

# **Science Strategy**

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### Introduction

The National Water Grid Authority (NWGA) is the Australian Government agency responsible for delivering the Australian Government's commitment to the National Water Grid, through targeted water infrastructure investments that will increase resilience for Australia's existing agriculture and primary industry sectors to drought and climate change and create opportunities for the development of new agriculture and primary industries.

The NWGA was established by the Australian Government in 2019 to play a key role in shaping national water infrastructure policy, provide national leadership for investment in water infrastructure projects and oversee the development of the National Water Grid. While state and territories have primary ownership and responsibility for managing, planning, and regulating water resources, the NWGA is responsible for leading the Australian Government's interests in national water infrastructure policy. Broader national water policy matters are led by the Department of Agriculture, Water and the Environment.

A Science Program is supporting the NWGA to ensure that high-quality scientific information and data are available to inform water infrastructure investment decisions. This Science Program Strategy outlines the goals, themes of work and arrangements for guiding investments made under Science Program.

Underpinning the Science Program is an assumption that there are five elements necessary for the NWGA to achieve its objectives:

- 1. Knowledge of the regulatory and policy arrangements in place. This includes National Water Initiative (NWI) principles and jurisdictional policies and regulations.
- 2. Access to scientific knowledge
- 3. Access to technical knowledge
- 4. Understanding of commercial supply chains and market demand
- 5. Understanding of community expectations

As shown in Figure 1 below, the NWGA has produced an Investment Policy Framework and Science Program Strategy that underpin broader NWGA Strategy. The Science Strategy ensures that best available science and technical knowledge is considered in water infrastructure investment decisions and that delivering the National Water Grid has regard to a region's natural environment, geography, climate and any existing water infrastructure assets.



## The Science Program

The goal of the Science Program is to support Australian Government national water infrastructure investment decisions through being informed by a robust, scientific evidence base (Figure 2). A comprehensive evidence base allows the NWGA to invest in water infrastructure that considers water efficiency and resource sustainability and helps secure intergenerational equity.



#### Figure 2. The role of science in identifying solutions

Investments under the Science Program play a key role in identifying water infrastructure investments as part of the National Water Grid Fund (NWGF) (Figure 2). Science Program projects can address any identified knowledge gaps such as the possible impacts of climate change on water resources. The Science Program can also invest in projects that address gaps present in feasibility, business case or later stages of an infrastructure project, whether for new construction or augmentation of existing assets. Water resource analyses in northern Australia and an analysis of emerging opportunities for managed aquifer recharge have already been undertaken to identify opportunities for future investment in water infrastructure.

There are three investment areas of the Science Program: water resource analysis, alternative and emerging options, and new information resources that help inform investment decisions and communicate science outcomes (Box 1).

### Box 1 – Science Program has three elements

#### **Theme 1: Water Resource Analysis**

#### EXPECTED OUTCOME

Where and how water resources can be developed to increase water supply to support the agriculture and primary industry sectors

#### **Theme 2: Alternative and Emerging Options**

#### EXPECTED OUTCOME

Identification of emerging opportunities or new water technologies that can be leveraged to overcome supply constraints and enhance the supply capacity of existing water infrastructure

#### Theme 3: New information resources including communicating the science

#### EXPECTED OUTCOME

New information resources and web-based mapping of water resources, storage and supply infrastructure to inform decision making, including sharing the results of science investigations for water infrastructure investment.

For Themes 1 and 2 of the Science Program science projects will need to address at least one of the following key questions:

- 1. Where are the opportunities, impediments or knowledge gaps for water infrastructure to develop new sustainable agriculture and primary industries?
- 2. Where are the opportunities impediments or knowledge gaps for water infrastructure to build resilience and sustainability for existing agriculture and primary industries?

Projects under Theme 3 of the Science Program will develop new information tools and resources that support decision making, including communicating the water infrastructure investment and development process.

## Science Project selection

Through engagement with key stakeholders, the Science Program will likely receive topics for science investigations from three stakeholder groups:

- Australian Government initiated topics, such as those from Australian Government science agencies and Australian Government departments, including the NWGA. The NWGA could also receive topics for science projects through NWGA Advisory Body members.
- Topics from state and territory governments, focusing on their priority science activities to support water investment decisions, and
- Other topics including, but not limited to, research institutions, the general public (through the NWGA website via the 'Ideas Register') and technology companies.

The NWGA identifies state and territory governments as key partners in the delivery of water infrastructure under the NWGF. The Science Program engages with state and territory governments nation-wide to understand water infrastructure priorities in each jurisdiction and the science required to inform water infrastructure investment decisions.

Communication with state and territory governments is achieved through direct engagement with government officials through relevant forums.

Once topics have been received they will be considered in the context of their alignment and level of development and assessed against the framework in this strategy (see Figure 3).



#### Figure 3. Decision tree for science project proposals

\*Assessed for value for money and requirements under the PGPA Act. Funding pathway dependent on project delivery mechanism.

## **Project consideration**

Project topics will be considered in line with the key questions of the Science Program, outlined in Box 2, to determine the project's relevance. Any emerging priorities that have been identified will also be used in determining relevance.

### Box 2 – Science Program key questions

Where are the opportunities (or impediments/knowledge gaps) for water infrastructure to:

- 1. develop new sustainable agriculture and primary industries?
- 2. build resilience and sustainability for existing agriculture and primary industries?

Project topics should demonstrate relevance to at least one of the key questions and demonstrate relevance to the principles of the Science Program, outlined in Box 3.

Underpinning the principles is the obligation to consider cost effectiveness, value for money and project delivery risk.

### **Box 3 – Project principles**

- 1. Alignment with water infrastructure objectives and desired outcomes
  - i. Align with NWGA objectives (support primary industries and unlock potential, promote growth and sustainability of regional economies and build resilience).
  - ii. Demonstrate project readiness and opportunities to progress water infrastructure investment decisions.
  - iii. Consider state and territory priorities.
  - iv. Consider other Australian Government priorities (e.g. developing northern Australia).
  - v. Consider social, economic and environmental impacts including resource sustainability as well as the impacts of climate change.

#### 2. Address a knowledge gap required to progress water infrastructure

- i. Contribute to a fundamental understanding of the available water resource to support sustainable development through infrastructure.
- ii. Contribute to understanding how emerging methods and technologies that may:
  - a) increase supply and availability of water including opportunities for better use existing water supplies, and
  - b) deliver sustainable and resilient use of water resources (in the context of drought and climate change).
- iii. Contribute to better communicating the results of science investigations in water infrastructure investment to stakeholders, the community and decision makers.

#### 3. Working in partnership

- i. Offer opportunities for collaboration, including consideration of joint investment for shared priorities.
- ii. Consider stakeholder priorities and desired outcomes.

Underpinning these principles is the obligation for considering value for money and consideration of project delivery risks

The project proposal's scientific basis will also be assessed, which may involve investigating whether the proposed idea has been peer reviewed and/or whether the idea comes from a credible and reputable institution.

## **Project funding**

Once a project has received endorsement (i.e. aligns with the Science Program and with the broader NWGA program of work), Australian Government investment in the project may be determined in consultation with stakeholders involved in the project.

Depending on individual project requirements, the Science Program may:

- access providers on water science related procurement panels that have relevant scientific and technical skills
- conduct a limited tender arrangement with a provider that has specific scientific and technical skills and expertise required to deliver the project
- conduct an open tender competitive process
- invest in partnership with state and territory governments through a Federation Funding Agreement or
- provide a research grant opportunity.

The Science Program adheres to all Australian Government procurement rules and guidelines. The Commonwealth Procurement Rules, the Commonwealth Grants Rules and Guidelines, and the *Public Governance, Performance and Accountability Act 2013* govern the use and management of funds.

### Program delivery and evaluation

A monitoring and evaluation plan is being developed for the Science Program to support the delivery of the Science Program. This monitoring and evaluation plan will complement the monitoring and evaluation arrangements already established for the NWGA including the NWGA Business Plan, the Policy, Science and Engagement Branch Business Plan and the Department's Corporate Plan.

Science projects will be monitored to ensure timely and relevant information is available to understand how projects are tracking against milestones. Milestones for projects will be included in financial agreements with proponents to ensure that projects are delivering interim results.

Evaluation as part of the Science Program will be undertaken periodically and at the conclusion of the program.

### Progress and opportunities report

Periodic evaluation of the Science Program — including in the form of a Progress and Opportunities report — will be undertaken to assess whether the Science Program is contributing beneficial information that informs investment opportunities. In addition, the periodic evaluation will provide an opportunity to draw on lessons learned to guide future science project investment decisions.

### End of program evaluation

An independent end of program evaluation will be undertaken to determine:

- the extent to which the program has achieved its goal
- whether the information generated as part of Science Program funding has addressed the key questions of the Science Program
- what lessons learned could be implemented to future programs, and
- whether the program's format and processes were suitable to deliver its goal.