Murray–Darling Basin Environmental Water Knowledge and Research Project

Communications and Adoption Strategy

Prepared by: The Murray–Darling Freshwater Research Centre

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Murray–Darling Basin Environmental Water Knowledge and Research Project Communications and Adoption Strategy

Draft Report prepared for the Department of Environment and Energy by The Murray–Darling Freshwater Research Centre.

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Cover Image: The late Roger Goode explains aspects of wetland ecology to the Murray–Darling Wetlands Working Group.

Photographer: Ben Gawne, MDFRC

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Contents

1 Introduction

1.1 About the MDB EWKR Communications and Adoption Strategy

The Murray–Darling Basin Environmental Water Knowledge and Research (MDB EWKR) project aims to deliver knowledge that is relevant and accessible for environmental water managers in the Murray–Darling Basin. The project team will collaborate with water planners and managers, asset managers, natural resource managers (NRM), scientists and relevant community groups to identify research priorities, and to undertake research targeted at addressing those priorities.

Adoption and Communication are essential to the achievement of the MDB EWKR project objectives and will play a central role in supporting collaboration and application of new knowledge to management decisions (Figure 1).

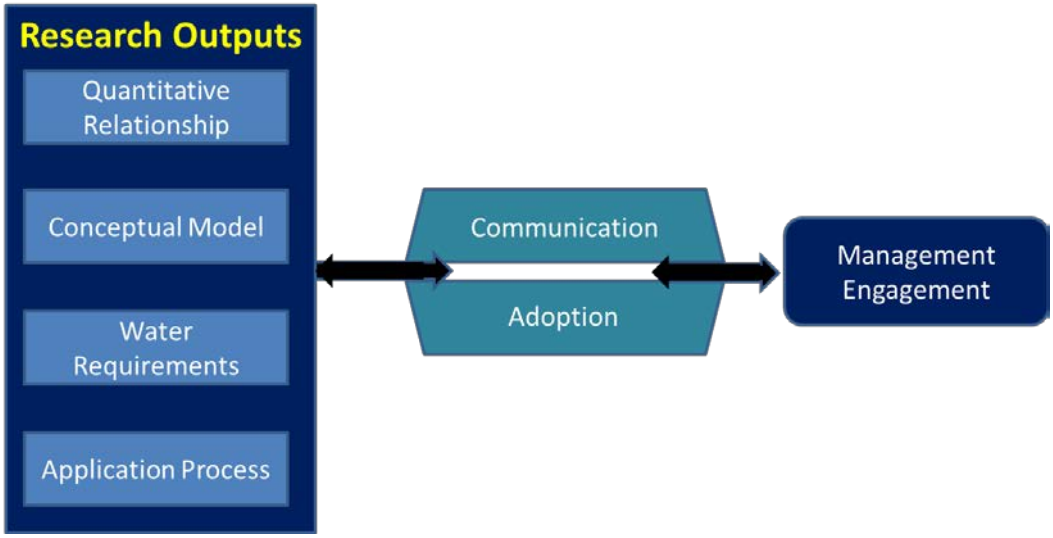

Figure 1. Illustration of the role of Communication and Adoption in conveying different types of research outputs (quantitative relationships, conceptual models, water requirements and application processes) to managers.

The program logic developed during the scoping and planning phase of MDB EWKR highlighted that effective communication promoting collaborative and integrated research was critical to the success of the project, and its adoption by environmental water and NRM managers (see Attachment A — MDB EWKR Program Logic diagram).

The aim of this Communications and Adoption Strategy is to share and promote the project's purpose, objectives, activities and achievements in an effective, consistent and coordinated manner. It provides a framework to manage and coordinate the variety of communications and adoption approaches that the project will use to share key messages and reach target audiences.

The Strategy is aimed at the Project's Target Audiences, as shown in Figure 2:

- researchers involved in the MDB EWKR project – to support collaboration in the communication and application of project outputs
- the Department of Environment and Energy (DoEE) – to support their management of the project

- key management stakeholders – to promote awareness of the project's outputs and support application of Project knowledge to decisions.

This Strategy provides the foundation for a 'Communications and Adoption Plan' an Annual Work Plan and Budget. The Work Plan and Budget are reviewed and updated annually. The MDB EWKR research activities are described separately in the project's Annual and Multi-year Research Plans (ARP and MYRP). The research plans and the Annual Work Plan and Budget will be updated simultaneously.

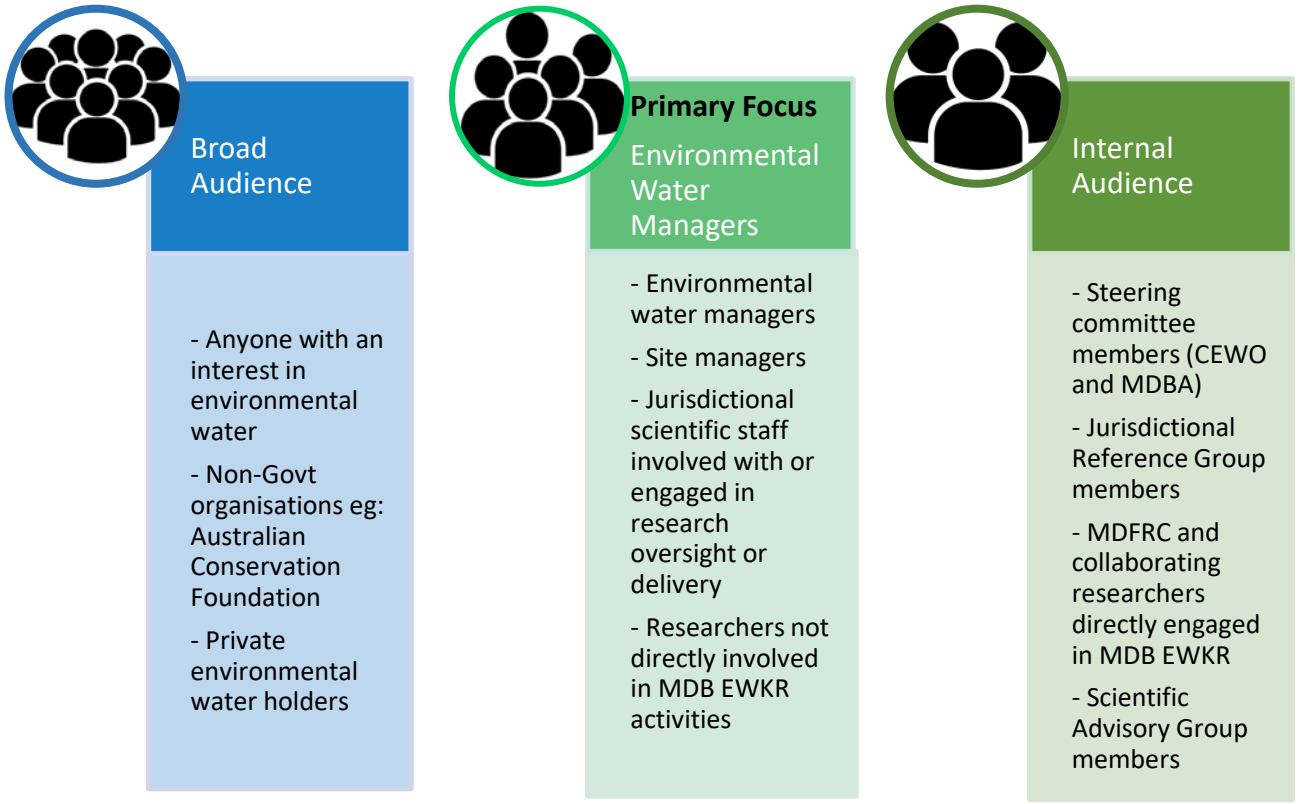

Figure 2: MDB EWKR Target Audiences

2 Adoption

2.1 Objectives

The Adoption component of the Strategy aims to share:

1. Research outcomes to enhance environmental water management, complementary NRM, and environmental watering outcomes.
2. Research outcomes and emerging knowledge gaps, and associated research priorities to provide direction for future investment in research.

In 2015–16, the MDB EWKR Project Leadership group engaged with managers through both the JRG and a series of regional workshops (held in May–June 2016 and in November 2016). These

engagement activities sought feedback from managers on both their knowledge needs and key challenges associated with adoption. The regional workshops discussed some of the issues that confront any knowledge provider in achieving adoption.

It was generally agreed that the major challenges include accessing information, ensuring information is relevant, applying information within the specific context, ensuring the information provides feasible solutions, and reconciling dissonance. Many of these issues can be addressed by discussions between experts and managers. The challenge for EWKR will be to achieve a balance between participating in these types of conversations, and producing outputs that ensure the project's legacy continues to be available for application to management decisions.

2.2 Context

Adoption is driven primarily, by need. As a consequence, the adoption process ideally starts before the research does, with building partnerships, identifying needs, scoping, and jointly developing research questions that will address stakeholders needs.

If the knowledge generated meets stakeholders' needs, adoption strategies need to be able to respond to those needs and take account of the way the information is going to be managed and shared, as well as the social and institutional context within which the adoption process takes place. Adoption is not a simple linear process of accessing information and applying it to a decision. In most instances, new knowledge will need to be adapted and placed within a context before it can be applied. Consequently, the process of adoption occurs in a number of phases that starts with an awareness of new knowledge, moves into a period of exploring and trialling, then applying and finally evaluating the new knowledge (Figure 3).

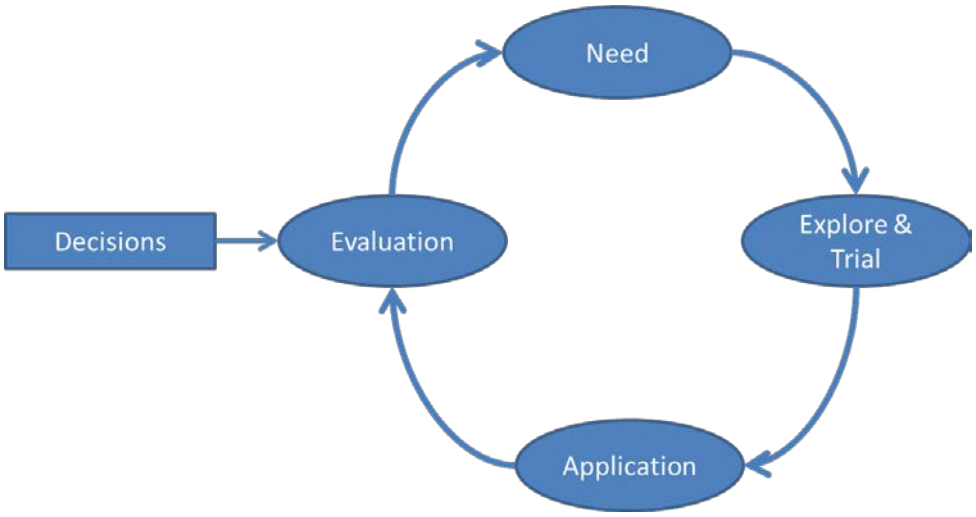

Figure 3. Adoption is driven by need. In the current context, the need is for knowledge to underpin decisions. When a decision needs to be made, there is an evaluation of the knowledge available to inform the decision. Once needs have been identified, the manager will seek and trial new knowledge before applying it and finally evaluating whether the knowledge has influenced the need.

Facilitating adoption within this context requires that knowledge be managed in a way that supports these processes. This is of particular importance to the MDB EWKR project, as ensuring the knowledge we generate is meaningful and relevant is a priority. Some of the key considerations when making new knowledge available include ensuring that it is:

1. accessible: managers can easily find the information.
2. relevant: information is relevant to the decision. This includes consideration of the scale at which the information is relevant.
3. applicable: the information can be adapted to the specific management and environmental context.
4. feasible: use of the information.
    a. is not associated with unacceptable risks.
    b. does not require investment of time or resources that are not available (e.g. capacity development).
    c. supports practical or feasible decisions.
5. credible: the information is trusted and conforms with managers' existing models and decision-making role.

In light of the process of adoption (Figure 3) and the need to engage managers in evaluating whether the Project's proposed approach conforms to the criteria above, adoption will be an ongoing process throughout the life of the project. To ensure this occurs the MDB EWKR project has engaged with managers from the beginning of the project to address their needs and seek input to the development of adoption strategies, for example, reviewing Decision Support Tools and knowledge-seeking strategies. These activities have also helped develop relationships with key stakeholders that will be important to successful adoption.

This component of the Communication and Adoption strategy builds on the adoption activities that have been undertaken to date, and identifies a series of activities and outputs that seek to improve managers' predictive capacity through adoption of the new knowledge created by the MDB EWKR project.

2.3 Scope and purpose

The Adoption component complements the Communications Component. It describes the project's approach to facilitating the uptake and application of the project's knowledge to management decisions. In contrast, the Communication component seeks to describe the project's approach to providing information to the varied and numerous stakeholders. The relationship between the two components is illustrated in Figure 4.

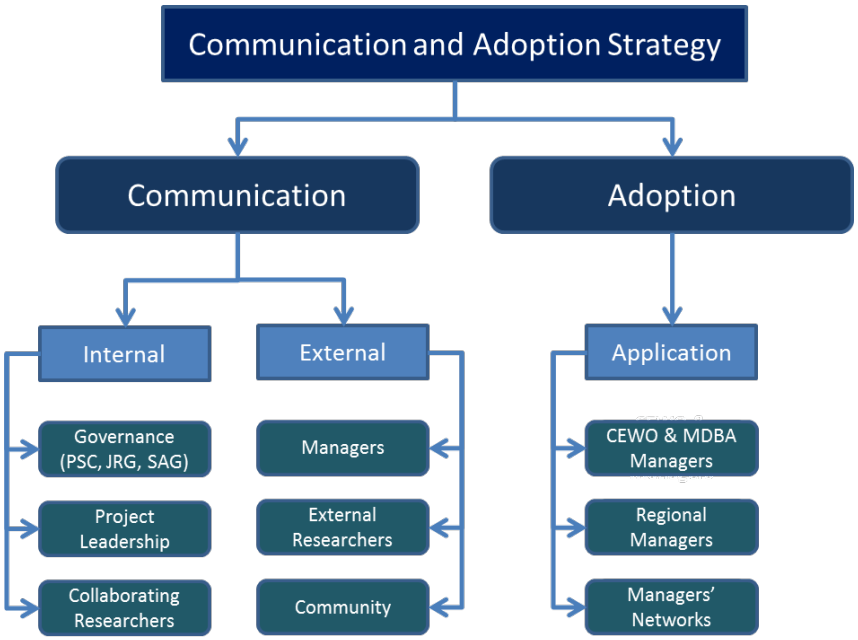

Figure 4. The relationship between the Communication and Adoption components of the Adoption and Communication Strategy, with Communication describing the processes and outputs designed to convey information, and Adoption seeking to facilitate the application of knowledge to management decisions. The light blue boxes represent sub-components, while the turquoise boxes represent the relevant audiences.

The Adoption component of the Strategy describes the processes and activities by which the MDB EWKR Project Team will facilitate the uptake of the project's information, concepts, tools or practices, in order to support achievement of the DoEE's anticipated outcomes. To apply the MDB EWKR outputs to management decisions, the Project's improvements in understanding and predictive capacity will need to be adapted to the specific managerial and environmental context in a way that improves outcomes. This requires an understanding of who will be adopting the information and what it will be used for, which will enable:

- environmental water managers to improve their capacity to predict outcomes of environmental flow allocations over 1–5 years.
- managers from the MDBA, CEWO and State agencies to improve their capacity to report on progress toward Basin Plan environmental objectives and targets.

The approach to Adoption will include four sub-components:

1. collaborating with managers to achieve their objectives
2. capitalising on existing networks to deliver knowledge when managers need it
3. engaging with managers to determine how project outputs are customised to meet their needs.
4. managing the project's legacy.

2.4 Sub-components

2.4.1 Collaboration

We know adoption relies on strong relationships, this is because relationships:

- build trust between provider and user and reduce the user's perceptions of risk around the use of new knowledge
- improve the provider's understanding of the users' knowledge needs and the context within which that knowledge is applied
- facilitate access to new knowledge
- provide opportunities for exploration and trialling of new knowledge.

Collaboration is an effective and powerful means of developing relationships. The regional workshops undertaken in May–June 2016 identified numerous opportunities for collaboration between water managers and the MDB EWKR project team. Taking advantage of these opportunities will support the development of relationships between researchers and managers and influence both the way that the research evolves and the transfer of new knowledge developed by the project.

Opportunities for collaboration will be identified and included in the theme's Annual Research Plans, responding to Manager requests and needs as the project areas develop. Opportunities for collaboration will emerge through interactions between researchers and managers. Supporting these collaborations will require a flexible and adaptive approach that reacts to opportunities as they are identified. To date, examples of collaboration between project team members and managers include:

1. data analysis
2. monitoring management interventions.

2.4.2 Networks

The Decision Support Tool (DST) review identified that managers are adept at using their networks to access information to inform their decisions. The MDB EWKR Adoption component of the Communication and Adoption Strategy will use these existing networks to facilitate adoption. This approach is because:

1. the MDB EWKR does not have the capacity to change existing management culture and learning practices
2. there are significant benefits associated with managers consultative approach to decision making that may be lost if the MDB EWKR sought to mediate significant change
3. using existing networks builds on existing relationships and capitalises on their imbedded trust, which facilitates adoption.
4. Using existing networks make sense and enables the team to access a broader range of people, this will be done:

    a. By supporting project researcher already involved in networks to impart their MDB EWKR knowledge into decision-making processes. Key MDB EWKR staff will be kept well informed of project developments in order to pass the information on to their networks.

b. Engage key personnel from within managers' existing networks to enable them to act as adoption conduits for the MDB EWKR project. Communication with these stakeholders is described in the External Communication component of the Strategy.

Implementation of this element of the Adoption component is reliant on:

a. the project's internal communication processes to ensure that collaborating researchers are aware of project outputs and are capable of communicating it to managers,
b. external communication with the researcher community so that external researchers are aware of project outputs and are capable of communicating it to managers,
c. a flexible and adaptive approach that supports engagement when managers' request it.

5. Seek opportunities to expand existing networks:

    a. Seek opportunities for the inclusion of project team members in management processes. There may be opportunities to support the direct participation of project team members in management processes. Investing in developing new relationships will be one of the legacies of the project.
    b. Support a water managers' forum/workshop that provides an opportunity for the evaluation of environmental flow outcomes. This would provide an opportunity for the exchange of knowledge among managers, as well as an opportunity for MDB EWKR researchers to apply their knowledge to the interpretation of outcomes. This type of interaction would allow for the development of relationships among managers and researchers that may, over time, lead to the inclusion of the researchers into the managers' active network.

MDB EWKR will also expand the networks of collaborating researchers through open internal communication and a flexible and adaptive approach that reacts to opportunities as they are identified.

2.4.3 Output customisation

Each research activity undertaken as part of the MDB EWKR project will produce a written output that will be incorporated into one of the project's contracted deliverables (Theme or Area reports). It is important that the information included in these reports is of value and available to managers. To increase the value of these outputs, the project will undertake the following process.

Step 1. Wherever possible, outputs of activities will be written up in a scientific paper that will be submitted for publication in a peer-reviewed journal.

Step 2. The draft paper will be circulated to a small group of managers known to be interested in the topic.

Step 3. Feedback will be sought from the managers concerning the key messages, how the information might be applied, and its possible influence on decisions.

Step 4. The feedback from managers will be used to develop a summary of the paper's content that provides a narrative summarising the information and its application to management. The form of the summary (fact sheet, video, decision tree) will be influenced

by input from managers, as well as the type of information, and the way in which it will be used by managers.

Step 5. The managers will then review the draft output before it is made available through one of the processes described in 2.4.5 Communication channels section of this Strategy.

This process ensures that managers are actively engaged in the development of outputs, which will both facilitate adoption and help the researchers identify management implications, identify how knowledge will be applied to decisions, and how it might be adapted to different situations. The engagement with managers will be undertaken through both the Collaboration Space and through workshops held with managers at the four research sites and in Canberra.

Careful consideration will need to be given to the types of outputs produced. Given that managers each have their own learning preferences, there is unlikely to be consensus on the best type of output, and the project does not have the resources available to meet everyone's needs. This challenge will be met in two ways. Firstly, the input from managers will be used to prioritise options. Second, the outputs will be circulated among collaborating researchers, who will then be able to communicate the key messages to their networks. Given the importance of managers' networks to the adoption process, one cost-effective means of packaging information may be the production of synthesis papers that provide a summary of the current state of knowledge (see Attachment D for further information). Any investment in syntheses will be determined through engagement with managers.

2.4.4 Legacy management

A key element of any Adoption component is the management of the project's intellectual legacy, to ensure that the project's knowledge outputs are managed in a way that they continue to be available for adoption into the future (Table 1). This can be achieved through a variety of means that are summarised in 2.4.5 Communication channels

Table 1. Table of the major intellectual legacies and how the MDB EWKR project will address them.

Potential project legacies	Treatment within MDB EWKR
Research data including spatial data	Data management strategy will be developed
Published research papers	Anticipated outputs of the research themes
Communication, training and education products	Included within the Adoption component
Technical infrastructure	Not anticipated to be an output of the MDB EWKR project
Social capital such as groups or networks	Have been formalised by MDB EWKR (e.g. JRG and waterway mangers group). Will be a legacy of the project — but the project will not be able to sustain this beyond its own life

It will be important that project outputs are managed in a way that supports their use by managers. This may require that additional context or guidance is provided on how the knowledge is used to support different types of decisions.

One potential strategy for ensuring knowledge accessibility and its ongoing management would be to develop a partnership with an appropriate institution that already has a well-established knowledge management strategy. This would have benefits to the project in terms of securing its legacy, and to stakeholders, as it may help reduce the fragmentation of knowledge about environmental flows.

The outputs will be promoted through activities described in the Communication component. These activities will be focussed on three main audiences, Commonwealth water managers, regional water managers, and their networks of experts. Researchers will be made aware of the outputs through traditional channels, such as the published literature and presentations at conferences (External Communication sub-component).

The specifics of the management strategy will be developed once the research themes have completed their conceptualisation processes. At this point, there will be greater clarity around the types of outputs that will need to be managed. There will then be opportunities to seek guidance from managers about how best to manage these outputs to make them accessible and relevant.

2.4.5 Communication channels

Due to the diverse target audience, MDB EWKR is required to develop products that encompass broad, high level interpreted information about the work being undertaken, through to more specific outputs designed for a particular group of people or location.

In order to meet these broad requirements, a hierarchy of 'nested' products and events will be incorporated, ranging from broad, overarching messages in easily accessible formats, through to specific and detailed knowledge. As the level of specificity increases, the more focused the communication product or adoption approach will be to meet the particular needs of the target audience.

Options available for individuals to access MDB EWKR work, whether they be an environmental water manager, a researcher or a community member are shown in Figure 4. There is movement between and within the elements in the diagram, with no-one locked into accessing information from one communication or adoption channel. For example, at a high level, the storytelling platform and social media promote key messages and achievements. More accessible detail will be provided through fact sheets, synthesis guides and focused workshops. Highly technical knowledge will be used to inform environmental watering decisions through focused collaboration at a theme and/or site level.

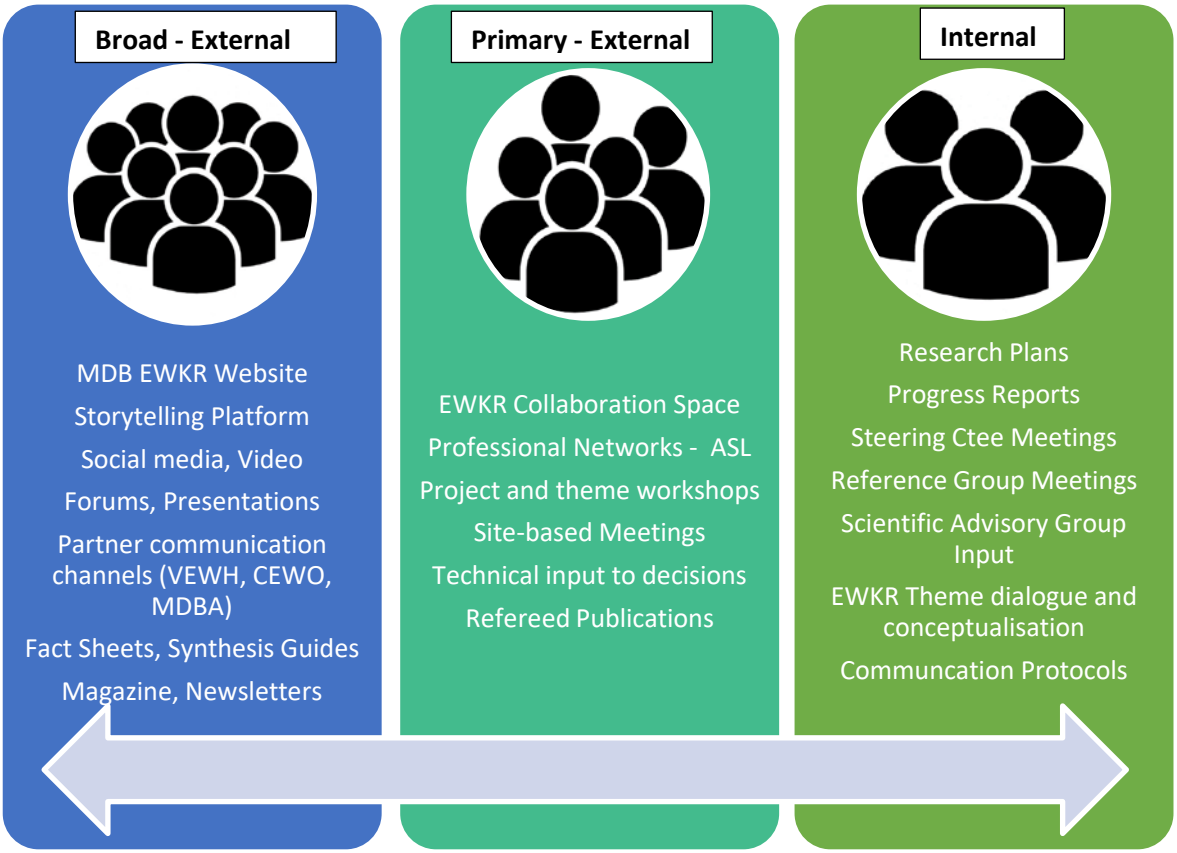

Figure 4: MDB EWKR Communication and Adoption Channels

3 External communication

3.1 Objectives

External communication within MDB EWKR refers to activities and processes that keep key external stakeholders informed of project progress, opportunities and research outputs.

The objectives of external communication are to:

1. support effective implementation of the Adoption component of the Strategy
2. ensure key stakeholders are provided with relevant information about the project
3. ensure research outputs are communicated effectively in a timely and useful way to stakeholders to inform water management decisions.
4. ensure that the MDB EWKR project contributes to the Government's communication around the implementation of the Basin Plan.

Achieving these objectives will make sure that:

- stakeholders are aware of adoption opportunities and activities
- stakeholders are aware of project progress, achievements and research outputs
- MDB EWKR activities complement and do not duplicate work undertaken in other monitoring and evaluation and research activities.

3.2 Key messages and expected outcomes

Having identified the stakeholders (Attachment B), categorised them and identified the value they expect from the project (Attachment C), the next consideration is the key messages and the expected outcomes from communication activities. The following is a list of the messages about key MDB EWKR design elements of which all internal stakeholders should be aware.

Key message:

The Murray-Darling Basin Environmental Water Knowledge and Research project will **collaborate** with water managers to **investigate** the uncertainties around how best to use environmental water, and **apply** this knowledge to real-life decision making.

- Collaborate –with environmental water managers by listening and working to ensure their needs are understood, and that research focuses on addressing their needs.
- Collaborate – with freshwater scientists to ensure that the knowledge generated is the best available and relevant.
- Investigate – explore, test and analyse priority environmental water management issues through rigorous peer-reviewed science.
- Apply – consult, seek input and adapt scientific findings to the realities of environmental water management through open dialogue with water managers.

These messages will use the following communication strategies to reach the broad external audience identified as possibly being interested in MDB EWKR.

Broad - External communication strategies:

MDB EWKR website

The MDB EWKR website (www.mdfrc.org.au/projects/ewkr/) is a central location for project information and will be a first point of contact for people with an interest in the project. It will provide an overview of the project, its purpose, objectives, activities and outputs. It will also provide portals to both general information about environmental flows e.g. MDB EWKR Storytelling Platform, as well as the best available science on the influence of flow on ecosystem condition

MDB EWKR Storytelling Platform

The Storytelling Platform will be a website linked to the main MDB EWKR Website that will have highly visual stories in plain English. An example of what the Storytelling Platform could look like is www.riproc.com.au. These stories will be used across many other communication products including social media and partner websites, such as the Commonwealth Environmental Water Holder and Victorian Environmental Water Holder. The stories can also be used in magazines like RipRap or partner publications. The storytelling platform will enable communication to be dynamic, as it is easy to update as new stories are written

Social Media, Video

The content provided through the Storytelling Platform, the MDB EWKR Collaborative Space and general activities underway across the MBD EWKR Research Team, will be used on the MDFRC Facebook account. Social media content can be scheduled so that MDB EWKR will 'post' once or twice a fortnight, yet the effort required to organise these posts can happen monthly. In addition, a MDB EWKR You Tube channel will feature video snippets from researchers out in the field, for example, waterbird tracking, sampling zooplankton, or a local forum where MDB EWKR researchers and practitioners are sharing results.

Other Websites and Platforms

Stories and content generated across MDB EWKR may also be shared on other related websites such as Finterest, Riverspace, the Commonwealth Environmental Water Holder and Victorian Environmental Water Holder, and partner websites. The underlying principle for all MDB EWKR communications is that one story is used multiple times, and on as many platforms as possible to extend reach and cater to a wide range of audiences.

Conferences and Forums

Presentations will be undertaken at relevant conferences at the National and Regional scale, reflecting the geographic location of the projects target audience. The River Symposium (2017 & 2019) may be

used as an opportunity for the project to share research outcomes with water managers and the scientific community.

MDB EWKR personnel will also be encouraged to share their findings at discipline specific conferences wherever possible. In 2018, the Australian Stream Management Conference presents opportunity for MDB EWKR to sponsor the event and host a workshop or field trip associated with work accomplished to date.

RipRap Magazine or equivalent

MDB EWKR may consider sponsoring a RipRap around a relevant theme and contribute a number of articles. The magazine format is highly visual, provides an easy to access reference guide to a range of projects and contact people, is easy to read and already has distribution across NRM and 'watery' networks. The production of an attractive magazine will also be used to share findings with partners and local communities. The synergy between the magazine and social media can also be used to share each story as a stand-alone item and direct people to either the Storytelling Platform or other relevant websites.

Partner media channels and networks

Using existing networks to share findings is an important part of the MDB EWKR communications approach. Material provided through the Storytelling Platform and EWKR Collaborative Space can be adapted and tailored to 'fit' in a Commonwealth Environmental Water Office or Office of Environment and Heritage publication or e-newsletter. Other possible newsletters are the Australian River Restoration Centre, Wetland Update, Fish Habitat Network, Australian Society of Fish Biology, River Basin Management Society and Australian Society of Limnology.

MDB EWKR Collaboration Space

The MDB EWKR Collaboration Space will be used to broadcast project information, generally on a fortnightly basis to subscribers. It will also support internal communication and integration among research collaborators, as well as being a repository for research plans, shared documents, data and models. It can also be used to engage water managers in the development of outputs, as well as being a forum to discuss managers' knowledge needs.

3.4 Primary Audience Strategies

The primary target audience for MDB EWKR is environmental water managers. It is for this reason that more emphasis and effort will be placed on adoption, than broader communication, with these three approaches guiding interactions between the MDB EWKR team and environmental water managers.

1. Collaborate with managers to achieve their objectives – this will require flexible, adaptive approaches in which researchers consider opportunities and collaborate to develop outputs.

2. Capitalise on existing networks to deliver knowledge when managers need it – this will also require a flexible, adaptive approach in which researchers are given clear objectives and have

support to communicate, interact and develop their networks within the environmental water manager professional community.

3. Engage with managers to determine how project outputs are customised to meet their needs – this will require an ongoing process of engagement between managers and projects to ensure meaningful environmental water management outcomes are achieved.

Using these three approaches, the following adoption strategies will be used to focus attention and tailor outputs for environmental water managers.

Primary - External communication activities

Collaboration Space

The MDB EWKR Collaboration Space will be used to broadcast project information, generally on a fortnightly basis to subscribers. It will also support internal communication and integration among research collaborators, as well as being a repository for research plans, shared documents, data and models. It can also be used to engage water managers in the development of outputs, as well as being a forum to discuss managers' knowledge needs.

Professional Networks

Each researcher and practitioner involved in MDB EWKR brings with them a network. As MDB EWKR develops a portfolio of stories, those involved in the project will be encouraged to adapt and tailor stories so they 'fit' within their networks. Research Gate might be another platform MDB EWKR personnel can use to share

Project workshops and meetings

MDB EWKR workshops and meetings will facilitate ongoing engagement with participating managers and researchers. These meetings will test ideas, and ensure research is able to be applied in 'real-life' situations. In addition, MDB EWKR will use pre-existing professional network meetings and workshops as engagement and information sharing opportunities.

Snapshot Factsheets and Syntheses

Fact Sheets will be used to provide an easy to understand overview of what is known about a particular environmental water management issue identified by stakeholders as important to them. These Fact Sheets will be free to download and may also be produced in hard copy for distribution at workshops and events. More detailed Synthesis Guides will be developed to bring together research and practice

at a more technical level than the Fact Sheets. These Guides will be longer, and may be on topics such as: the 'role of large floods in ecosystem functioning' or 'how to manage trade-offs when managing water for the environment'. As with the Fact Sheets, the Synthesis Guides will be developed around topics identified by environmental water managers and focus on science informing practice.

Refereed publications

It is anticipated that all project activities will lead to a published output and, for quality assurance purposes, the preferred option is that the outputs will be peer reviewed and published in the scientific literature. In some instances, this may limit managers' access to the information, which is not desirable. Where a journal's publication policy limits capacity to make the paper available, the project will produce a Fact Sheet that summarises the findings in an accessible and easy to apply way.

4 Internal communication

4.1 Objectives

Internal communication within MDB EWKR refers to activities and processes by which the project participants are kept informed of project progress, opportunities and risks.

It aims to:

1. support effective project management, collaboration, integration and external communication
2. ensure researchers are aware of stakeholder needs to ensure that the project delivers value and that outputs align with the broader scope of work under the Basin Plan.

Achieving these objectives will ensure that:

- participants are up-to-date with project achievements and outputs and can promote them to external stakeholders
- opportunities for activities with complementary benefits across themes are identified and acted upon
- opportunities to reduce workload and/or costs by coordinating activities, such as data collection, stakeholder meetings, etc., are identified and acted upon
- MDB EWKR activities complement and do not duplicate work undertaken in other monitoring and evaluation and research activities
- the project is managed effectively and efficiently (e.g. through timely and comprehensive reporting of project progress and risks)

Key issues in ensuring effective communication are the identification of the audience, the messages and the expected outcomes of the communication. The following sections describe the major internal audiences and provide a brief overview of the messages and the value expected.

4.2 Roles and responsibilities

4.2.1. Project Leadership

The Project Leadership:

1. keep the DoEE and members of key project committees aware appraised of project progress, developments and risks. These include the SAG, JRG, PSC and MDFRC Executive and Board
2. keep Theme Coordinators informed of progress, developments and risks occurring across the project and in any related external projects
3. capitalise on theme activities and emerging research to deliver communications and adoption objectives
4. communicate information about project progress, achievements and outputs to research and management colleagues.

4.2.2. Theme Coordinators

The Theme Coordinators provide the focal point for the management of all activities undertaken by the Theme. Specifically, they:

1. keep Project Leadership appraised of theme progress, developments and risks
2. keep their theme's collaborators informed of progress, developments and risks occurring across the project and in any related external projects
3. adapt activities being undertaken by the theme to capitalise on emerging developments or opportunities
4. communicate information about project progress, achievements and outputs to their research and management colleagues.

4.2.3. Collaborating researchers

Collaborating researchers have responsibility for the delivery of the outputs specified in their subcontracts. Each activity within a theme is led by an identified researcher, who will take responsibility for the delivery of the activity and associated communication with collaborators and the Theme Coordinator. Specifically, collaborating researchers will:

1. keep their Theme Coordinator appraised of activity progress, developments and risks
2. adapt activities they are undertaking to capitalise on emerging developments or opportunities
3. communicate information about activity progress, achievements and outputs to their research and management colleagues.

4.3 Internal communication activities

The activities described in this section are contracted project deliverables and more detailed descriptions of their content and delivery are included in the MDB EWKR Multi-Year Research Plan and Project Agreement

4.3.1. Regular Coordinator Meetings

The Project Leadership will meet fortnightly to discuss progress, opportunities and risks. Adoption and communication activities will be standing agenda items for the meetings.

4.3.2. Regular Theme Meetings

Theme coordinators will convene regular Theme Leadership meetings to discuss progress, adapt research plans and delivery of project milestones. Outputs from these meetings will be shared with the other Theme coordinators at the coordinator meetings.

4.3.3. Research plans

The Annual Research Plan (ARP) and Multi Year Research Plan (MYRP) represent the foundational internal communication outputs for the project and include a detailed description of the proposed activities to be undertaken by each theme for each financial year (ARP) and for the remaining years of the project (MYRP). The development of the ARP and MRYP requires extensive communication within and across themes, and with external collaborators.

4.3.4. Reporting

The MDB EWKR is contracted to produce a Mid-year and an Annual Progress Report. These reports require detailed descriptions of progress toward achieving project objectives and, in particular, the implementation of the activities described in the ARP. This information will be generated by collaborating researchers, synthesised by Theme Coordinators and compiled by the Project Leadership.

5 References

ARTD Consultants (2014) MDB EWKR Project Evaluation Strategy. Final Report prepared for The Murray–Darling Freshwater Research Centre.

MDFRC (2014) Murray–Darling Basin Environmental Water Knowledge and Research Project: Decision Support Tool Strategy. Draft Report prepared for the Department of Environment and Energy by The Murray–Darling Freshwater Research Centre, MDFRC Publication 60/2015, May 2015, 14pp.

MDFRC (2015) Draft MDB EWKR Code of Ethics for Data Sharing and Publication.

Watts H, Butcher R (2015) Review of existing decision making processes and decision support tools in environmental watering. Final Report for the MDB EWKR Project.

Attachment A — MDB EWKR Program Logic

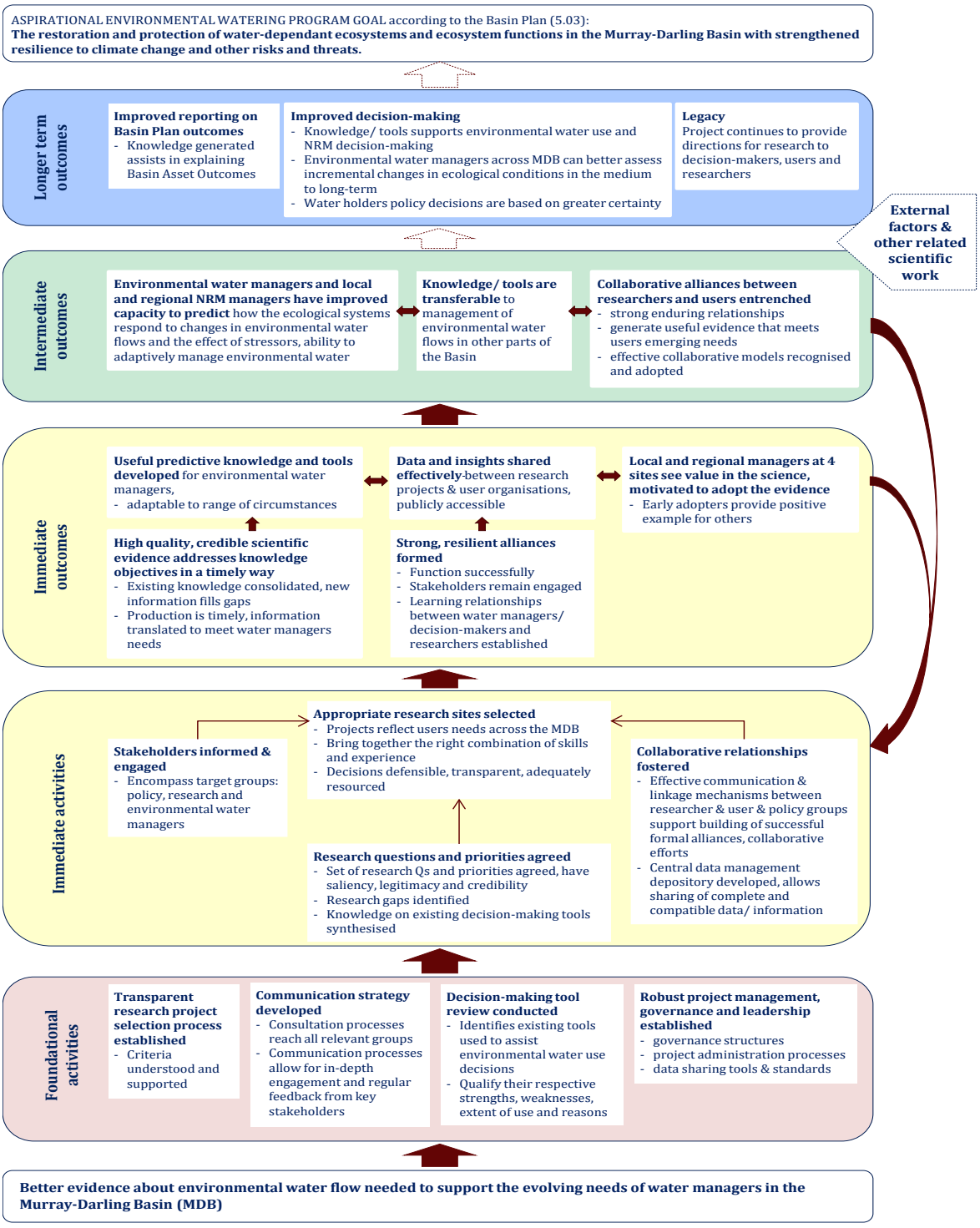

Figure 1. MDB EWKR program logic (from bottom to top) showing the foundational activities the project uses to generate a series of immediate outcomes, which in turn generate intermediate outcomes, and ultimately contribute to longer term outcomes. It also shows other factors that may influence intended outcomes or prevent a program from achieving intended outcomes.

Attachment B — MDB EWKR stakeholders

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
Internal stakeholders						
Commonwealth Environmental Water Office (CEWO)	The CEWO is the client for the project. As the funding body, project oversight and ultimate decision-making responsibility lies with the CEWO. Water delivery areas of the CEWO will impact the project through their invited involvement in the scoping and planning activities. The CEWO also supports the CEWH to decide how/where environmental water is	EWKR research findings will assist the CEWO to support the CEWH in performing the functions under the Water Act 2007, and in particular, supporting more informed management of the Commonwealth environmental water holdings for the purposes of protecting or restoring environmental assets.	All communications necessary for project implementation, progress reports etc. (as detailed in Funding Agreement). EWKR research objectives, advice from reference panels, research findings.	Regular, informal and as required e.g. email, verbal, meetings. Fortnightly teleconferences between MDFRC and CEWO project teams.	Fortnightly scheduled teleconferences and as required	Project Manager (MDFRC)

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
	used during the project period, which will affect the EWKR research in the field.					
Murray–Darling Basin Authority	The MDBA is on the EWKR Steering Committee and thus serves an advisory role in project decision making. The QLD Floodplain Vegetation Requirements project is associated with the Northern Basin Review and the MDBA will play a key role in reviewing outputs from that project. The MDBA is also administering the Joint Venture Monitoring and Evaluation program, which shares	By delivering information to better manage environmental water in the MBD, EWKR research will assist the MDBA in performing its functions under the Water Act 2007.	EWKR research objectives, advice from reference panels, research findings.	Email, verbal, meetings	Six monthly (likely interval for steering committee meetings); as needed at other times	The Department

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
	many similar objectives with MDB EWKR.					
Project Steering Committee (PSC) (the Department and MDBA)	By overseeing the project and advising the Project Sponsor on project matters. The PSC is responsible for setting broad strategic direction and enlisting high-level support within DoEE and MDBA, to ensure the delivery of project outputs and achieving project outcomes. The PSC functions in an oversight and review role, and thus provides endorsement or recommendations rather than approvals.	Improved understanding of the challenges associated with undertaking strategic collaborative research and its subsequent adoption by managers, that will be important in managing future projects.				The Department

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
Jurisdictional Reference Group (JRG)	By providing strategic advice in relation to the scientific focus, management relevance, and end-user engagement aspects of MDB EWKR. The JRG is the primary means of obtaining strategic input to the project from Basin-state agencies. State agency representatives form the JRG, a key governance structure to ensure jurisdictions are involved and remain engaged with the project. The QLD Government is involved in the decision making for the Queensland floodplain	As managers of environmental water, State agencies will benefit from the MDB EWKR findings to better manage water resources. Research findings may guide better collaboration between different water managers to improve environmental outcomes.	MDB EWKR research objectives, strategic direction, and advice from reference panels, research planning and findings.	E-mail, verbal, meetings. JRG to be utilised as a conduit for getting information into the agencies.	Regular updates (notionally monthly), and as required.	The Department Project Manager (MDFRC)

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
	watering portion of the project. State agencies may provide additional support for research that expands /complements the Commonwealth-funded research					
Science Advisory Group (SAG)	By providing strategic advice to the Project Leader in relation to the scientific focus and science delivery aspects of MDB EWKR. SAG: -advises on key steps in the development of the research plans -identifies and helps resolve issues of concern	Their involvement in the project may lead to opportunities for integration with their work and potential collaborations into the future.	Expert advice on the Annual Research Plans and Multi-year Research Plans.	Verbal input during 'the annual' workshop followed up with consolidated written advice.	Annual	Project Leader (MDFRC)

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
	-facilitates or improves project outcomes by identifying linkages and synergies with other related initiatives -advises on key steps in the development of the research plans.					
Environmental water and natural resource managers	By providing advice to MDFRC/researchers on priorities, advising of ways for research to assist management decisions and by advising on preferred methods for receiving research outputs.	Primary users of project outputs/knowledge. Will benefit from improved predictive capacity and ability to make informed decisions regarding environmental water use.	MDB EWKR research objectives, strategic direction, advice from reference panels, research planning and findings	Through JRG; through direct discussions with research teams, coordinators; research planning workshops; tapping into existing water manager meetings (e.g. EWAG); attending watering action meeting/teleconferences.	As required	Project Leader, Project Manager and Theme Coordinators
Theme Coordinators	By developing and implementing the research program and by being the focal point for the management of all activities	The project represents a major career opportunity for each of the coordinators. For vegetation, fish and waterbirds, the	Project Leadership and Theme Collaborators — progress, developments and risks associated	Workshops, teleconferences, email, meetings	Bi-annual workshops, fortnightly meetings, phone and	Theme Coordinators

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
	undertaken by the theme. The Theme Coordinators have responsibility for the implementation of their Theme's Multi-year Research Plan and delivery of the outputs specified therein.	coordinators are early career researchers who will benefit from the experience and the expanded professional network. For Darren, the project provides an opportunity to expand his expertise.	with activities in their theme Other research and management colleagues — project progress, achievements and outputs		email as required	
Corporate business areas in LTU (Finance, Legal, Contracts)	By supporting the Project Leader, Project Manager and Theme Coordinators with monthly and annual financial statements, annual financial audits, preparation of subcontracts, legal advice, and administrative support for workshops and webpage maintenance.	Additional workload if advice/assistance is requested.	Clearly articulated and relevant information to support requests and responses.	E-mail, verbal, meetings	As required	Project Manager and Project Leader (MDFRC)

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
External stakeholders						
La Trobe University	Contract holders — will need to successfully administer funds to MDFRC.	Will benefit from research opportunities and collaboration with other researchers as part of a stronger, more connected research community.	Clearly articulated research questions and overall research program and how this relates to what is needed by water managers.	Workshops, communication will be primarily handled be MDFRC.	In managing funding agreement establishment and variations (via MDFRC).	Project Leader, Project Manager, Centre Director, MDFRC
Relevant research providers (e.g. Universities, State science bodies, CSIRO). Other researchers (not directly involved in MDB EWKR).	Will be involved in EWKR research — quality of work will affect project outcomes.	Will benefit from research opportunities and collaboration with other researchers i.e. as part of a stronger, more connected research community.	Clearly articulated research questions and overall research program and how this relates to what is needed by water managers.	Workshops, communication will be primarily handled by MDFRC.	Via MDFRC, throughout EOI process, research planning, research implementation.	Project Leader, Project Manager
Other community members/groups with an interest in the project and water/environmental	Minimal impact	Improved water management resulting from EWKR research will benefit the public in a number of ways.	Benefits of the research to the broader community.	To be managed by MDFRC — possibly online video clips, fact sheets.	During project, end of project.	Project Leader, Project Manager

Stakeholder	*How could this stakeholder….*		*What information needs to be communicated?*	*Method of communication (formal or informal) (email, newsletter, meeting, face to face etc.)*	*When/ how often?*	*Who is responsible?*
	Impact the project	*Be impacted by the project*				
management in the MDB						

Attachment C — Stakeholder Value Propositions

Stakeholders expecting value from the project

Relevant stakeholders: Water managers, State Government departments, natural resource managers, CEWO, MDBA.

Value proposition: For the project to achieve its objectives, this audience needs to benefit from the project through improvements in their capacity to manage water dependent ecosystems in the MDB. This audience will be the focus of Adoption activities, but will also need to be kept informed of progress and other activities or outputs that may generate value to them. Further information on adoption activities are provided in the Adoption component description.

Stakeholders expecting accountability from the project

Relevant stakeholders: Politicians, consumptive water users, government departments, natural resource managers, CEWO, MDBA.

Value proposition: In many instances, the value of research is not easily quantified and, within the context of limited financial resources and significant opportunity costs, there will be stakeholders 8who will expect value to be delivered by the project, even if they are not direct beneficiaries. Within this context, there is limited expected return to the project; however, the messages here would focus on the value of research and what could be achieved through an ongoing program of investment.

Stakeholders with an interest in Basin Plan implementation

Relevant stakeholders: Consumptive water users, regional communities, politicians, environmental groups.

Value proposition: As noted above, the project represents a small component of the Government's implementation of the Basin Plan and, as such, it has a role in contributing to the delivery of key messages about the role of environmental flows in achieving the Basin Plan objectives. Within this context, it is not anticipated that the project will engage directly with the broad range of stakeholders in this audience, rather that the project will generate material that will support key institutions such as the MDBA and CEWO in communicating their messages about the Basin Plan and environmental flows.

Stakeholders with an interest in freshwater science

Relevant stakeholders: Freshwater scientists, environmental flow managers.

Value proposition: Communicating with scientists and managers with an interest in freshwater science supports achievement of two project objectives. First, the project seeks to deliver high quality science, which is achieved through dialogue with the scientific community to support innovation. Second, the adoption of improved understanding will occur, in part, through managers accessing their personal networks. The project will facilitate the application of knowledge to environmental flow decisions through communication with scientists.

Attachment D – Communication Protocols

The Project Leadership and Theme Coordinators are responsible for project-wide communication, and coordination of communication products and activities relevant to the research themes as a whole.

Theme Coordinators are responsible for research theme-related communication to all project participants, and have responsibility for communication required for the coordination of activities on work components, as well as contributing to project-wide activities.

Researchers will have responsibility for contributing communication with regard to their specific site and area of work, and will support theme and project communication.

Table 1. MDB EWKR communication protocols.

Procedure	Requirements
1. Conveying consistent messages about the project (both written and verbally) in non-formal settings	Appropriate wording and up-to-date information will be provided in communication outputs generated by MDFRC, across a range of channels. Consistent and up-to-date communication generated by MDFRC will provide leadership and guidance to all MDB EWKR stakeholders with regard to the MDB EWKR message.
2. Standard acknowledgement	All published outputs from the MDB EWKR project must acknowledge the contribution of the DoEE. At a minimum all publications and communications materials must include the following acknowledgement: *The Murray–Darling Basin Environmental Water Knowledge and Research Project is supported through funding from the Commonwealth Environmental Water Office, Australian Government and managed by The Murray–Darling Freshwater Research Centre.* Any **alternative** wording must be agreed to by DoEE. Any **additional** acknowledgement as appropriate (for example all collaborating parties on a body of work) can follow the standard wording above.
3. Processes for handling media requests	The DoEE will provide Communications Guidelines to the MDFRC identifying their priority messages and a risk assessment for media releases. This material will be used to inform the development of media releases. The MDFRC will apply its quality assurance processes to all media releases. It should be noted that media releases are a very low priority for the MDB EWKR project and will only be undertaken in collaboration with a key management partner e.g. CEWO, MDBA or a State management agency. All media requests received by MDFRC will be processed by the MDB EWKR Project Manager. When individual project members are approached by the media, the MDB EWKR project has no capacity to constrain their opinions. Issues around using the MDB EWKR Communication and Adoption Strategy as a basis for responding to media inquiries will be discussed among the project team, and guidelines developed.
4. Web pages	The DoEE will provide Communications Guidelines to MDFRC identifying their priority messages and a risk assessment for web communication. This material will be used to inform the development of web material.

Procedure	Requirements
	MDFRC will apply its Quality Assurance processes to all material placed on the website. All MDB EWKR-related web content to be posted by research collaborators will be provided to MDFRC prior to being posted with a clear time frame within which comments are to be returned. Where material is identified as representing a risk, MDFRC will provide the material to the DoEE for review with a clear time frame within which comments are to be returned.
5. Social media	The DoEE will provide Communications Guidelines to MDFRC identifying their priority messages and a risk assessment for social media content. This material will be used to inform the development of social media postings. MDFRC will apply its quality assurance processes to all social media content. Where content represents a risk, the proposed social media interactions will be provided to the Department prior to being posted with a clear time frame within which comments are to be returned.
6. Publication of printed materials	The DoEE will provide Communications Guidelines to MDFRC identifying their priority messages and a risk assessment for printed material. Printed material (reports and fact sheets) will be subject to the project's own quality assurance processes and then published. The exception will be in cases where there is an identified risk in which case the material will made available to DoEE, with a clear time frame within which comments are to be returned, prior to being made available to the public. Standard acknowledgement will apply.
7. Scientific presentations and papers	Scientific presentations and papers will be subject to the project's own quality assurance processes. Issues around using the MDB EWKR knowledge as a basis for commenting on water management or policy will be discussed among the project team, and guidelines developed. The DoEE's risk assessment will be used to inform the content of presentations and papers. In the case of conference presentations, the abstract and presentation will be submitted to the DoEE for review.. A Draft MDB EWKR Code of Ethics for Data Sharing and Publication has been prepared as required under Clause 3.4 of the Intellectual Property Rights provisions set out in the MDB EWKR funding agreement. The Code may need to be amended and updated as the project is further developed.
8. Processes for handling complaints and concerns raised by stakeholder groups	All complaints and concerns raised with MDFRC or DoEE by stakeholder groups will be forwarded to the MDB EWKR Project Manager who, in consultation with the DoEE Project Leader, will identify an appropriate course of action.
9. Process for monitoring and evaluating project communications	A strategy for evaluation of the implementation of the Communications and Adoption Strategy will be developed as a component of MDB EWKR Project evaluation. The evaluation will focus on the appropriateness, effectiveness and efficiency of the Communication program. Monitoring of communication activities will include (but not be limited to): • Web page hits • Management participation in development of outputs

Procedure	Requirements
	• Documented communication between MDB EWKR researchers and managers

Attachment E: MDB EWKR Adoption activities to date

The next few sections describe some of the activities undertaken to date that provide context for the approach described in the Adoption component of the Strategy.

Identifying need

Successful adoption is fundamentally dependent on the project producing new knowledge that meets managers' needs. Within this context, the research questions that the MDB EWKR project will seek to address were identified and prioritised through a process of consultation with managers from each of the jurisdictions. Workshops were held with managers from July to September 2014 to identify managers' knowledge needs across the Basin. The feedback from these workshops was the major input to the identification of the project's priority research questions.

Evaluating Decision Support Tools

Initially the DoEE believed that the production of Decision Support Tools would be an effective adoption strategy. In considering the process and criteria described above, the project team decided to evaluate the effectiveness of DSTs for adoption. Evaluation & Sustainability Services Pty Ltd were commissioned to review DSTs and their use in environmental flow decision-making processes. The review found that:

- generally DSTs are not a common tool in the environmental water decision-making process
- the DSTs that are applied come in a variety of forms from procedures, to spreadsheets, to hydrographic models to some flow response models. They are also acknowledged as just one input to the decision making process.
- DSTs in the context of quantitative ecological response models are generally not used
- environmental water managers consulted in the review generally thought that the issues are too complex to develop models that can be applied in one location let alone transferred to others.

Within the context of the adoption process and criteria described above, it is perhaps not surprising that DSTs are not effective in adoption as the capacity for managers to adapt the imbedded knowledge to their situation and DST's associated costs represent significant disincentives for managers. Consequently, the project decided to develop an adoption strategy that focuses on engagement with managers and managing knowledge in ways that meet their needs.

Engagement in project planning

The project's governance structure includes both a Project Steering Committee (PSC: comprised of representatives of the DoEE and Murray–Darling Basin Authority) and the JRG comprised of representatives of each of the Basin jurisdictions and the Commonwealth Environmental Waterholder. The JRG have been actively involved in project planning, and providing feedback on each of the major outputs to date, including:

- priority question selection
- study site selection
- the Multi-year Research Plan
- the 2015–16 Annual Research Plan

This active involvement in the decision-making process helps build relationships between researchers and managers and helps ensure that the research aligns with management need. The research will evolve and adapt to current conditions across the Basin and the active involvement of managers in this process will help ensure that these decisions on research direction will not compromise the alignment between research outputs and management need.

Engagement in the development of the Adoption Strategy

In May and June of 2016, six regional workshops were held with managers that sought input on approaches to adoption. The workshops built on the review of DSTs that had revealed that decisions processes are made in consultation with a large number of stakeholders and experts. Given this process, one of the major pathways by which knowledge is applied to management decisions is through the consultation process, and the MDB EWKR project could improve adoption if it capitalised on these existing networks rather than seeking to impose a new or additional source on knowledge on managers. The workshops discussed decision-making processes and identified the networks of expertise used by the managers who attended.

Attachment F — Potential synthesis activities and outputs

Synthesis in the context of the Adoption Theme refers to an aggregation of information from multiple sources. The synthesis seeks to package knowledge in a way that supports its application to specific management needs. Thus a synthesis may seek to support management of different flow types (e.g. freshes or overbank flows), different steps in the adaptive management cycle (e.g. flow planning, evaluation or reporting) or different scales (e.g. individual wetland or Basin scale).

Ecosystem synthesis

The MDB EWKR project provides an opportunity to integrate the outcomes from the four research themes to improve our capacity to predict the environmental flow outcomes for water dependent ecosystems. This is an important issue for two reasons:

1. the Basin Plan seeks to provide healthy and resilient ecosystems as one of its major outcomes (Section 5.02.2.c), particularly where they support the life cycles of a listed threatened species or listed threatened ecological community (Section 8.05.3.a).
2. The Basin-wide Environmental Watering Strategy seeks to protect or restore vegetation, fish and waterbird populations. Achieving these outcomes will depend on sustaining the ecosystems of which these biota are a part.

Currently environmental water managers have limited science to support the consideration of ecosystem water requirements, and rely on the water requirements of key indicator species whose water requirements are both better understood and are believed to act as a reliable surrogate for ecosystem water requirements. For example, the development of the Basin Plan relied on information concerning the water requirements of species (e.g. River Red Gum (*Eucalyptus camaldulensis* Dehnh.)) or guilds (e.g. colonial nesting waterbirds) that provided an indication of ecosystem water requirements more broadly. This approach represented the best science available at the time, but the process highlighted the absence of robust information on ecosystem water requirements and the capacity to identify the risks associated with using indicators in this context.

The MDB EWKR project, through a process of integration of the outcomes of the Vegetation, Fish, Waterbird and Food Web themes will generate new knowledge concerning ecosystem water requirements. It is anticipated that improvements in our understanding of the drivers of vegetation population condition and diversity, fish populations and waterbird recruitment and the links between them (food webs) will lead to the identification of interdependencies and in some instances trade-offs among ecosystem components. This output will synthesise these findings to provide new insights into ecosystem water requirements.

Synthesis papers on strategic issues

A key activity supported by the Adoption Strategy will be the development of synthesis papers that will package up information generated by the project and seek to place that knowledge within the context of specific management decisions (e.g. flow design or complementary management). Wherever possible, these papers will be written in collaboration with managers who are active in these particular areas. It is anticipated that these papers will be published in the scientific literature unless in doing so, it would compromise researchers' ability to publish research undertaken by the themes.

The objective of these papers will be to ensure the outputs are relevant to management decision-making processes and will, wherever possible, support the adaptation of the knowledge generated by the project to situations commonly found across the MDB. If possible, engagement with managers will seek to identify instances where the new knowledge is applied, and these will be

made available to provide examples of how the information may be adapted to suit different situations.

These papers and any associated examples involving the use of their knowledge will be key outputs within the knowledge management system, and their availability will be promoted through the activities described in the Communication and Adoption Strategy.