

Cross Dependency Initiative – XDI Sydney

What is the XDI Sydney project?

Critical infrastructure is highly interdependent, which means the ability to contain climate related disruption to services and assure resilience is quite limited without a system-wide view. The NSW Office of Environment and Heritage (OEH) is partnering with Sydney Water and Climate Risk the developers of the AdaptWater tool to co-develop the Cross Dependency Initiative or XDI Sydney. The project will identify areas where there are critical extreme weather and climate change risks to assets, and importantly the dependencies between different types of infrastructure.

Building on the development of the AdaptWater tool by Australian water utilities and its expansion to AdaptRoads by Manly Council, the project will develop an AdaptInfrastructure tool that will be able to identify cross-dependent climate change impacts in water, electricity, transport, telecommunications, and built environment infrastructures. It will use GIS spatial data for weather, engineering and financial data to analyse large numbers of utility assets for risks and the effect of co-dependencies.

XDI Sydney will initially run as a pilot for 3 years within the geographical area of Metropolitan Sydney – including upstream and downstream assets that are essential to the proper functioning of the city – and will be readily expandable to NSW and nationally.

AdaptInfrastructure will provide computationally detailed insights into hazards, exposure and vulnerability across a complex system, which can be constantly updated as assets are added or removed. In this way, asset owners can see which risks to third party infrastructure assets will affect their own system and equally the consequences of their own vulnerability to other critical infrastructure. Their interdependent risks are quantified not just financially, but in non-financial KPIs such as the number of customers affected by outage.

The tool encourages ‘collaborative adaptation’ so that all affected providers can contribute to the costs of upgrading or replacing an asset, making considerable savings compared to adapting their own assets.

Who are the Foundation Partners?

At commencement of the project, the Foundation Partners include: Sydney Water, Transport for NSW, City of Sydney and OEH.

Foundation Partners have contributed financially to the project and will provide direction on the required capabilities and detail – for example ranges of archetypes for each sector, failure modes and key hazards that need to be included in the system. This group may be expanded during the pilot as other organisations express an interest to join the project.

The Foundation Partners sign funding agreements with OEH which include data licensing arrangements. All partners will enter data sharing arrangements and can control the data that is available to other users of the system. The tool will not be available publicly.

A project Steering Committee will meet on a quarterly basis to oversee the project, with membership drawn from representatives of the Foundation Partners and Climate Risk.

What are the key deliverables?

The key deliverables for the XDI Sydney project, include but are not limited to:

- Commissioning the software for each partner and infrastructure types and undertaking trial Adaptation Pathway cost-benefit analysis.

- Working with each partner to produce a standardised 'State of Asset Resilience' (SOAR) report for each partner – suitable for Annual Report disclosure of resilience status and targets. This will include internal benchmarking and quantify all sources of Integrated Risk.
- Working with partners to provide a 'Collaborative Adaptation' report identifying all adaptation pathways which would engage more than one partner to achieve a more cost effective plan than unilateral actions.
- Developing a NSW Infrastructure Resilience Benchmarking system and annual report for OEH and partners.

What is XDI Sydney aiming to achieve?

The project outcomes include:

- Development of a world leading stochastic risk quantification tool to cover all infrastructure types and assets.
- Improved planning outcomes and investment decisions made by NSW infrastructure owners and operators.
- Improved decision making in managing risks to assets from natural hazards and the projected impacts of climate change.
- Significant savings as upgraded and replacement costs are shared by affected providers.

How can my organisation get involved?

There are 3 ways to get involved in XDI Sydney:

1. Join the project as a Foundation Partner.
2. Join the Technical Advisory Group to provide expert input to the project in areas that may be outside the realm of the Foundation Partners. Members may be provided with confidential access to the system to provide advice and as such will be required to sign confidentiality agreements.
3. Join the Friends of XDI Sydney to keep up to date with the project's progress.

For more information please contact:

Liesl Laker
 Senior Project Officer Impacts and Adaptation
 Regional Operations | Office of Environment and Heritage
 T: (02) 9995 6361 | E: liesl.laker@environment.nsw.gov.au

Foundation Partners

