and engagement; adoption and progress. Rubrics for performance standards (effectiveness, efficiency, appropriateness) are

³⁵ It is understood that MDBA has established a new 'First Nations Leadership Group'.

³⁶ For example, Governing Panel meeting number 17, 6 March 2023.

presented in Appendix B. Where relevant these findings have informed how we have addressed the key evaluation questions posed by the Governing Panel, which are addressed in Section 4.

| Governing Panel | | |
|----------------------------|--|--|
| Effectiveness | | Effective – turnover and composition |
| Efficiency | | Moderately efficient – streamlining documentation needs attention |
| Appropriateness | | Moderately appropriate – lack of diversity, failure to include First Nations in setting research questions |
| ELT & SLT | | |
| Effectiveness | | Moderately effective – meeting frequency, integration of outputs linked to adoption |
| Efficiency | | Moderately efficient – reduce administration |
| Implementation Team | | |
| Effectiveness | | Moderately effective to effective – turnover |
| Efficiency | | Moderately efficient to efficient – some streamlining of processes needed |

Figure 6. Summary of evaluative result for Governance Processes. Performance level and reason/area needing attention.

| Initial planning | | |
|--------------------------|--|--|
| Effectiveness | | Moderately effective to effective – tender process, presetting of research questions, alignment to Basin Plan review |
| Efficiency | | Efficient – not transdisciplinary; but difficult to achieve |
| Appropriateness | | Moderately appropriate – limited consultation with policy |
| Program documents | | |
| Effectiveness | | Moderately effective – update Program Plan and MERI Plan, finalise benefit realisation mapping |
| Efficiency | | Moderately efficient – reduce repetition and integrate |
| Co-design | | |
| Effectiveness | | Moderately effective to effective – failure to include First Nations in setting research questions |

Figure 7. Summary of evaluative result for Design and Planning activities. Performance level and reason/area needing attention.

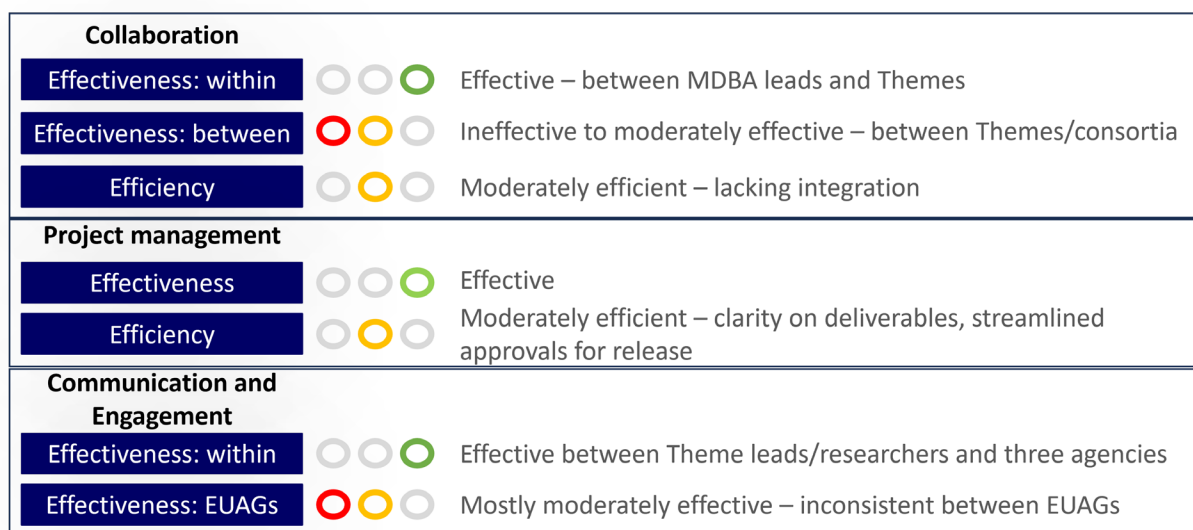


Figure 8. Summary of evaluative result for Program Implementation activities. Performance level and reason/area needing attention.

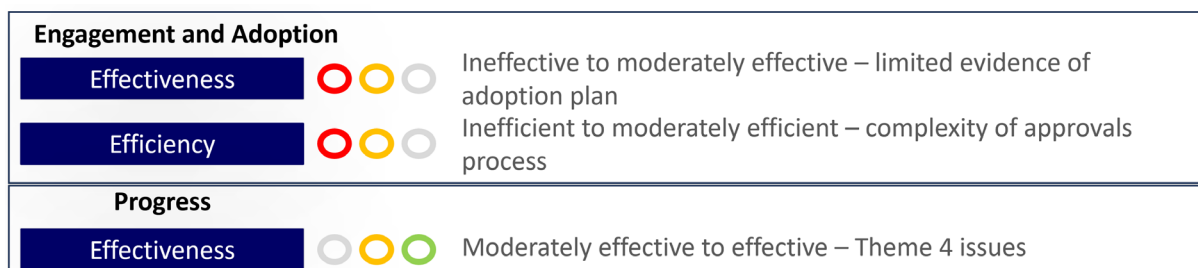


Figure 9. Summary of evaluative result for Outputs and Outcomes. Performance level and reason/area needing attention.

4 KEY EVALUATION QUESTIONS (KEQ)

In this section we address the five of the key evaluation questions set by the WERP Governing Panel. The sixth evaluation question is addressed in Section 6.

4.1 KEQ1. Do the program artefacts (documents) provide a sound description of how MD-WERP is designed and being managed?

In general, the WERP documentation is comprehensive and thorough, and provides a good description of the planning and implementation of the Program, but much of the detail is not publicly available. The documentation has been fully evaluated in this MTE, specifically: Section 2.1 for the WERP governance; Section 2.2 for the initial and Theme co-design processes; and Section 2.3.2 for project management.

The MTE found that the existing Program Plan needs to be updated (see Recommendation 3). This is a high-level description of WERP and includes the vision, objectives, all the relevant process, key documents, structure, staging, roles and responsibilities; it is a map of the complete program.

Following good management practice WERP has a MERI Plan which requires evaluation mid-term (this report) and at the end of the Program. However, this Plan has a number of deficiencies including: a requirement that the EAP be evaluated at 6-monthly intervals which does not seem to be occurring;

a requirement that each Theme prepares and actions a MERI Plan - again this has not occurred; and no guidance on a culturally appropriate evaluative approach for the review of the social, economic and cultural Theme 4 (Recommendation 6).

4.2 KEQ2. Is the management and governance of the program rigorous?

A robust governance structure has been established for WERP with direction and oversight provided by a high-level Governing Panel. Overall, the operation of the Governing Panel was judged as having processes that are moderately efficient and effective. Governing Panel processes are well documented, but do not appear to be particularly transparent. The Governing Panel should consider possible improvements to the diversity of the Panel, particularly the addition of First Nations expertise.

An effective administrative and project management system is in place which tracks the deliverables of each project and with detailed records available, although an improved document management system would aide in finding such material more quickly. Each research Theme has an effective process in place for the management of their research projects with the relevant Commonwealth Theme leads closely involved. The efficiency of the project management system could be improved by greater clarity about the project deliverables and a more streamlined report approvals process.

To date, engagement with key stakeholder (MDBA, CEWH and DCCEEW) has been quite effective and the continued application of the WERP EAP should ensure this engagement continues. However, engagement with the EUAGs has been less effective. In particular, their advisory role is not fully appreciated by some and needs to be continually reinforced. Some state representatives feel less engaged because of the rather infrequent meetings. Some more regular progress updates make help.

Comment has been made in the section above of the need to update and implement the current WERP MERI Plan.

4.3 KEQ3. Is there clarity on what is being delivered by the program?

Clarity on what is being delivered by WERP is patchy. The Theme leads (research and Commowelath) and the governing groups (Governing Panel, ELT, SLT) have a clear view of the research projects and what they are intended to deliver. However, from the interviews, it was apparent that many involved with WERP (particularly some members of the EUAGs) only really gained an understanding of what was being done after attending the recent Symposium.

Suggestions from the interviews that could assist in improving the clarity of the Program outputs include:

- Preparation of a document that provides a simple explanation of each project (the research question, likely outputs, how the knowledge will be used and by whom) - the information in the RIPs is too detailed
- The interrelations between projects where relevant - it should be possible to prepare a graphic showing the research projects and their interrelationships
- Some indication of how the knowledge from different research projects will be synthesised into transdisciplinary products that can be used for quadruple bottom-line decision making involving some or all of environmental, economic, social and cultural aspects.

4.4 KEQ4. Is reasonable progress being made and is the program on track to deliver its promises?

Progress

As noted in KEQ2 above, progress of the strategic research projects within each Theme is being very effectively tracked, via the tracking of project deliverables, with regular updates provided to the Governing Panel. Broadly, there appears to be good progress with Themes 1, 2 and 3 and confidence that the research projects will be completed on time. However, there are considerable concerns with the progress of the First Nations projects in Theme 4, and some concern expressed that the research in this Theme is too academic. It appears that relationship between MLDRIN and the La Trobe University consortium are good, but that they are somewhat strained between MLDRIN and MDBA and the Governing Panel. The other concern with progress is the apparent lack of a transparent process for the synthesis and 'packaging' of the research outputs into forms that can assist with water policy and management generally, and be specifically used for the Basin Plan Review.

On track to deliver promises?

In answering this question, WERP has two sets of outcomes that could be the 'promises' referred to:

- The three high level outcomes: improved water policy, with respect to achieving Basin Plan objectives; improved capacity to manage risks with respect to water availability and water use; and improved river operations and water management outcomes.
- The five strategic objectives: maximise the value to water reform and management from investment; leverage co-investment with research providers and key stakeholders; facilitate adoption of research by advancing cooperation between users and researchers; invest in applied research that delivers better informed environmental water management decisions by Commonwealth agencies and improved outcomes for communities; and be a platform from which to launch a more enduring research program.

The MTE found that there has been considerable thought and discussion about the outputs of the strategic research and their usefulness to the main end-users (MDBA, CEWH and DCCEW) via the 'benefits realisation mapping' process. Whilst each of the Themes has mapped the expected outputs from each project to medium-term outcomes and then to benefits/impacts (economic, environmental, social and First Nations)³⁷ and finally to the three WERP outcomes (listed above), the realisation pathways are not fully articulated in the draft material available to the MTE. The relationship to the Risk Management Plan and MERI Plan needs to be clarified. Also, there is little to no information on how benefits will be measured, or when, and what the benefits reporting mechanism might look like which are critical considerations relating to the effectiveness of benefits realisation (Williams et al. 2021, 2023).

It would have been useful for answering this question if there was some reporting on the medium-term outcomes identified in the benefit mapping. This appears not to have been done. WERP should consider developing a process for regular (say 6-monthly) updating of the expected *outcomes* from each project - regular reporting on the *outputs* from each project is currently undertaken via the progress updates and the system for tracking project deliverable

4.5 KEQ5. Is it likely that the program outputs will be utilised by end users and create positive impact?

Again, it is difficult to answer this question at this stage of the Program. This is particularly so given the lack of clarity on how the project outputs will feed into specifically management and policy needs. This may become clearer, at least for the needs of MDBA, as WERP links more closely with the Basin Plan Review team. Finalisation of the benefits mapping will potentially help inform this question. It was noted by most interview participants were positive about the progress and potential impact.

³⁷ There is no consistency - some Theme benefits maps have three endpoints and some four.

4.6 Evaluative judgement

Overall, the processes used to conceive, design and implement the WERP are largely effective and efficient.

In general, the WERP documentation is comprehensive and thorough, and effective in providing a good description of the planning and implementation of the Program, but much of the detail is not publicly available. The MTE found a number of documents need to be updated, including: the existing Program Plan and the MERI Plan.

WERP has in place a robust governance and management structure which is overseen by a high-level Governing Panel. The operation of the Governing Panel was judged over all as moderately effective. The largely effective administrative and project management system tracks the deliverables of each research project and keeps detailed records although an improved document management system would aid in finding such material more quickly. Additionally, each research Theme has an effective process in place for the management of their research projects with the relevant Commonwealth Theme leads closely involved.

Engagement (collaboration) of the research Themes with the key stakeholder (MDBA, CEWH and DCCEE) has been quite effective. However, engagement with the EUAGs has been less effective. Clarity on what is being and will be delivered by WERP is patchy with the Theme leads (research and Commonwealth) and the governing groups (Governing Panel, ELT, SLT) having a clear view of the research projects and what they are intended to deliver, but others (particularly some members of the EUAGs) have less clarity.

Progress of the strategic research projects within each Theme is being very effectively tracked, with regular updates provided to the Governing Panel. There appears to be good progress with Themes 1, 2 and 3 and confidence that the research projects will be completed on time. However, there are considerable concerns with the progress of the First Nations projects in Theme 4.

The MTE has not been able to assess whether WERP is on track to deliver on its promises (i.e., its objectives). A good start has been made with the development of 'benefits realisation maps' for each Theme. However, these are poorly documented and not integrated with either the risk management plan or the evaluation plan. Additionally, there does not seem to be any reporting on the medium-term outcomes identified in the benefit mapping.

5 RECOMMENDATIONS

5.1 KEQ6. How would you recommend we improve the delivery of the program?

This MTE has found that the Program is of significant value and merit. However, a number of areas have been identified that, if addressed over the next year or so, would assist the Program to meet its objectives.

It is recommended that:

- 1 The Governing Panel consider changes to improve diversity in membership, particularly through the inclusion of independent First Nations expertise.
- 2 Consideration be given to merging the ELT and SLT, and including key members of the MDBA Basin Plan Review team – going forward their efforts should be focused more on the end products from WERP and their adoption, particularly for the Basin Plan Review.
- 3 The Program and project management administrative requirements be reviewed to make them more streamlined and efficient - this should include development of an improved document archiving system and streamlining of the process for approval of deliverables and final reports

- 4 The Program Plan be updated or a new document prepared - this is a high-level description of WERP, including the vision, objectives, all the relevant process, key documents, structure, staging, roles and responsibilities - it is a map of the complete program.
- 5 A new document or an updated version of the EAP be prepared that clearly identifies the research (knowledge) outputs and how they will be used – this should include an updating of the Theme benefits maps to include detail on the products that will be produced and how they link to the benefits and Program objectives.
- 6 Consideration be given to appointing one or more 'knowledge brokers' to assist in integrating and synthesising the research outputs into 'knowledge packages' to improve the likelihood of adoption in both the policy and management space and to help 'drive' the adoption process (Note: a clearer distinction between what is an output, outcome, impact and benefit is needed as these terms are frequently used interchangeably).
- 7 The MERI Plan be updated as a priority to focus on the end of program evaluation including:
 - 7.1 Outline the preferred approach and design of the end of program evaluation with reference to benefits realisation/change management outcomes; either designed by the evaluators or shared with the evaluators prior to commencing the outcome evaluation
 - 7.2 Include explicit consideration how to undertake evaluation of First Nations projects in a culturally appropriate manner including closing the loop in an appropriate fashion
 - 7.3 Refine the key evaluation questions to ensure they better align to the Program objectives, intended outcomes and Basin Plan Review needs
 - 7.4 Update of the Theory of Change, if retained, to include assumptions (causal connections, events, and conditions) and feedback loops³⁸; alternatively refine the Program logic – neither are considered currently fit for purpose
 - 7.5 Provide clarity on the relationship to the benefit realisation mapping and measures of success
 - 7.6 Produce and implement the MERI Plans for each Theme; include sub-program logics (updated impact pathways may be fit for purpose) and cross reference/align to benefits realisation mapping
 - 7.7 Confirm the performance indicators to be monitored at Program, Theme and project level; identify and collect data to addresses performance measures; ensure data is accessible to evaluators (database/document storage system)
 - 7.8 Clarify audience for the evaluation and report requirements
 - 7.9 The end of program evaluation be undertaken by independent evaluators.
- 8 The CATE Framework is updated to explicitly state what are the Synthesis Activities (third investment stream) planned; how they will be targeted at appropriate end users, and who has responsibility for their creation and delivery.
- 9 The Governing Panel seek further advice on ways to better engage with First Nations groups to ensure the current First Nations-led projects in Themes 3 and 4 are initiated and successfully completed.
- 10 The Governing Panel give specific consideration to a process to action the Program objective: *'be a platform from which to launch a more enduring research program'* - this could include: making the case for a continuing research program to support Basin Plan implementation into the future; consideration of the best model for such research (e.g., the current procurement, consultancy type model vs other models such as the National Environmental Science Program

³⁸ See Mayne 2023 and references therein

model); links to the One Basin CRC and other research initiatives; how the lessons from the WERP experience may be used to better focus an enduring water research program as part of the renewal of the National Water Initiative.

- 11 The benefit realisation maps include the Tactical projects and Synthesis Activities outputs, and be updated to address realisation across the quadruple bottom line (environmental, economic, social and cultural).
- 12 A 'lessons learned' document be developed to provide an enduring legacy focusing on leadership at all levels, interface between science-policy-management, and benefits - closing the loop. Further, the Governing Panel should consider how the WERP data and documents are 'housed' so it is available in the future.

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7 APPENDIX A: DOCUMENTS REVIEWED

The following is a list of documents (using file names) sourced for the MTE and grouped roughly by the area of relevance to the indicators used in the MTE – some are listed in more than one grouping.

PROGRAM DOCUMENTS

Program Plan

MD-WERP Program Plan - Report Attachment, August 2020

Risk Management Plan

Governing Panel No 11 Agenda Item 2 Attachment C Risk Plan – 13 December 2021 – MD-Water and Environment Research Program (MD-WERP)

GP15 Item 5.D, Project risk register – ELT 5 September 2022

MD-WERP Governing Panel Agenda Meeting 15, item 5.D, Project risk register – ELT 5 September 2022

MD-WERP Monitoring, Evaluation, Reporting and Improvement Plan, November 2021

MD-WERP Overview and progress April 2023 – Power point presentation, April 2023.

MERI documents

MD-WERP Monitoring, Evaluation, Reporting and Improvement Plan, November 2021

MD-WERP Governing Panel, OOS Meeting, Draft minutes, 30 March 2023

MD-WERP Mid-term evaluation: Terms of Reference, 2023

CATE documents

MD-WERP Branding guidance – August 2021

MD-WERP Communication requirements and obligations – CSIRO Informing strategic research services, November 2021

MD-WERP Governing Panel Agenda Meeting 15, item 5.C, Communication – Adoption – Transparency and Engagement update, 2022

Project CEI plan template – Oct 2022

MD-WERP Communication, adoption, transparency, and engagement framework, January 2023

MD-WERP Engagement and Adoption Plan March 2023 v0.3

GP 17 AI02 - Attachment C, CATE update

MD-WERP Governing Panel Agenda Meeting 17, item AI05 - Engagement and Adoption Plan and Benefits Mapping, 06/03/2023.

Theme 1 capability mapping v0.1

Theme 2 capability mapping v0.1

Theme 3 capability mapping v0.1

Theme 4 capability mapping v2Jan 2023b

AI05 – Att B – MD-WERP Theme benefits and capabilities summaries v0.1

PROCUREMENT PROCESS

Tender documents

Draft Tender Evaluation Plan

MDBA Request for Tender (RFT) No 2020-01 – Request for Tender (RFT)

MDBA minute MD – Water Environmental Research Program (WERP) – Request for Tender (RFT)

MD-WERP Governing Panel Meeting #7 Agneda Item 1

Request for Tender (RFT) No 2020-01 – Part 1 and 2

Request for Tender (RFT) No 2020-01 – Part 3 Draft Deed

Request for Tender (RFT) No 2020-01 – Part 4 – Tender Response Schedule 1 to 5 and 7

Request for Tender (RFT) No 2020-01 – Part 4 - Tender Response Schedule 6

WERP Tender Applicants

Work orders

MD00xxxx MD-WERP Theme 1 Work Order 2023-24 (year 3)

MD00xxxx MD-WERP Theme 2 Work Order 2023-24 (year 3)

MD00xxxx MD-WERP Theme 3 Work Order 2023-24 (year 3)

MD00xxxx MD-WERP Theme 4 Work Order 2023-24 (year 3)

MD-WERP Work Order Year 1_Theme 1

MD-WERP Work Order Year 1_Theme 2

MD-WERP Work Order Year 1_Theme 3

MD-WERP Work Order Year 1_Theme 4

RESEARCH PLANNING

MD-WERP Research Prospectus

RIP Phase 2 Theme 1 Climate Adaptation

RIP Phase 2 Theme 2 Hydrology

RIP Phase 2 Theme 3 Environment

RIP Phase 2 Theme 4 SEC

Attachment D Phase 2 Research Implementation Plan template

Attachment C Co-design Plan

MD-WERP RIP Examples

Theme 1 capability mapping v0.1

Theme 2 capability mapping v0.1

Theme 3 capability mapping v0.1

Theme 4 capability mapping v2Jan 2023b

Symposium

25 documents across the four Themes – not individually reviewed

Session and purpose – MD-WERP Annual Symposium 2023

PROGRAM MANAGEMENT**Governing Panel documents**

Governing Panel No 11 Agenda Item 2 Attachment A Program Update – 13 December 2021 – MD-Water and Environment Research Program (MD-WERP)

Governing Panel No 11 Agenda Item 2 Attachment C Risk Plan – 13 December 2021 – MD-Water and Environment Research Program (MD-WERP)

Governing Panel No 12 Agenda Item 2 Attachment A Program Update – 25 March 2022 – MD-Water and Environment Research Program (MD-WERP)

Governing Panel No 13 Agenda Item 2 Program Update – 17 June 2022 – MD-Water and Environment Research Program (MD-WERP)

MD-WERP Governing Panel Agenda Meeting 12, item 2, Attachment B Status Report, 2022.

MD-WERP Governing Panel Agenda Meeting 12, item 2, Attachment C MD-WERP Seminar, 2022.

MD-WERP Governing Panel Agenda Meeting 13, item 2, Attachment C Spotlight on Climate Adaptation, 2022

GP15 Item 5. Program update

GP15 Item 5.A, Strategic project update

GP15 Item 5.B, Program Budget 31 July 2022.

GP15 Item 5.C, Communication – Adoption – Transparency and Engagement update, 2022

GP15 Item 5.D, Project risk register – ELT 5 September 2022

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment A, Strategic investment theme update, 2022.

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment B, Tactical investment projects update, 2022.

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment C, Communications and engagement investment update, 2022.

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment D, Program Budget 31 October 2022.

GP 17 AI02 - Attachment A - Strategic investment theme update

GP 17 AI02 - Attachment B, Tactical update

GP 17 AI02 - Attachment C, CATE update

MD-WERP Governing Panel Agenda Meeting 17, item AI05 - Engagement and Adoption Plan and Benefits Mapping, 2023.

MD-WERP GP Meeting 18 - AI03 Program Update

MD-WERP GP Meeting 18 -AI03 - Attachment A, Strategic progress reports

MD-WERP GP Meeting 18 - AI03 – B Communication Adoption Transparency and Engagement update GP18

Governing Panel meeting minutes

MD-WERP Governing Panel Meeting 11, Agenda item 2, Attachment C – Risk Plan, 2021

MD-WERP Governing Panel, meetings No.1 minutes, 23 August 2019

MD-WERP Governing Panel, meetings No.2 minutes, 11 December 2019

MD-WERP Governing Panel, meetings No.3 minutes, 19 February 2020

MD-WERP Governing Panel, meetings No.4 minutes, 1 April 2020

MD-WERP Governing Panel, meetings No.5 minutes, 22 May 2020

MD-WERP Governing Panel, meetings No.6 minutes, 1 September 2020

MD-WERP Governing Panel, meetings No.7 minutes, 30 November 2020

MD-WERP Governing Panel, meetings No.8 minutes, 30 March 2021

MD-WERP Governing Panel, meetings No.9 minutes, 7 July 2021

MD-WERP Governing Panel, meetings No.10 minutes, 8 November 2021

MD-WERP Governing Panel, meetings No.11 minutes, 13 December 2021

MD-WERP Governing Panel, meetings No.12 minutes, 25 March 2022

MD-WERP Governing Panel, meetings No.13 minutes, 17 June 2022

MD-WERP Governing Panel, meetings No.15 minutes, 16 September 2022

MD-WERP Governing Panel, meetings No.16 minutes, 06 March 2023

MD-WERP Governing Panel, meetings No.17 minutes, 5 March 2023

MD-WERP Governing Panel, OOS Meeting, Draft minutes, 30 March 2023

Program management

MDBA Organisation Chart – update 21 August 2023

MD-WERP Program Internal Health Check / Periodic Review DELIVER THE CAPABILITIES Phase, December 2022.

MD-WERP Program Deliverable Tracker v0.2 (Excel spreadsheet)

Project CEI plan template – Oct 2022

Executive Leadership Team

ELT2982023 RAW NOTES

ELT Draft minutes 03_07_23

ELT Draft minutes 09_05_23

ELT Draft minutes 28_02_23

ELT ToR slide 2021

Science Leadership Team

MD-WERP Science Leadership Team, Meeting Minutes, 13 December 2022

MD-WERP Science Leadership Team, Meeting Minutes, 21 March 2023

MD-WERP Science Leadership Team, Meeting Minutes, 26 September 2022

MD-WERP Science Leadership Team, Meeting Minutes, 4 July 2023

Investment updates

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment A, Strategic investment theme update, 2022.

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment B, Tactical investment projects update, 2022.

MD-WERP Governing Panel Agenda Meeting 16, item AI02 - Attachment C, Communications and engagement investment update, 2022.

MD-WERP Strategic investment theme update: Project Status Reports, Light Traffic Report
December 2022 – February 2023

PROGRESS REPORTING

Annual Progress Reports

MD-WERP Annual Progress Report 2019-2020

MD-WERP Annual Progress Report 2020–21 – with errata

MD-WERP Annual Progress Report 2020–21 Final

MD-WERP Annual Progress Report 2021–2022 (Final Internal)

MD-WERP Annual Progress Report 2021–2022 (Final External)

MD-WERP Annual Progress Report 2020-21, Murray–Darling Basin Authority Canberra, 2022.

MD-WERP Annual Progress Update 2021–22.

Progress Reports

2022_03_Strategic Research Progress Status Report_CSIRO (Excel spreadsheet)

February 2022 Progress Status Report (Excel spreadsheet)

LTU-WERP March 22 Strategic Research Progress Status Report (Excel spreadsheet)

LTU WERP T3 Strategic Progress Report May 2022 Final 1 June

LTU WERP T4 Strategic Progress Report May 2022 Final 1 June

MD-WERP Progress Report Theme 1 Nov 2021

MD-WERP Progress Report Theme 2 Nov 2021

MD-WERP T3 Progress Report Nov 2021

MD-WERP T4 Progress Report Nov 2021

MD-WERP Progress Report 02062022 Theme 1

MD-WERP Progress Report 02062022 Theme 2

MD-WERP Progress Report 03062022 Theme 2

MD-WERP Progress Report

Theme 1 Dec22-May23 Progress Report

Theme 2 Dec22-May23 Progress Report

Theme 3 Dec22-May23 Progress Report

Theme 4 Dec22-May23 Progress Report

MD-WERP Governing Panel Agenda Meeting 18, item AI03 - Attachment A, Strategic progress report, 2023.

8 APPENDIX B: MTE APPROACH AND DESIGN

This Appendix is a modified version of a Briefing Paper on the Evaluation design submitted to the Governing Panel in August 2023.

8.1 MD-WERP background and context

The Murray–Darling Water and Environment Research Program (MD–WERP) is a \$20 million investment by the Australian Government to improve water management across the Murray–Darling Basin in response to the fish deaths in the lower Darling River in December 2018 and 2019 (Vertessy et al. 2019). Addressing knowledge gaps specific to water management and ongoing Basin Plan implementation led to a focus on the production of new knowledge that is applied and served the information needs associated with Basin Plan implementation.

The MD–WERP has three high level outcomes (MDBA 2021a):

- Improved water policy, with respect to achieving Basin Plan objectives,
- Improved capacity to manage risks with respect to water availability and prioritising water use, and
- Improved river operations and water management outcomes.

There are five strategic objectives (MDBA 2021a):

- PO1: Maximise value to water reform and management from investment.
- PO2: Leverage co-investment with research providers and key stakeholders
- PO3: Facilitate adoption of research by advancing cooperation between users and researchers.
- PO4: Invest in applied research that delivers better informed environmental water management decisions by Commonwealth agencies and improved outcomes for communities.
- PO5: Be a platform from which to launch a more enduring research program.

Aligned with the outcomes and objectives, the MD–WERP has three streams of investment (activities):

- **Strategic research:** Applied research investments delivered by a collaboration between the Australian Government and the MD-WERP Research Consortium to co-design, co-invest and deliver applied research by mid-2025.
- **Tactical investment:** Short and responsive investments delivered by a range of research and delivery partners, with each project likely to be completed within 6-12 month timeframes.
- **Synthesis activities** (including communication and adoption support): Delivered in partnership with science communication service providers to deliver existing knowledge in forms easily adopted by water manager, policy makers and Basin communities.

Within each stream of investment there are a range of projects and activities proposed. MD–WERP has been established to deliver research activities from 2020 to 2025 with most of the activities commencing in the financial year 2021-2022 and occurring for four years.

8.2 Key definitions

Basic terms used in evaluation in general, and specific to this Mid-term Evaluation (MTE) include (modified from Laursen et al. 2022 and references therein; Scriven 1991, Davidson 2013, Mayne 2023):

- **Criteria** — features of the evaluand indicating its quality, merit, worth, or value; in the MTE these include efficiency, effectiveness, appropriateness and impact.
- **Evaluands/intervention** — subjects or objects being evaluated, in this case the MD-WERP.

- **Evaluative judgment**— a declaration of the evaluand’s quality, merit, worth, or value.
- **Evaluative reasoning** — the thought process of comparing an evaluand’s status to its standards to infer its quality.
- **Performance standards** — thresholds of presentation or performance on each criteria that define levels of quality, merit, worth, or value.
- **Theory of change** — describes how an intervention is expected to lead to intended results, showing the causal links from inputs to impact and the assumptions underlying the ToC.

8.3 Evaluation type

Program evaluation is an assessment, conducted as systematically and impartially as possible, that analyses the level of achievement of both expected and unexpected results by examining the results chain, processes, contextual factors and causality using appropriate criteria such as relevance, effectiveness, efficiency, impact and sustainability (UNDP 2019). Program evaluations can generally be assigned to two broad categories:

- **Process evaluations** which relate largely to governance of programs and projects and are undertaken to assess the internal workings of a program and adjust the management strategies and practices that it is promoting.
- **Outcome evaluations** (also called impact evaluations) relate largely to technical elements of projects, which assess the impacts of a program upon the environment, societal conditions, and human activities of concern to a program. An outcome evaluation works to objectively estimate the relative contributions of a program’s policies and processes to observed social and environmental change.

Evaluations can be participatory (i.e., having stakeholder input) or independent (i.e., without stakeholder input). Stakeholders are taken to include those involved either as a recipient/user of the outputs of the project and those directly involved in generating the data.

The timing of the evaluation can also vary over the life of a program and therefore will involve different suites of questions and approaches to the evaluation. For large complex programs such as the MD-WERP there are typically three points at which evaluation can be undertaken (modified from Department of Finance 2021, [tool evaluation question bank.docx \(live.com\)](#)):

- **Short term, immediate, post-commencement, process evaluation** A ‘check in’ on a program soon after its commencement, focusing on initial implementation, design and delivery. Reporting to internal stakeholders enables issues to be identified and corrective action taken early in the program lifecycle.
- **Monitoring, medium-term, intermediate evaluation** An assessment of a program’s progress in its ‘business as usual’ phase, focusing on short and medium-term outcomes and contribution to strategic objectives. It is also an opportunity to test the program’s data sources. Reporting is primarily intended for internal stakeholders but can also include external stakeholders.
- **Impact, long-term outcome evaluation** An assessment of a program’s performance against its objectives, together with its impact (ideally tested against a counterfactual). It may also assess the program’s value for money, cost-effectiveness and other attributes. In most cases, the evaluation report is intended for external publication.

This evaluation is *participatory in nature focused on short to medium term process and outcomes*.

8.4 Evaluation purpose

The purpose of an evaluation is to provide credible, useful, evidence-based information that enables the timely incorporation of its findings, recommendations, and lessons into decision-making processes, in this case the evaluation will include elements of both short-term process evaluation and intermediate term evaluation focusing on short term outcomes. The MTE will provide an assessment of the MD WERPs achievements against the Key Evaluation Questions relating to the efficiency and effectiveness of the program with the outcomes being used to inform program improvement and to demonstrate program successes.

8.5 Evaluation design

One of the aims of the evaluation is to learn **what** attributes of the co-design and planning stage worked and **why**, and for **who**; ultimately with the intent to improve the approach in MD-WERP. When the aim is to learn to improve the success of a program (or attributes of a program), or to replicate a program elsewhere, then explanations are needed, and theory-based designs become important (Stern 2015). Questions relating to **how** an intervention worked in certain contexts is also important (Stern 2015).

8.5.1 Theory of Change

A Theory of Change (ToC) is a theory-based method that can be used for designing and undertaking evaluations by mapping the assumed relationships between activities and short-, medium-, and long-term outcomes of an intervention. It should make explicit the assumptions regarding why and how change occurs (Kny et al. 2023, Claus et al. 2023). ToC detail the assumptions behind the causal steps in the sequence of moving from process to outcome. In a simple linear form it can be used as a framework which outlines how the inputs, activities and outputs of a program connect to the desired outcomes of the program (Figure 10) in order to deliver on the objectives of the program (United Nations Environment Program 2017).

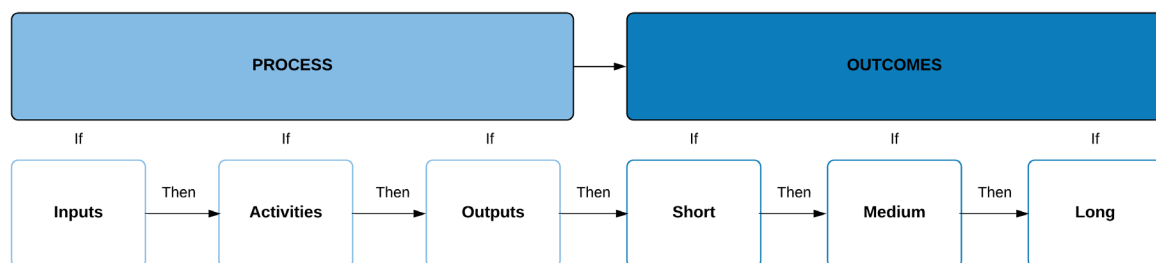


Figure 10. Simplified linear Theory of Change. Left side of the graphic relates to process evaluation, the right-side relates to outcome evaluation.

The formal changes in the program logic over the life of MD-WERP will be captured in consultation with the MDBA and by reviewing documentation of approved changes captured program artefact and reporting. This is the ToC at evaluation and becomes the basis of the evaluation. Theory of Change will be used by the project team to develop evaluative questions (EQs) within the agreed evaluation criteria, such as effectiveness, appropriateness, and efficiency.

8.5.2 Qualitative mixed methods

Mixed methods approaches are common in evaluation designs and have been adopted in this evaluation. Mixed methods combine one or multiple quantitative and/or qualitative methods. This strengthens the confidence in conclusions drawn from the data when based on several different sources of information gathered in different ways. To this end multiple qualitative methods including document review and semi-structured interviews were included in the MTE.

8.5.3 Document review

Material considered within the evaluation will include (not an exhaustive list – see main body of report):

- Governing processes
 - Meeting minutes
 - Terms of reference
- Codesign and planning
 - Research prospectus
 - Research theme planning and design
 - Strategic investment planning and design
 - Synthesis activities planning and design
- Implementation activities
 - Theme progress reports
 - Health checks
 - CATE Communication plans and processes
 - Project CEI plans
 - MD-WERP forum
- Outputs and outcomes
 - Annual reports
 - Quarterly reports
 - Annual monitoring and research plans
 - Communication artefacts i.e., newsletter

8.5.4 Interviews

Semi-structured interviews were undertaken with a select number of stakeholders. The design of the interview questions aimed to:

- ensure alignment with evaluative questions and
- construct an inquiry-based conversation to balance inquiry with conversation.

The questions were developed to ease participants into the interview with easy to answer questions followed up with linked and more detailed questions. Matters relating to the key questions were discussed in the middle of the interviews and the interview closed with questions seeking participants opinions on how to make improvements moving forward. All interviews were recorded after seeking approval from participants, with audio files transcribed. Responses captured in the reporting are anonymous.

8.6 Identifying and engaging with stakeholders

8.6.1 Participatory approach to identifying stakeholders

MDBA will be one of the primary users of the findings from the evaluation and, as such, it is important to understand how they intend to use the evaluation findings. In this sense the evaluation is participatory, directly involving MDBA in the refinement of the evaluative questions, determining who is to be interviewed, and to point out any specific decision points of importance.

The Governing Panel approved a set of six questions on which the evaluation will be based in part. These are not phrased as evaluative questions per se, but the interview questions will be evaluative in nature.

8.6.2 Targeted consultation and engagement

Sampling and collection of data from stakeholders will be purposive and iteratively developed. Participants were initially identified using stakeholder lists, MDBA recommendations, and snowball sampling by interviewees, according to their relationship to the structure and implementation of the program.

The WERP Implementation Team was consulted in a workshop to finalise the evaluation design and the evaluative questions. The WERP Implementation team confirmed the key participants to be interviewed from each of the stakeholder groups (Table 2).

Table 2. Stakeholder groups, interview type and number of participants.

| Stakeholder group | Code | | Participants |
|--------------------------|------|----------|--------------|
| Governing Panel | SG1a | Internal | 1 |
| GP Support | SG1b | Internal | 1 |
| Design | | External | 1 |
| Implementation team | SG1c | Internal | 1 |
| Governing process | | External | 2 |
| Commonwealth theme leads | SG1d | Internal | 4 |
| Consortium leads | SG2a | External | 2 |
| Consortium theme leads | SG2b | External | 3 |
| First Nations | SG3 | External | 2 |
| Policy end users | SG4a | External | 5 |
| Other end users | SG4b | External | 11 |

Stakeholders were engaged by semi-structured interviews (via Teams). Some interviews were in a groups, as the MTE had limited scope/time to undertake the evaluation.

8.7 Evaluation criteria and performance standards

8.7.1 Evaluation criteria

The RFQ references only one criteria – effectiveness, however the Australian Government NRM MERI Framework (2009) lists the following evaluation criteria as being relevant:

- Efficiency** is a measure of how inputs (resources, expertise, time, etc.) are converted into outputs (reports, data, etc.) (Peersman 2015). Assessing efficiency should consider what systems are in place for activities to be implemented, the application of best practice, or allocated expenditure versus actual expenditure. Questions evaluating project efficiencies will identify whether the intended quality and quantity of outputs were produced within the available resources and represented value for money³⁹.

Effectiveness is a measure of how well a project achieves its objectives or other specified activity, output, or outcome.
- Appropriateness** is the determination made through comparing a project with the needs of the intended beneficiaries using any of the techniques of needs analysis.
- Impact** is a measure of the broader consequences of the project which can occur at multiple scales, on the target group and other directly or indirectly affected parties. Impact is therefore a measure of change produced by the evaluand. Not all aspects of an evaluand will have high level or direct impacts.

³⁹ A full economic evaluation was not within scope.

The MD-WERP MERI Framework (MDBA 2021) identified efficiency and effectiveness as being relevant to the MTE (see Table 8) but the MTE will also include appropriateness and impact. The MD-WRP MERI plan presents the criteria as questions:

- **Efficiency:** Are we delivering the program and projects efficiently?
- **Effectiveness:** Are the activities and outputs delivering the intended short-term outcomes?
- **Appropriateness:** Are the activities and outputs being delivered as planned?
- **Impact:** Are we improving our water policy, capacity to manage risks and river operations/ water management outcomes?

8.7.2 Performance standards

Performance standards should include measures of the program's outputs, efficiency and effectiveness in the context of its purposes and key activities. The levels of performance used in any evaluation methodology requires clear articulation of the aspects of performance that are to be evaluated. The MD-WERP MERI Plan lists several indicators and measurements (Table 3).

Table 3. Performance indicators and measurement as specified in the MD-WERP MERI plan.

| Indicator | Measurement | Frequency | Evaluation Criteria | Reporting Use |
|--|---|-----------|---------------------|--|
| Program level indicators | | | | |
| Collaboration (end users and researchers) | Survey of researchers and end users on the collaboration model, including co-design approaches. | Annual | Effectiveness | Annual Progress Report Mid and end of term evaluation |
| Capacity and capability building of researchers and end users | Survey of researchers and end users on changed capacity and capabilities | Annual | Effectiveness | Annual Progress Report Mid and end of term evaluations |
| Adoption (end-user and research collaboration) | Survey of end user advisory group members and other selected end-users, and researchers, to evaluate the program's approach to end-user engagement. | Annual | Effectiveness | Annual Progress Report Mid and end of term evaluation |
| Adoption (progress towards delivering impact pathways) | Survey of end users on usefulness of research outputs and progress towards delivering the impact pathways and in meeting expected impacts. | Annual | Impact | Mid and end of term evaluations |
| Program communication and engagement | Data on communication and engagement activities | Annual | All | Annual Progress Reports Mid and end of term evaluations |

Assessment of these indicators will be supplemented by additional performance measures framed as interview questions (Table 4) that follow the typical elements of program logic. The evaluative judgement will be a narrative of the efficiency and effectiveness of the program, with some early indication of progress towards achieving the intended outcomes.

Table 4. Potential performance measures (modified from Butcher and Schreiber 2020a and MDBA 2021). Not all necessarily captured in evaluation questions.

| Attribute being evaluated | Performance measures |
|---------------------------|----------------------|
|---------------------------|----------------------|

| | |
|----------------------------|--|
| Governance processes | Interactions of Governing Panel and consortium partners |
| | Interaction of Governing Panel with MDBA |
| | Evidence of responsiveness of project management |
| Inputs | End user capacity – considered in contracting process (largely out of scope) |
| | End user capability – considered in contracting process (largely out of scope) |
| | Knowledge needs – research prospectus |
| | Researcher capacity – considered in contracting process (largely out of scope) |
| | Researcher capability – considered in contracting process (largely out of scope) |
| Activities - co-design | Co-design planning process |
| | Timing of consultation – in relation to input |
| | Adequacy of engagement and consultation |
| Activities - collaboration | Collaboration between stakeholders |
| | Engagement levels of managers, delivery team, water holders, end-users |
| | Responsiveness of MDBA to stakeholders |
| Outputs | Timeliness of outputs by investment stream |
| | Robustness and quality of outputs by investment stream |
| | Transferability of outputs to increase adoption by investment stream |
| Impact | Improved understanding relating to investment streams/objectives |
| | Exposure and reach of outputs |
| | Change to behaviour (organisation and or individual level) |
| | Adoption of new knowledge |

8.7.3 Rubrics

Rubrics for each evaluative criterion which describe the performance standards used in the evaluative judgements. Narrative descriptions of the evaluations will include the following levels of performance:

- Inefficient, Moderately efficient, Efficient
- Ineffective, Moderately effective, Effective
- Inappropriate, Moderately appropriate, Appropriate

Table 5. Efficiency criteria and performance standards (modified from Butcher and Schreiber 2020b).

| Efficiency | Performance standards | | |
|-----------------------------------|--|--|---|
| | Inefficient | Moderately efficient | Efficient |
| Governance processes | Processes inefficient, with poor coordination and communication between MDBA, Governance Panel and consortium members. Processes are not transparent and poorly documented. Governing structure inefficient. | Processes moderately efficient, with coordination between MDBA, Governance Panel and consortium members. Only some processes are transparent and documented. Governing structure moderately efficient. | Processes are efficient, well coordination between MDBA, Governance Panel and consortium members. Processes are transparent and well documented. Governing structure efficient. |
| Activities Co-design | Co-design process inefficient, poorly organised, and lacking consideration of end users' capacity and capability. | Co-design process moderately efficient, some consideration of end users' capacity and capability. | Co-design process efficient, well organised, giving adequate consideration of end users' capacity and capability. |
| | Inefficient co-design process – end users not engaged at appropriate times | Co-design process moderately efficient, moderate engagement at key points, not only inception. | Co-design process efficient, all end users engaged throughout entire process and with continued engagement. |
| Activities - collaboration | Limited to no collaboration and communication with stakeholders. | Evidence of some efficient collaboration and communication with stakeholders. | Strong evidence of efficient collaboration and communication with stakeholders. |

| Efficiency | Performance standards | | |
|---|--|--|--|
| | Inefficient | Moderately efficient | Efficient |
| | Researchers and end users' engagement inefficient or non-existent. | Researchers and end users' engagement moderately efficient, some interaction occurring. | Researchers and end users' engagement efficient, well timed and productive. |
| Outputs – communication and adoption | Fails to produce the intended quality and quantity of most outputs (including data), within the available resources in a timely fashion. | In most cases, but not all, succeeds in producing the intended quality and quantity of outputs (including data), within the available resources in a timely fashion. | Efficient process in producing the intended quality and quantity of outputs (including data), within the available resources in a timely fashion. |
| Progress towards outcomes and impact | Limited improvements over time, with little novel learning for the cost of the activities (i.e., adaptive management outcomes limited). | Moderate improvements over time, with some novel learning for the cost of the activities (i.e., adaptive management outcomes moderate). | Obvious improvements over time, with novel learning across the program for the cost of the activities (i.e., adaptive management outcomes efficient and represent good value for money). |

Table 6. Effectiveness rubric of performance standards (modified from Butcher and Schreiber 2020b).

| Effectiveness Sub-criteria | Performance standards | | |
|---|--|---|---|
| | Ineffective | Moderately effective | Effective |
| Governance processes | Governance structure not effective. Poor understanding of structure. Processes ineffective in achieving desired purpose. | Governance structure moderately effective, some duplication of processes. | Governance structure effective, and rigorous. No duplication of processes and structure well understood. |
| Activities Co-design | Inputs limited, little to no consideration of stakeholder capacity or capability in co-design process. | Moderately effective, with some consideration of stakeholder capacity or capability in co-design process. | Effective process for consideration of stakeholder capacity or capability in co-design process. |
| | Ineffective as cultural sensitivities and values not considered in co-design. Fails to build on strengths to make a positive contribution to the lives of current and future generations of First Nations. | Moderately effective with some consideration of cultural sensitivities and values in the co-design process. Some contribution to the lives of current and future generations of First Nations likely. | Effective consideration of cultural sensitivities and values in the co-design process. Builds on strengths to make a positive contribution to the lives of current and future generations of First Nations. |
| Activities - collaboration | Collaboration with stakeholders is ineffective, fails to ensure diverse voices are heard and respected. | Collaboration with stakeholders is moderately effective, some delays and or failures in collaborative processes. | Collaboration with stakeholders is effective, ensures diverse voices are heard and respected, true partnerships operating effectively. |
| | Collaboration with First Nations is ineffective, fails to ensure diverse voices are heard and respected. | Collaboration with First Nations is moderately effective, some delays and or failures in collaborative processes. Two way learning not fully evident. | Collaboration with First Nations is effective, ensures diverse voices are heard and respected. Two-way learning is evident. |
| Outputs – communication and adoption | Objectives specific to communicating key findings were minimally effective, with few of the planned/ approved outputs delivered. | Objectives specific to communicating key findings were mostly effective with the majority the planned/ approved outputs delivered. | Highly effective objectives specific to communicating key findings with the majority of planned/ approved outputs delivered. |

| Effectiveness Sub-criteria | Performance standards | | |
|--------------------------------------|--|--|---|
| | Ineffective | Moderately effective | Effective |
| | Communication of key findings unlikely to lead to changed water policy management practices and or demonstrate cultural respect towards First Nations. | Communication of key findings likely to lead to limited/minor changes in water policy and management practices. Some | Communication of key findings on track to result in substantial changes in water policy and management practices. |
| | Communication activities were poorly-targeted and missed most stakeholders. | Communication activities were generally well-targeted but missed some stakeholders. | Communication activities were well-targeted, with all stakeholders kept informed of progress. |
| | Low end user uptake - intended users of key outputs only peripherally or not aware of outputs. | Moderate levels of end user uptake - intended users of key outputs aware of outputs in general. | High levels of end user uptake – intended end users aware of and utilised outputs. |
| Progress towards outcomes | Minority of outcomes achieved. Some unlikely to be achieved over longer timeframe. | Outcomes partially achieved. Some partially achieved, but likely to be achieved over longer timeframe. | Majority of outcomes fully achieved, or on track to be achieved. |
| | Line of sight from program outcomes to the Basin Plan limited. Outcomes unlikely to contribute to meeting legislative requirements. | Line of sight from program outcomes to the Basin Plan is clear for most of the outcomes. Most outcomes are likely to contribute to meeting legislative requirements. | Line of sight from all program outcomes to the Basin Plan is clear. Outcomes will contribute to meeting legislative requirements. |
| Impact - achieving objectives | Majority of objectives unlikely to be achieved over life of the program. | Moderate number of objectives partially achieved, but likely to be achieved life of the program. | Majority of objectives on track to be achieved. |

Table 7. Appropriateness rubric of performance standards (modified from Butcher and Schreiber 2020b).

| Appropriateness Sub-criteria | Performance standards | | |
|---|--|---|---|
| | Inappropriate | Moderately appropriate | Appropriate |
| Governance processes – program level documents | Project logic and design in foundation documents lacks clarity, key assumptions and or drivers are not articulated, and/or exhibits poor alignment to objectives and outcomes, reporting requirements not articulated. | Project logic and design in foundation documents is satisfactory with key assumptions and or drivers articulated, reasonable line of sight to objectives and outcomes, reporting requirements mentioned. | Project logic and design in foundation documents is exemplary, with key assumptions and or drivers clearly articulated, direct line of sight of results to reporting requirements with outcomes aligned to those of the BWS and EWP. |
| Activities Co-design | Co-design had limited engagement, with participation of stakeholders occurring only at inception, with limited input to overall design. Limited consideration of knowledge needs of stakeholders included in planning and co-design. | Co-design was moderately effective with stakeholders and First Nations having some input at several points in the planning stage. Some consideration of knowledge needs of stakeholders included in planning and co-design. | Co-design process effective with good engagement, with participation of stakeholders and First Nations occurring at multiple points in the planning stage. Knowledge needs identified by stakeholders fully incorporated into planning and co-design. |
| | Inappropriate as cultural sensitivities and values not considered in co-design. Fails to build on strengths to make a positive contribution to the lives of current and future generations of First Nations. Unlikely to contribute to First | Moderately appropriate with some consideration of cultural sensitivities and values in the co-design process. Some contribution to the lives of current and future generations of First Nations likely; likely to contribute to | Appropriate consideration of cultural sensitivities and values in the co-design process. Builds on strengths to make a positive contribution to the lives of current and future generations of First Nations, contributes to First Nations |

| Appropriateness Sub-criteria | Performance standards | | |
|---------------------------------|--------------------------------------|--|------------------------------|
| | Inappropriate | Moderately appropriate | Appropriate |
| | Nations water policy and management. | First Nations water policy and management. | water policy and management. |

8.8 Evaluative questions (EQs)

Evaluative questions (EQs) define the information that the evaluation will generate and consider. Evaluation, by definition, answers evaluative questions about quality and value and worth to provide an overall judgement of performance (Davidson 2014). In this context quality refers to how good something is, and value refers to how good it is in terms of the specific situation. Evaluative questions provide both a focus and a frame for an evaluation and are essential for producing robust conclusions (McKegg et al. 2018). Ideally 5-7 high level evaluative questions should guide the evaluation with sub-questions designed to provide the details and aggregate up to inform the high-level evaluation.

The MDBA has developed two sets of evaluative questions: key evaluation questions (KEQs) relevant to both the MTE and end of program evaluation (Table 9) and an additional six questions set for the MTE by the Governing Panel.

Table 8. Evaluation criteria, KEQs and relationship to Program objectives and reporting timeline (MDBA 2021). **Note that appropriateness is included in the MTE.

| Evaluation Criteria | Key Evaluation Question (KEQ) | Alignment to Program Objective | Reporting timeline |
|----------------------|---|---|---|
| Efficiency | KEQ 1: To what extent was the program implemented in an efficient manner? | PO1: Maximise value to water reform and management from investment. PO2: Leverage co-investment with research providers and key stakeholders. | Annual Progress Report Mid- term evaluation End of term evaluation |
| Effectiveness | KEQ2: To what extent have program activities and outputs effectively supported the achievement of program outcomes? | PO3: Facilitate adoption of research by advancing cooperation between users and researchers. | Mid- term evaluation End of term evaluation |
| Impact | KEQ 3. To what extent has the program improved our water policy, capacity to manage risks and river operations/water management outcomes? | PO4: Invest in applied research that delivers better informed environmental water management decisions by Commonwealth agencies and improved outcomes for communities. PO5: Be a platform from which to launch a more enduring research program. | End of term evaluation |

| | | | |
|--------------------------|----------------|--|---|
| Appropriateness** | Not applicable | PO4: Invest in applied research that delivers better informed environmental water management decisions by Commonwealth agencies and improved outcomes for communities. | Program progress report Annual Progress Report |
|--------------------------|----------------|--|---|

8.8.1 Interview questions

The relationship between the WERP MERI KEQs and the questions listed in the ToR for the MTE⁴⁰ are shown in Table 9. The approach for the MTE is to follow a theory of change/program logic steps and to craft a series of interview questions relating to each of the main steps (refer to Figure 10) and to the governing processes of the program. Four stakeholder groups have been identified with some questions being specific to individual groups (i.e., First Nations).

The prompts listed under each interview question are for the interviewer to use at their discretion and act as a guide to unpack answers given by participants.

⁴⁰ Approved by Governing Panel in March 2023, but not supplied til post contract

Table 9. Range of possible interview questions and relation to WERP MERI Plan KEQ and questions listed in the MTE Terms of Reference.

| Program component | MTE potential interview questions | ToR question (MDBA March 2023) | MERI KEQ (MDBA 2021) |
|-------------------------------------|--|---|---|
| Governance process | How effectively has the MDBA implementation team utilised the Governing Panel to guide program design and management? <i>PROMPT: What improvements, if any, could be made?</i> | 1. Do the program artefacts provide a sound description of how MD-WERP is designed and being managed? | KEQ 1: To what extent was the program implemented in an efficient manner? |
| | How effectively did MDBA engage with the consortium leads to achieve best-practice project design and ensure robust, relevant science? <i>PROMPT: What improvements, if any, could be made?</i> | | |
| | Was the project design process efficient and effective? <i>PROMPT: What aspects of engagement were effective, e.g., emails, terms of reference etc.</i> <i>PROMPT: What improvements would be recommended?</i> | | |
| | To what extent was the approach to consultation and collaboration between Implementation team and consortium partners effective and effective? <i>PROMPT: What improvements (if any) re engagement/ownership/improved delivery would you recommend?</i> | 2. Is the management and governance of the program rigorous? | |
| | To what extent has the governance model for MD-WERP enhanced project efficiency and effectiveness? <i>PROMPT: How efficient was the governance model in helping the project to achieve strong and relevant science?</i> <i>PROMPT: How efficiently did the Implementation team manage communication, risks, and issues between the groups of the governance model?</i> | | |
| | How efficiently did MDBA implementation team interact with the Consortium partners and theme leads? | | |
| | | | |
| Inputs | To what extent was the capacity and capability of the end user groups considered in the design phase? | 3. Is there clarity on what is being delivered by the program? | |
| | To what extent was the capacity and capability of the researchers considered in the design phase? | | |
| | To what extent were knowledge needs of end users taken into consideration in the design phase? | | |
| Activities – co-design and planning | How efficient were interactions during co-design process? <i>PROMPT: What level of involvement in planning – identifying knowledge needs.</i> | | |

| Program component | MTE potential interview questions | ToR question (MDBA March 2023) | MERI KEQ (MDBA 2021) |
|-----------------------------------|--|---|---|
| | How effective has the co-design process been? <i>PROMPT: Based on expectations at the beginning of MD-WERP, were your needs addressed at the level you required them to be addressed at?</i> | | |
| | How appropriate were the processes used to develop program objectives? <i>PROMPT: How appropriate are the project deliverables for your needs?</i> <i>PROMPT: This includes addressing knowledge gaps identified by stakeholders</i> | | |
| | How appropriate was the co-design with regards to providing a culturally safe environment and giving appropriate consideration to cultural values and outcomes? <i>PROMPT: What improvements, if any, could be made?</i> | | |
| | | | |
| Activities - collaboration | To what extent has the collaborative processes between the MDBA and consortium members been effective and efficient? <i>PROMPT: What is working and why?</i> | | |
| | How effective and efficient has the approach to consultation been? <i>PROMPT: What change if any changes would you recommend? improved engagement/ownership/improved delivery?</i> | | |
| | How appropriate are the processes used to engage with stakeholders? <i>PROMPT: What were the most appropriate mechanisms – did it differ by group?</i> | | |
| | To what extent has the collaborative processes between the MDBA and end users been effective and efficient? <i>PROMPT: What is working and why?</i> | | |
| Outputs | What data are available to determine initial outputs and early outcomes of the program, and do they show the program has been effective? | 4. Is reasonable progress being made and is the program on track to deliver its promises? | KEQ2: To what extent have program activities and outputs effectively supported the achievement of program outcomes? |
| | To what extent has the MD-WERP effectively communicated outputs? <i>PROMPT: timeliness, type, mechanism of delivery of updates, reports, feedback on input received, notes of meetings etc</i> | | |
| Progress towards outcomes | To what extent are the intended outcomes likely to be achieved? | | |
| | Have any issues or developments emerged that might limit the achievement of intended outcomes? If so, what actions are being taken to address them? | | |

| Program component | MTE potential interview questions | ToR question (MDBA March 2023) | MERI KEQ (MDBA 2021) |
|------------------------------|---|--|---|
| | <p>How impactful has the MD-WERP program been thus far in leading to change in behaviour?</p> <p><i>PROMPT: take lead from responses; Are you aware of any broader consequences of the project (i.e. economic, jurisdictional, managerial) within a state or basin level?</i></p> <p><i>PROMPT: Has there been any changes in behaviours related to interaction between project participants, collaboration, communication, environmental water management etc. as a result of the program?</i></p> | | |
| Impact -achieving objectives | To what extent is the program consistent with the strategic policy objectives, i.e., how well is the program aligned to the Basin Plan? | 5: Is it likely that the program outputs will be utilised by end users and create positive impact? | KEQ 3. To what extent has the program improved our water policy, capacity to manage risks and river operations/water management outcomes? |
| | <p>To what extent have the synthesis projects contributed to improved water policy?</p> <p><i>Prompt: Have you adopted or used any of the synthesis project outputs? Do you envisage their future use?</i></p> | | |
| | To what extent will the tactical projects improve capacity to manage risks with respect to water availability and priority setting? | | |
| | <p>To what extent will the strategic research projects improve river operations and water management outcomes?</p> <p><i>Prompt: Overall do you think the program will improve the ability of water agencies (MDBA and CEWO) to undertake their missions more effectively?</i></p> | | |
| | <p>To what extent are the objectives relating to First Nation outcomes likely to be achieved?</p> <p><i>Prompt: Overall do you think the program will improve the ability of water agencies (MDBA and CEWO) to undertake their missions more effectively and include cultural considerations?</i></p> | | |

8.9 Evaluative judgements and reporting

As stated above, the evaluation findings will be based on considering the responses from the interviews against the performance standards to make statements regarding the effectiveness, and efficiency of the MD-WERP following the program logic stages of planning (governance processes), inputs, activities, outputs and outcomes/impact.

The main audience for the evaluation report will be the MDBA, with the final report providing a summary of the approach taken and evaluative findings. The evaluative report will include the following (modified from Davidson 2014):

- Explicitly evaluative language will be used when presenting findings (rather than value-neutral language that merely describes findings)
- Structuring of the findings section using focal areas and Evaluative Questions as subheadings
- Clarity and transparency about the evaluative reasoning used, with the explanations clearly understandable to both non-evaluators and readers without deep content expertise in the subject matter
- Recommendations for any adjustment to the management strategies and practices utilised in MD-WERP.