![Water Services Association of Australia logo]

30 August 2021

Bernadette Kelly (Bernadette.kelly@dese.gov.au)
cc: Michelle Chatelin (michelle.chatelin@dese.gov.au), Mary Mulcahy (mary.mulcahy@dese.gov.au)

Re: National Environmental Prediction System (NEPS) Scoping Study

Dear Bernadette and colleagues,

We are pleased to make a submission to the National Environmental Prediction System (NEPS) Scoping Study, part of the 2016 National Research Infrastructure Roadmap.

The Water Services Association of Australia is the peak industry body representing the urban water industry in Australia. Our members are water utilities and councils who provide water and sewerage services to over 24 million customers in Australia and New Zealand. Based around our vision of 'customer driven, enriching life' WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

The water industry's operations have deep connections with issues of biodiversity, ecological system health and protection. Some of our major drivers include responding to climate change, enhancing liveability and resilience of our communities and the environment, all while providing core water services. In doing so, the industry is a great user of many types of modelling, and a great producer of many valuable modeling tools.

The proposed NEPS

We understand that the broad purpose of the NEPS is to build on the existing knowledge about how biodiversity is *declining*, and the *impacts* that development of various types (urban growth, mining, agriculture and so on) can have on ecosystems.

However, there is currently less capability – both human and technological – in the area of *forecasting* impacts on biodiversity and ecological systems, that would occur under stressors including climate change and development. Therefore, the NEPS aims to increase the skill at *predicting* the types and levels of impact that might be triggered by specific types of development.

We understand that the scope for NEPs is terrestrial initially, with a view to potentially expanding it to focus on broader realms such as water in future, if it is successfully established. We gather it is intended to operate at a scale that would be useable for regional and local development.

How this relates to the water industry

We see that the NEPS could be of value to the urban water industry. Of course, the water industry has a constant focus on water-related biodiversity and ecological impacts, given that our operations involve taking water from the environment to supply communities, managing the discharge of used water to water bodies, and also managing water in the environment (stormwater and waterways). As such, if the NEPS were to expand into more detailed predictions of aquatic and marine impacts in future, that would be very relevant to our work.

At this early stage, with the focus on terrestrial ecosystems and impacts, the NEPS would still be relevant to urban water operations. Water utilities are heavily engaged in land use planning and development planning. Such planning is increasingly done with a holistic focus, which considers land use and water issues together, to enable integrated servicing arrangements and better overall outcomes. The sorts of outcomes the industry aims to achieve are liveability features like cool, green cities, the creation of valuable blue and green infrastructure (green spaces, water bodies), and the flow-on benefits of such assets, like healthier, happier, more active communities.

The water industry can also itself play a role in development, for example when it builds or decommissions assets such as treatment plants, pipelines, pumping stations and other water infrastructure. Like any other, the industry has due regard to issues of habitat protection and other ecological impacts. The water industry always looks to conduct its activities (both development, and its ongoing provision of services) in ways that minimise environmental impact. Therefore, greater predictive knowledge about potential biodiversity and ecological impacts would be very useful. This could impact the types and locations of assets and treatment processes that are chosen, or mitigation arrangements that can be considered (such as biodiversity offsets).

If the NEPS is successfully established for terrestrial impacts, we imagine that the overall architecture of governance frameworks, principles and systems could be extended to water.

NEPS could support climate change adaptation and mitigation efforts

The urban water industry is acutely concerned about climate change which affects us in m ways:

- Droughts and reduced inflows impact the yield and reliability of our water supplies, which can trigger the need for new water supply infrastructure, new sources, and the imposition of water restrictions on communities

- Other extreme events like bushfires and floods, also dramatically affect our operations as they can lead to large amounts of contaminants that enter our raw water supplies, putting substantial pressure on water treatment systems

- We are also a user of energy in our treatment operations. Therefore there is a vast amount of innovation and exploration among the water industry about how we can adapt to climate change but also mitigate it, through transitioning to renewables such as hydrogen, bio-gas, biosolids management, co-generation and other methods.

In early 2020 the water industry released its [Climate Change position](#), committing to achieving net zero by 2050, or earlier where this aligns with customer expectations. There is already appetite and innovation within many water utilities to go beyond this core commitment. The recent release of the IPCC Assessment Report 6, is likely to spur even greater urgency around these efforts.

Having better ability to forecast the types and level of impact that our activities could have (both negative and scope for regeneration) is valuable and helpful.

NEPS could assist with effective transitions to circular economy approaches
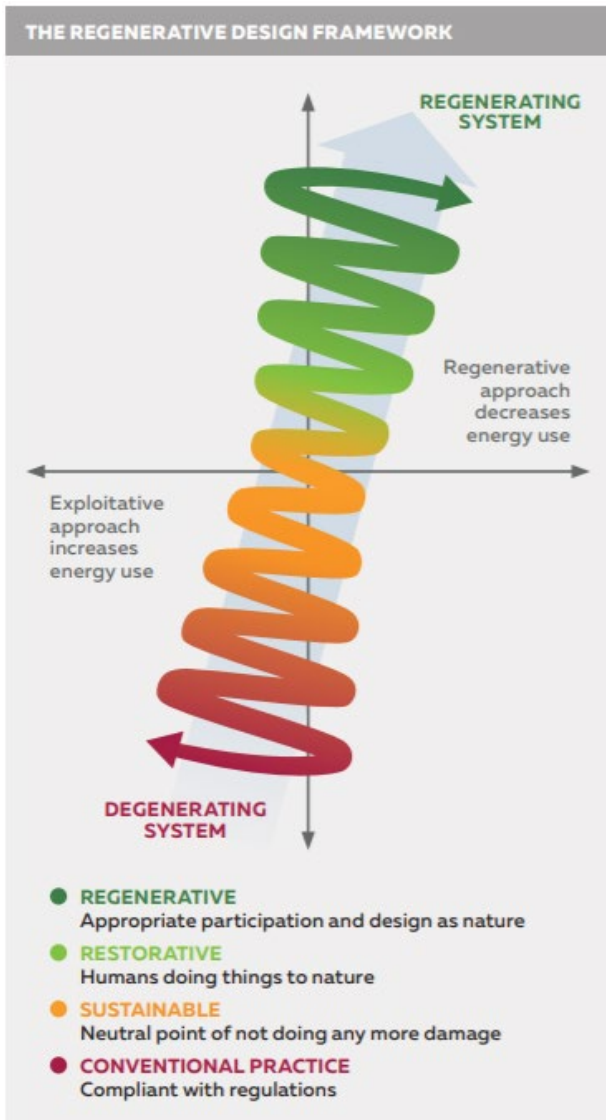
In fact there is a lot of momentum in the industry to move beyond simply minimising impact, to actively improving environmental outcomes. Last year, WSAA released a *[Transitioning the Water Industry with the Circular Economy](#)* report.

THE REGENERATIVE DESIGN FRAMEWORK

REGENERATING SYSTEM

Regenerative approach decreases energy use

Exploitative approach increases energy use

DEGENERATING SYSTEM

● **REGENERATIVE**
Appropriate participation and design as nature

● **RESTORATIVE**
Humans doing things to nature

● **SUSTAINABLE**
Neutral point of not doing any more damage

● **CONVENTIONAL PRACTICE**
Compliant with regulations

The report set out the objectives of circular economy approaches, presenting many case studies of water utilities in Australia and around the world who are innovating and looking to adopt nature-based solutions and regenerate natural systems.

Later this year, we will release a Circular Economy Action Plan, outlining tactics and initiatives to help the water industry progress towards circularity. Greater predictive knowledge about biodiversity and ecosystem impacts – both land and water-based – would be a useful foundation to underpin circular economy activities.

Efforts to minimise impact or remediate, would be helped by greater insight into what our biodiversity assets are, what threatens or harms them, and effective ways to protect them.

Transitioning the Water Industry with the Circular Economy, WSAA, 2020, p4

Further engagement

Due to the short time frame, we have not had the opportunity to engage in any detail with our members (the water utilities around Australia). They may have an interest in it, and could provide insights that would help shape it in future.

We would be happy to work with the Department of Education, Skills and Employment going forward, to liaise with relevant players in the water industry. This could include both water utilities and research bodies. WSAA, along with Water Research Australia, has recently completed the development of a National Research Priorities Agenda, which summarises the specific needs of the water industry and its partners for the future.

One of the key issues from our perspective, as for any large scale modelling initiative, is to ensure that it is useable in practice. The best way to ensure this is to work with actual participants in development activity – ie potential users/clients – to discuss understand through their lens what the needs are and how they might use it in practice. We have not been able to assess that through the information on the website, but we could seek to engage some water utilities as a future step.

We also have not had time to consider the questions posed in any detail, or in consultation with our member water utilities. However we provide some indicative top-line comments below.

Questions posed in the Scoping Study paper

1. **In your opinion, what needs could be met by national-scale, quality, integrated, environmental prediction capabilities in Australia?**

   - Identification and prioritisation of urban activities that do the most harm, and the most effective remediation methods.

   - Consistent measurement tools that could be used by organisations to assess their own plans, and by regulators in their consideration of funding requests.

2. **What benefits would this deliver to Australia?**

   - More informed and therefore more effective planning of its many development activities.

   - Ultimately, more effective environmental controls and better outcomes for retaining biodiversity and habitats – which are recognised markers of planetary health.

3. **This paper identifies governance, synthesis capability, modelling infrastructure, and pilot projects as key elements of the proposed NEPS. Do these elements provide the necessary framework to enable Australia to build its environmental predictive capability?**

   - We have not had time to consider this in detail but could seek to engage some key players within the water industry to do so, with more time.

4. **Do you have any specific ideas on whether any of these elements are unnecessary or whether any elements are missing from this proposed NEPS model?**

   - As above.

5. **This paper recommends using terrestrial ecosystems as the first pilot project to build the NEPS framework. An alternative would be to build up multiple domains, including freshwater, agriculture, coastal and marine ecosystems, simultaneously from the start. Which approach do you think would be more useful, and why?**

   - Clearly aquatic and marine will be most directly impactful for water industry activities. However it may well be efficient to start with one domain and establish an architecture of governance frameworks, principles and so on that could be refined, and then be applied to other domains. As stated above, terrestrial impacts are still of interest to us.

Once again, WSAA commends those involved in developing the proposed NEPS. We thank you for the opportunity to contribute to this worthwhile review. Please contact me if you would like any further information, on adam.lovell@wsaa.asn.au or 0417211319.

Kind regards

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