



QUEENSLAND
WATER
MODELLING
NETWORK

EXTERNAL ENGAGEMENT PROGRAM

*Outcomes Statement Year 1
May 2019*



INTRODUCTION

In June 2018 the [Queensland Water Modelling Network](#) commissioned a consortium to develop and deliver a program of activities to help build the capacity of water modelling and user expertise in Queensland, facilitate engagement across the full range of actors in the Queensland water-modelling ecosystem, and stimulate innovation in all aspects of water modelling and use. This program of activities is termed the [External Engagement Program](#) or EEP and the consortium engaged by the QWMN to deliver the EEP includes the IWC (consortium lead), Griffith University, University of Queensland, Queensland University of Technology, University of Southern Queensland, the Australian Institute of Marine Science (AIMS) and QCIF.

The aim of this report is to describe and to critically interpret the outcomes achieved through EEP activities in year 1 in an accessible format. A year 1 M&E report for the activities of the EEP is available separately and which builds on this report to provide a more systematic activity-based assessment of the performance of the EEP against agreed outputs, outcomes and impacts. This report instead provides an outcomes-based assessment of the work and provides:

- A characterisation and assessment of the activities of the EEP in terms of a set of outcome categories derived from the kinds of outcomes identified in the EEP M&E plan and from the conceptual framework used to design the program of activities that comprise the EEP.
- An identification of key partnerships and synergies and sponsorship
- An identification of key lessons learned from year 1 of the EEP and identify key recommendations for future activities for the EEP and more broadly for the QWMN.

This report will be reviewed by EEP partners and the QWMN, to seek additional feedback on outcomes, lessons learnt and recommendations for future activities prior to publication.

The EEP lead organisation (IWC) recognises and appreciates that the outcomes identified in this report have been generated through the substantial contributions by Consortium members and the QWMN as well as the significant interest and engagement from across the Queensland water modelling and use sector during 2018/19 program.

The EEP was established with the following vision and mission:

Vision: For QLD to be recognised as an international leader in innovation and use of water models and modelling

Mission: To build the capacity of the QLD water modelling and use sector to produce innovative water models and modelling solutions that effectively address complex water policy, planning and management issues

Figure 1 below shows the sector scale capacity building model that underpins and links the activities of the EEP.

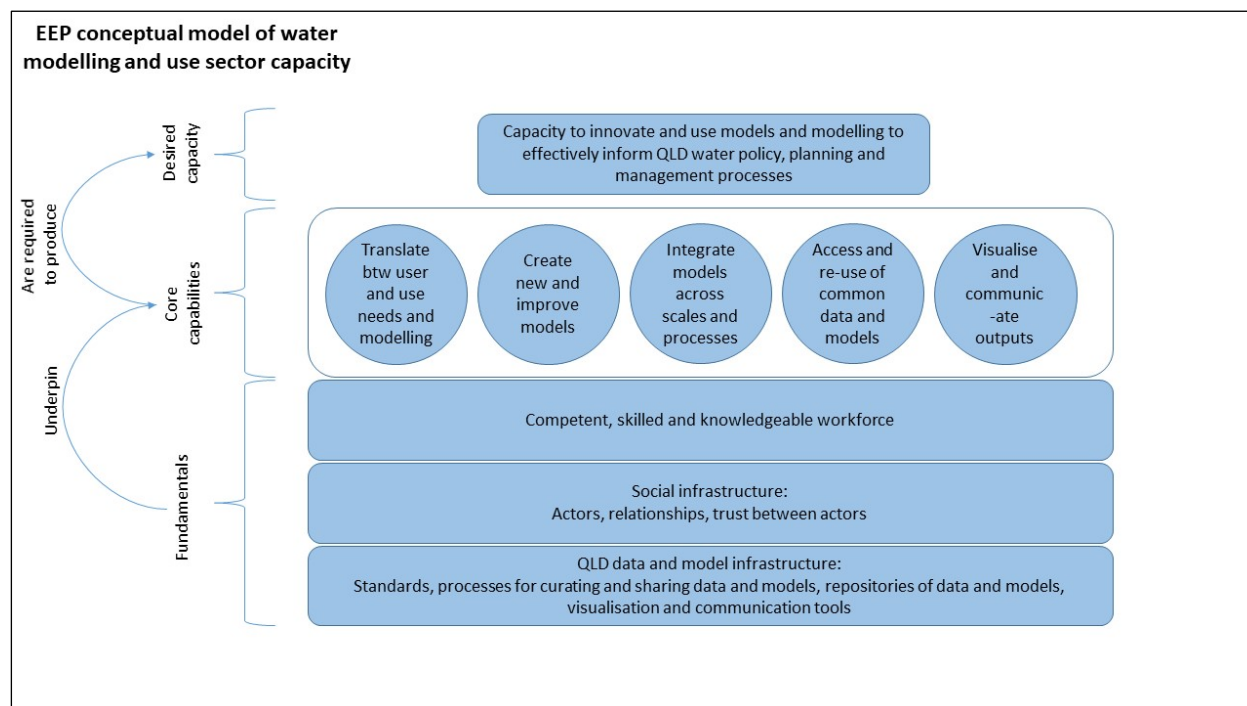


FIGURE 1 REGIONAL SECTOR SCALE MODEL OF CAPACITY BUILDING FOR THE QLD WATER MODELLING AND USE SECTOR

Lawrence and Riches (2017)¹ and QWMN (2017)² state that the broad aim of building the capacity of the QLD water modelling and use sector is to achieve higher and sustained rates of innovation and use of models and modelling for the range of water policy, planning and management issues faced in the State. The end result should be that water models and modelling solutions are more useful for practical purposes, more widely trusted and accepted by stakeholders as a basis for decision-making, that new models and modelling approaches are successfully researched, developed and implemented within QLD and that the capabilities which underpin the capacity to innovate and use models and develop modelling solutions are built, renewed and maintained over time. This capacity building definition and aim means that the EEP, across its activities, is focussed on building capacity at a sector scale to innovate in QLD both in terms of product (water models) and process (how models are used to inform water policy, planning and management decision making).

Each of the activities of the EEP are focussed on building all or some of the fundamentals and core capabilities shown in Figure 1 for the purpose of developing the desired capacity – to produce innovative water models and modelling solutions that effectively address complex water policy, planning and management issues.

¹ Lawrence, P. and Riches, J. (2017). Advancing Water Modelling through Networks and Engagement, 22nd International Congress on Modelling and Simulation, Hobart, Tasmania, Australia, 3 to 8 December 2017 <http://mssanz.org.au/modsim2017>. May 2019

² QWMN (2017), Technical Forum Summary Report 14-15 November 2017, Queensland Water Modelling Network, Queensland Government.

Figure 2 below shows the structure of the EEP in terms of activities organised into three components – the Hub which focusses on management and co-ordination activities, ERT which focusses on education, training and research activities, CoP which is a set of community of practice engagement activities and INF which is designed to focus on data and model infrastructure building activities but which is currently not funded). More information on the program activities can be found here - <https://www.des.qld.gov.au/science/pdf/qwmn-external-engagement-program.pdf>.

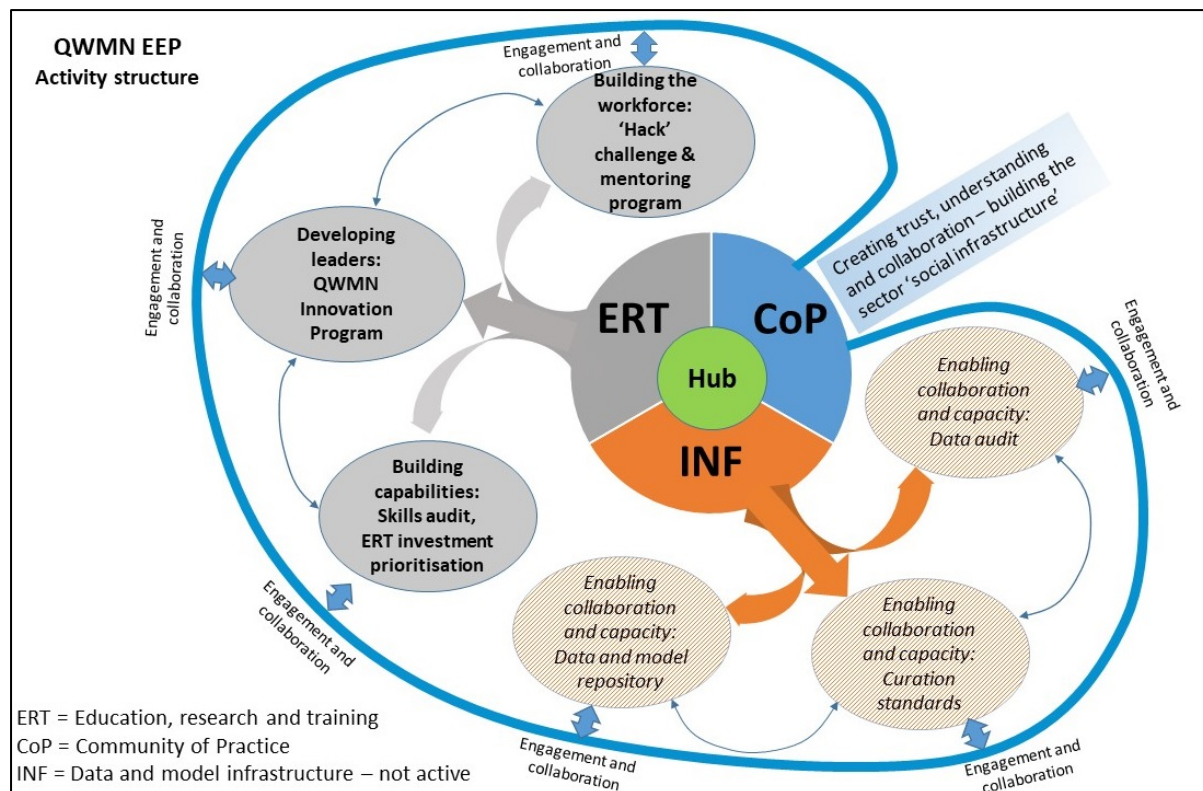


FIGURE 2 QWMN EXTERNAL ENGAGEMENT PROGRAM STRUCTURE (NOTE THAT THE INF COMPONENT IS NOT INITIATED)

Three broad outcome areas will be used to report on the year 1 activities of the EEP based on the sector scale capacity building model shown in figure 1 and the activities shown in figure 2:

1. Workforce development outcomes – here we will report on activities which have contributed to better understanding or growing the size and / or capabilities of the QLD water modelling and use sector workforce in some way.
2. Raising awareness and creating connections outcomes – here we will report on activities which have helped to raise awareness of the work of the QWMN and of other actors in the QLD water modelling and use sector, and as a consequence created connections between previously unconnected individuals and organisations.
3. Enabling and catalysing innovation outcomes – here we will report on activities, which have contributed, to creating new partnerships and collaborations and to leveraging funds to explore and identify ways of tackling emerging issues in innovative ways.

Within each outcome area, we will use outcomes drawn from the EEP M&E framework to describe the work of the EEP in year 1 along with any additional unanticipated outcomes that have been identified subsequently. A tabular reporting format will be used within each outcome area for readability. In each table the outcomes will be listed, a brief explanation provided as to how they were generated and then a brief articulation of the value created. Following the outcome table, a description of the synergies, partnerships and leveraged funding which have been created during year 1 of the EEP, will be provided and the key lessons learned and recommendations for future activities conclude each section.

WORKFORCE DEVELOPMENT OUTCOMES

Improving the capacity of the QLD water modelling and use sector is based upon growing and maintaining a sufficiently large, highly skilled and knowledgeable workforce. Also critical is a blend of technical and communication / collaboration capabilities to a) bridge the gap between policy, planning and management use and user needs; b) alongside with improved design and development of water models and modelling tools.

The outcomes listed in table 1 below are focussed on growing the size and / or capabilities of the QLD water modelling and use sector workforce.

Outcome	How the outcome was created	Value of the outcome
Increased awareness of water modelling career options	<ul style="list-style-type: none"> • CoP water modelling careers event in Feb 2019 bringing together around 50 young professionals and students with around 20 senior / experienced professionals • Mentoring program (year 1) bringing undergrads into contact with experienced QG modellers 	<p>There are no water modelling oriented professional associations in QLD that hold meetings - as a result the EEP has established novel mechanisms to enable young professionals and students to appreciate the diversity of career options in terms of employers and work.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Participant feedback survey from CoP event - Mentoring program implementation report year 1
Increased exposure of students to employers	<ul style="list-style-type: none"> • CoP water modelling careers event in Feb 2019 bringing together around 50 young professionals and students with around 20 senior / experienced professionals • Mentoring program bringing undergrads into contact with experienced QG modellers 	<p>Will help employers find skilled graduate employees and help students develop their CVs and networks such that they are better able to secure graduate employment with QLD.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Participant feedback survey from CoP event - Mentoring program implementation report year 1
Increased graduate interest in water modelling as a career	<ul style="list-style-type: none"> • Mentoring program engaging students with real world water modelling work and bringing them into contact with experienced QG modellers 	<p>Creation of greater understanding across university academics, mentors and students of the opportunities and skills requirements for a career in water modelling, and, as a consequence, stimulating interest in promoting and pursuing water modelling as a career option.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Mentoring program implementation report year 1.
Better skilled graduates entering the workforce	<ul style="list-style-type: none"> • Mentoring program developing skills in hydrological model set up and use using SOURCE applied to real catchments • Skills and knowledge audit identifying current and emerging skills and knowledge gaps and issues 	<p>Will reduce training costs for employers of graduates and ensure graduates are more effective and have the skills to be work ready.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Indicative feedback from employers engaged in mentoring program, identified the enhanced skillset of participating graduates.

Outcome	How the outcome was created	Value of the outcome
		- <i>Note: Employee start up training costs assessment could be evaluated by mentees are tracked post-graduation and their employers (if involved in water modelling) asked about start-up costs when employing them. (TBC)</i>
Improved understanding of the skill, knowledge and capability development needs of the QLD water modelling and use sector workforce and how to fill them	<ul style="list-style-type: none"> • Skills and knowledge audit identifying current and emerging skills and knowledge gaps and issues. • Planned CoP skills event in July 2019 to bring the student and young professional perspective together with employers and L&D providers from across the sector to identify how to tackle needs 	<p>Will help guide strategic investment and co-investment by the State, employers and by L&D providers including Universities to target current and emerging skill, knowledge and capability needs of the water modelling and use workforce in QLD.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - To be considered as part of the 2019/20 review as will require consideration and evidence of response by the actors identified.

TABLE 1 WORKFORCE DEVELOPMENT OUTCOMES FROM EEP YEAR 1 ACTIVITIES

KEY SYNERGIES, PARTNERSHIPS AND LEVERAGE CREATED

- Partnerships created between the QWMN, Griffith and DNRME for the pilot of the mentoring program, and between QWMN, JCU and DNRME as part of the second iteration of the mentoring program.
- Partnership between QWMN and eWater developed for the purpose of providing SOURCE training material and full software licences to mentees within the mentoring program equivalent to leveraging \$160,000 of external funding.
- Network of water modelling focussed young professionals, students and experienced professionals from State Government, local Government, water utilities, private sector and Universities across SEQ has been established.

LESSONS LEARNED

- There is interest amongst both senior level undergraduates and more junior QG staff in undertaking skills-based mentoring in water modelling to learn key basic hydrological / catchment / SOURCE model set up and use skills. Given interest amongst junior staff there may be opportunities for opening up something like the mentoring program to junior staff from industry and local government as well as to junior QG staff.
- There is a strong appetite amongst young and experienced professionals and students across the QLD water modelling and use sector to participate in fun, end of work day wine and canapés style careers and skills development focussed events, to connect and network with each other. This appetite is not being satisfied or filled by any other professional association active in QLD in a way that brings together professionals and students from different kinds of employers (State vs private vs Local for example) and from different application / issue areas (urban drainage and flooding, water supply, water resources for example).

- The QLD water modelling and use sector workforce overall is healthy with regards skills, knowledge, capability and size according to the results of the Skills and Knowledge Audit. There are specific issues to different kinds of organisations from succession planning for staff with specific and sometimes legacy specialised technical skills across QG departments, through difficulties in finding suitably qualified domestic candidates for water modelling doctorates across Universities to managing software/coding staff turnover rates for smaller consulting firms. There is an opportunity to improve the University development of work ready water modelling graduates (at undergraduate and postgraduate levels), and to better support work-based learning which is a preferred means of developing skills for employers across the spectrum. There is also a need to identify how to develop the right workforce capabilities for emerging issues such as the use of new technologies (HPC and cloud computing) and to deal with managing institutional knowledge and workforce succession planning. Finally whilst overall we have found a healthy water modelling and use workforce that is healthy there is a need to develop a way of tracking and strategically managing workforce health given its dispersed nature across many types of organisations and diversity in terms of skills and knowledge.

RECOMMENDATIONS FOR FUTURE ACTIVITIES

- Consider expanding the stated scope of the mentoring program from student focussed to students and young professionals (graduates) in both QG and beyond, including private sector.
- Continue to program fun, end of work day “wine and canapés” style careers and skills development focussed events for students and water modelling professionals from across the sector.
- Examine whether any such events would have enough critical mass outside the big population centres of Brisbane and Gold Coast.
- Plan how to invest in improving work ready water modelling graduates (including postgraduates) in QLD, how to best invest in supporting work-based learning, how to tackle emerging workforce size and capability issues and how to measure and track water modelling and use sector workforce health in terms of being sufficient to meet needs. These could be used as a focus for the sector investment priorities report scheduled for year 2 of the EEP.

RAISING AWARENESS AND CREATING CONNECTIONS OUTCOMES

Innovation occurs through the effective operation of networks, the exchange of knowledge and identification, creation and translation of opportunities to do things differently into reality. As a consequence, improving the capacity of the water modelling and use sector in QLD to innovate requires and relies on there being a high level of awareness of what other actors do across the sector and on there being fora and opportunities for actors to meet, learn about each other and to connect. From such connections, collaborations may emerge, and from collaborations come innovations. The outcomes listed in table 2 below are therefore focussed on raising awareness between actors across the sector, between sector actors and the work of the QWMN and on creating opportunities for connections between actors to be made.

Outcome	How the outcome was created	Value of the outcome
Increased knowledge of who does what in the sector	<ul style="list-style-type: none"> • QWMN Forum 2018 had a 40-50% increase in participation compared to the 2017 Forum • Compared to the State focus of the 2017 Forum, the QWMN 2018 Forum provided a broader platform for Federal, State and Local government civil servants and politicians, consulting firms, University researchers, private technology providers, and research agency staff to speak about their work and challenges • Feedback from 2018 Forum participants included comments on what was most liked about the event such as 'meeting new people', 'running into people doing similar things to me' and 'networking' • CoP water modelling careers event in Feb 2019 brought together around 50 young professionals and students with around 20 senior / experienced professionals 	<p>Awareness of what is needed, what is possible and who might be a collaborator is essential to building and maintaining an effective open innovation system in a sector.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Forum 2018 report and participant feedback - CoP event participant feedback
Increased number and diversity of actors aware of and reaching out to connect with QWMN activities	<ul style="list-style-type: none"> • QWMN Forum 2018 had a 40-50% increase in participation compared to the 2017 Forum indicating greater reach of the 2018 Forum marketing • The QWMN 2018 Forum attracted participants from Federal, State and Local government civil service and politics, consulting firms, University researchers, private technology providers, and research agency staff • The QWMN CoP has enabled a collaboration with a major national and State research-practice initiative, the CRC for Water Sensitive Cities (CRCWSC). As a result it has connected the QWMN with its State based roots to a wide range of previously QWMN unconnected actors from local government, water utilities and private consulting 	<p>Getting the most value out of the QG investment in the QWMN requires strong interest in and engagement with QWMN funding and activities. Engaging non-State actors in cross cutting elements of the QWMN model improvement agenda might yield at least efficiency benefits if not lay the ground for innovative approaches to be collaboratively developed.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Forum 2018 report and participant feedback

Outcome	How the outcome was created	Value of the outcome
		<ul style="list-style-type: none"> - 428% increase in size of email distribution list used by IWC to inform the sector about QWMN events and activities from 131 people in October 2018 to 561 people in May 2019 – the increase has come from parties interested in engaging with the QWMN and the activities of the EEP who have contacted us directly or signed up at events - Increased number and diversity of tender applicants to QWMN April 2019 tender including increased number from private sector
<p>Increased number of connections made between actors and between previously unconnected actors in the sector</p>	<ul style="list-style-type: none"> • QWMN Forum 2018 feedback indicated that the most appreciated aspect of the Forum was the ‘networking’ with both new and existing colleagues • CoP water modelling careers event in Feb 2019 brought together around 50 young professionals and students with around 20 senior / experienced professionals • Feedback from the CoP careers event included that networking, the diverse mix of people present and the inclusive active processes were highlights and meant that the event was effective at connecting people • The QWMN Hack Challenge run by the EEP which is scheduled for 5th/6th July will involve new collaborations across Universities, State Government, private consulting, water utilities and the Office of the Chief Scientist 	<p>Connections between actors in a sector are the seeds that might grow into productive collaborations, and create improved opportunities for using models to manage issues and problems that otherwise can fall between the cracks.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - 2018 Forum report and participant feedback - CoP event participant feedback - Hack event has created USQ-Office of Chief Scientist collaboration, and collaboration across QWMN and Gold Coast CC, AECOM, Alluvium and BMT. - Number and diversity of applications from across State and local government, water utilities, Federal agencies and consulting firms to become partners in the Innovation Program (24 applications from 15 different organisations) - Connections to eWater and 5 QLD Universities increased and strengthened through spread of training and use of SOURCE software including leverage access to \$160,000 of funding in SOURCE licences from eWater
<p>Improved understanding of how to make models and modelling useful for policy, planning and management needs</p>	<ul style="list-style-type: none"> • QWMN Forum focus was ‘collaboration, integration and use’ and provided speakers and discussion focussed on user and use challenges including for example State Government water security policy and planning and Local Government land planning and coastal flood management 	<p>For models to be useful, to add value and insight into policy, planning or management processes, they must be designed in collaboration with users and for uses and this requires that modellers and users (of models or their outputs) need to understand one another.</p> <p>Evidence of value being achieved:</p>

Outcome	How the outcome was created	Value of the outcome
	<ul style="list-style-type: none"> • Feedback from Forum 2018 participants included comments on what was most liked about the event as being ‘realising the challenges for the better use of models by decision makers’ and ‘being able to hear how modelling is used in a practical sense and what some of the challenges are’ • The CoP integrated urban water management in SEQ event in March helped establish a better joint understanding of the region’s sustainable development objectives and challenges and how models might help inform planning to meet them • The planned June 14th CoP landscape sustainability event will help ensure the model integration technical agenda is clearly matched with and driven by an understanding of the planning and management (i.e. use) value that can (or cannot) be created by integrating catchment water quantity and quality models 	<ul style="list-style-type: none"> - 2018 Forum report and participant feedback - CoP urban event report
New and / or improved / strengthened partnerships between researchers, industry and government	<ul style="list-style-type: none"> • 5 industry/government to research partnerships have been created as part of the QWMN Innovation Program – UQ-SEQ Water, Griffith-Gold Coast CC, USQ-BoM, C2O Consulting-JCU-AIMS, DES/QLD Hydrology-QUT • Partnership with CRCWSC has been created broadly for the urban theme of the QWMN CoP • Collaboration across DES, DNRME, Healthy Land and Water, USQ and IWC has been created for the June 14th QWMN CoP event • Collaboration with NSW Water Modelling and Monitoring Hub, QWMN/DES and IWC has been created to run a MODSIM 2019 session which has been accepted 	<p>Partnerships are a key way for different organisations to learn from each other and to benefit from the knowledge and capability that each other has, and they are also a key way to foster, enable and catalyse innovations.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> - Number of new partnerships and collaborations across different kinds of organisations - Leverage access to \$384,000 of University funding for a QG investment of \$150,000 as at the end of year 1, with expected increase to leverage funding of \$480,000 for a QG investment of \$187,500 early into year 2

TABLE 2 RAISING AWARENESS AND CREATING CONNECTIONS OUTCOMES FROM EEP YEAR 1 ACTIVITIES

KEY SYNERGIES, PARTNERSHIPS AND LEVERAGE CREATED

- The 2018 Forum participants have become the core of what we know to be the QLD water modelling and use sector – through alerting them to new QWMN events run as part of the EEP we have created a sense of State based sector identity which we can capitalise on and grown the number of actors that are aware of and interested in the QWMN and in water modelling and use in QLD generally.
- Engaging local governments in CoP events, the Forum and the Hack has created the opportunities for those local governments to create useful connections and to look for ways to progress their policy and planning agendas e.g. Gold Coast City is engaged and able to use that engagement to find ways to help them deliver and improve their long term city and catchment water strategies.
- Increased pan-QG engagement in the QWMN - the Office of the Chief Scientist is engaged in supporting the Hack, with the Chief Scientist declared as the Chief Judge for the event; DES, DNRME and Healthy Land and Water are collaborating to run the June 14th CoP event along with USQ and IWC
- Through the Urban and Landscape Sustainability themed CoP events and through the deliberately regionally and cross-sector (water-energy-land) focussed Hack, fora for a diverse range of Government, private and University actors have been created to identify where and how to improve the design and use of models for cross-cutting and emerging issues. The use of the CoP model allows for these fora to evolve relatively organically into partnerships over time to achieve collective outcomes.
- The process for design of the COP program has directly interacted with the wider QWMN DRI program with both activities influencing a more integrated outcomes and sector themes for the year 1 program.
- The COP events and fora have also supported the transfer of knowledge between products generated through the QWMN RDI program through the wider sector, and vice versa, directly improving products being created under the QWMN program.
- New research – industry/government partnerships between USQ and BoM, Griffith and Gold Coast, QUT and QLD Hydrology (DES), AIMS/JCU and C2O Consulting, and between UQ and SEQ Water have been formed as part of the Innovation Program. These have at the end of year 1 leveraged access to \$384,000 of University funding for a QG investment of \$150,000, with an expected increase to leverage funding of \$480,000 for a QG investment of \$187,500 early into year 2.
- The call for partners for the Innovation Program attracted 24 applications from 15 different organisations ranging from small consulting (e.g. Bligh Tanner and Alluvium) through local government (e.g. Gold Coast) to water utility (e.g. SEQ Water), State Government (e.g. DES and DNRME) to federal agencies (e.g. BoM and CSIRO), indicating a significant sector wide desire to engage in applied doctoral research as a mechanism for solving problems and driving innovation.

LESSONS LEARNED

- The QWMN Forum needs to strike a balance between diversity / breadth of scope and technical depth so that we can cater for the range of interests and also ensure only the highest quality speakers are given slots.
- There is a strong appetite, as with the water modelling careers event for a QLD based water modelling event (the Forum) that enables networking across application areas and different kinds of organisations.
- The purposeful use of CoPs as instruments to foster sector capacity is still relatively new to QG and participating research institutions and so the process of designing one and starting to deliver / build it has required trust and confidence building. This involved a reasonable transaction cost initially that was not fully appreciated beforehand but which is bearing fruits.
- The Innovation Program relies on University PhD admissions processes which operate at a significantly different paces and have different criteria and rules. The implications are that planning an intake of Innovation Associates should be seen as requiring at least 6, possibly 8-12 months of lead time from the point of having selected the industry/government partner and having defined the project in outline.

- The skills and knowledge audit has identified problems in finding high quality domestic candidates suitable for water modelling doctoral positions and the recruitment of Innovation Associates has highlighted this as a problem that requires some attention through strategic investment.
- Having said that there is a clear and widespread interest across industry and government to engage with applied doctoral research and we should invest in creating funding mechanisms to tap into this interest.

RECOMMENDATIONS FOR FUTURE ACTIVITIES

- An open process with high quality peer review is required to ensure that the Forum 2019 scope is broad and deep, and that all speakers are of excellent quality and able to capture the best of practices in QLD. The planning and thinking involved will require collective effort in June to ensure we are in advance of the Forum this year.
- Coordinated activity in social media messaging and the smart use of the EEP focussed website will require participation by a core suite of QWMN participants (from QG and beyond) to expand the interest in QWMN.
- Continue planned work to develop future funding for the continuation of the Innovation Program.
- As part of the EEP future priorities investment report and design and undertaking of the evaluation program in year 2, we should reflect on what we have learned about the design, stimulation and delivery of a CoP as a vehicle for advancing the aims of a State Government initiative – the QWMN. What can be learned for future QG practice and what can be learned more generally for CoP design and delivery management? How effective and efficient has the governance model used by the EEP been? What might be usefully changed in governance or operational management terms? How can collaborative consortia be best utilised by State Government for sector engagement and collaboration? How can best value for money be attained? What does value for money mean in the context of State Government engagement and collaboration across the water modelling and use sector?

ENABLING AND CATALYSING INNOVATION OUTCOMES

Innovation in terms of changes in practice which arise from the use of new products (e.g. new models) and/or the use of new processes (e.g. ways of planning or deciding) requires connections and collaborations both within and across organisations and across the various roles that sector participants have. Sometimes this is viewed as knowledge transfer but of course knowledge isn't a substance that can be transported, rather knowledge transfer means learning – learning by individuals in one department or organisations from what happens in another department or organisation in terms of institutionalised know-what, know-why or know-how. For such learning to occur effectively and efficiently and in a way that aligns with and supports organisational action deliberate and planned action is needed. Learning can also however be enabled to occur more organically through mechanisms that create the space for individuals from different organisations and/or professional or disciplinary backgrounds to jointly create an understanding of what needs to be done to make things better. Innovation also requires status and recognition so that bright minds are attracted to investing effort into creating new ways of thinking and doing in collaboration with others.

The outcomes listed in table 3 below are therefore focussed on the activities of the EEP which have focussed on deliberately enabling and catalysing innovation.

Outcome	How the outcome was created	Value of the outcome
Heightened appreciation of the value of innovation in water modelling practice	<ul style="list-style-type: none"> The Queensland Water Modelling Hack Challenge 2019 is being developed and will run in early July with prizes awarded for best overall (to be awarded by the Chief Scientist of QLD) and for the best in terms of team work, with the winning teams to then also be celebrated at the QWMN 2019 Forum 	<p>Instituting a water modelling prize in QLD that encourages innovative and collaborative thinking will help draw students and young professionals into the workplace. It will also recognise and incentivise creativity and may also lead to the start-ups being formed around winning ideas.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> Gold Coast City Council have offered \$20,000 in prize money for the Hack recognising the value of Hacks as a mechanism for creating innovation.
Improved transfer of knowledge between organisations	<ul style="list-style-type: none"> Having Innovation Program Associates placed for significant periods of time in industry/government hosts will ensure that the Associates act as the conduit for knowledge transfer – for translating user and use needs to research design and vice versa for translating research ideas, methods, and results into practical applications 	<p>Innovation from research to practice requires that research is formed in a way to produce outputs that can be used relatively easily to address practical issues and problems. This requires translation in two ways across the research to practice boundary – something that should both improve research (use and usefulness) and practice.</p> <p>Evidence of value being achieved:</p> <ul style="list-style-type: none"> 5 Innovation Associate projects have been scoped in collaboration across industry/government and research. These constitute an understanding of how to address practical problems through research.
Creating a mechanism to enable collective identification and planning of action to address issues of joint concern	<ul style="list-style-type: none"> CoP events are being thematically staged and built over time with a mix of open invitation and invited participants to develop what should become a self-directing community able to identify issues and drive towards action to address them 	<p>Enabling and tasking people to identify and solve their own collective problems creates the opportunity for champions and thought leaders to emerge. Also, selecting issues to think and act outside of the organisational box that they normally have to think within – an outcome which can organically nurture step</p>

Outcome	How the outcome was created	Value of the outcome
		change innovations and create platforms for thought leadership. Evidence of value being achieved: <ul style="list-style-type: none"> - Forum 2018 report. - CoP urban event report.

TABLE 3 ENABLING AND CATALYSING INNOVATION FROM EEP YEAR 1 ACTIVITIES

KEY SYNERGIES, PARTNERSHIPS AND LEVERAGE CREATED

- High profile support of the Hack Award - the Office of the Chief Scientist is engaged in supporting the Hack, with the Chief Scientist declared as the Chief Judge for the event.
- Leveraging access to data, models, tools and staff time and expertise for the Hack from across BMT, Alluvium, Gold Coast City Council, AECOM and WaterTech amongst others (being confirmed).
- Leveraging access to \$20,000 of prize money for the Hack from Gold Coast City Council.
- Through the Urban and Landscape Sustainability themed CoP events and through the deliberately regionally and cross-sector (water-energy-land) focussed Hack, fora for a diverse range of Government, private and University actors have been created to identify where and how to improve the design and use of models for cross-cutting and emerging issues. The use of the CoP model allows for these fora to evolve relatively organically into partnerships for learning and knowledge transfer over time to achieve collective outcomes.

LESSONS LEARNED

- Selecting topics for themed events requires sector champions to work alongside the CoP delivery team to ensure the scope and relevance is maximised.
- In overview, the theme issues of urban and sustainable landscape and climate change impacts on water modelling and use appear as a complex array of issues. Yet small workshop activities at CoP events enable a rich interpretation and identification of challenges and opportunities for the water modelling sector.
- The role of water modelling tools are being better appreciated when the context and true drivers behind the problems and water management needs are explicitly identified and acknowledged.
- The Innovation Program relies on University PhD admissions processes which operate at a significantly different paces and have different criteria and rules. The implications are that planning an intake of Innovation Associates should be seen as requiring at least 6, possibly 8-12 months of lead time from the point of having selected the industry/government partner and having defined the project in outline.

RECOMMENDATIONS FOR FUTURE ACTIVITIES

- Move the Innovation Associates training period to end July 2019 once all the Associates are in place.
- Expand the CoP participation profile to include more Queensland Government participants through either greater internal promotion and/or encouragement from team leaders and senior managers to participate.
- Continue to broadly socialise and promote the role, benefits and openness to participate in QWMN engagement events to all parts of the water modelling and use sector e.g. at the recent Flood Management Australia National conference in May 2019 there was limited awareness of this network.

FURTHER INFORMATION

For further information please contact the QWMN External Engagement Program Manager, Dr. Brian S. McIntosh at b.mcintosh@watercentre.org.