

Submission
No 237

**INQUIRY INTO PLANNING SYSTEM AND THE IMPACTS
OF CLIMATE CHANGE ON THE ENVIRONMENT AND
COMMUNITIES**

Organisation: NSW Smart Sensing Network

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To: NSW Legislative Council's Portfolio Committee No. 7 - Planning and Environment,

Submission in response to: **Planning system and the impacts of climate change on the environment and communities**

NSW Smart Sensing Network

The [NSW Smart Sensing Network](#) (NSSN) is an initiative of the NSW Government under the auspices of the NSW Office of the Chief Scientist & Engineer. It is a research and innovation network focused on developing and applying sensing and data technologies to societal challenges and opportunities of importance to NSW.

NSSN's members are the leading metropolitan and regional universities in NSW and ACT including University of Sydney, UNSW, University of Technology Sydney, Western Sydney University, University of Wollongong, University of Newcastle, Macquarie University, Charles Sturt University and the Australian National University.

The NSSN, as a consortium of nine world-class research universities across NSW & the ACT, is well-positioned to facilitate and drive initiatives involving the research sector that may arise from the inquiry.

Climate Change and the Planning System

In recent years climate change has resulted in increasing overlap between two of NSSN's key research themes - Smart Places and Natural Hazards. In the past each had distinct stakeholder groups with primarily local governments and planners on the one hand and emergency services on the other.

This is changing as our cities and towns become impacted by fire, flood, storms, landslide, drought, heat and sea level rise.

Key features of current and future planning and response to climate change are:

- 1) Climate change is continually changing the context within which the planning system operates and how services are delivered to the community;
- 2) There is increased uncertainty in our assumptions about the natural environment and how the built environment should respond;
- 3) It's not always clear what planning responses will simultaneously achieve development objectives and mitigation of natural hazards;
- 4) Local communities play a significant role in preparing, responding and recovering from fire, flood, heat and other natural disasters; and
- 5) More stakeholders need to participate in planning processes to ensure that outcomes meet the needs of all communities, emergency response agencies, infrastructure owners and developers.



All of these features add to the complexity and difficulty in coordinating process and outcomes within our current and future planning systems.

Evidence Based Decision Making

Evidence based decision making has been promoted for many years in most areas of government. In the case of planning, we can think of evidence as consisting of:

- objective data collected from the natural and built environment, often from various types of sensors deployed in the field, cities and towns or on remote platforms such as drones, aircraft or satellites;
- analytical and scenario modelling tools that help to interpret sometimes complex data based on scientific understanding;
- visualisation tools and ways of presenting evidence to those involved in planning;
- data and information sharing platforms to help align participants and ensure they have access to the same information.

“Smart Sensing” is a broad group of technologies and solutions that encompass all of these elements.

Smart Sensing and similar technologies provide several benefits when taking climate change into account in planning processes. Smart Sensing:

- **Enables place-based approaches to planning and delivery of services.** Smart sensing allows us to understand similarities and differences between different places in terms of how people use spaces, environmental conditions, and how effective transportation and other services are delivered.
- **Allows alternative planning approaches to be compared.** Scenario modelling allows the relative costs and benefits of different planning policies and designs to be compared at a very local level (such as at neighbourhood or precinct) as well as at larger scales.
- **Reduces the cost of planning and approvals processes.** Sensing provides objective information to reduce uncertainty and allow automation of routine business processes within and between organisations.
- **Helps to align stakeholders.** Sharing of sensing and other data helps to provide a common understanding of needs, plans, services, actual conditions “in the field” and measurement of progress towards goals. Provision of a common “situational awareness”.



Examples

The NSW Government is already investing in developing innovative new approaches that foster evidence-based approaches to mitigate climate change impacts and realise the benefits outlined above. The three examples listed here are supported by the NSW Government's Smart Places Acceleration program:

- **OPENAIR.** Led by the NSSN for the NSW Department of Climate Change, Energy the Environment and Water (DCCEEW), this initiative developed best practises, an open sensing data platform and other resources to help local government effectively procure, deploy and use low-cost air quality monitoring sensors. The result is that councils and their partners can have evidence-based discussions with stakeholders when planning how to mitigate the effects of poor quality and heat in their communities. Five NSSN member universities and several small business contributed their expertise to OPENAIR.
- **Smart Cool Places.** This pilot project, sponsored by NSW DCCEEW with UNSW is developing a proof of concept “National Urban Heat Vulnerability Observatory” to help planners apply data and the latest scientific models to evaluating and selecting heat mitigation approaches in cities and towns.
- **SIMPACT.** This project, led the Sydney Olympic Park Authority with Western Sydney University and UTS uses sensing and machine learning techniques to control irrigation systems in a way that achieves a cooling effect in summer while minimising water usage.

Work Still to be Done

These examples and others undertaken in NSW have largely been pilot projects. They were designed to develop and demonstrate new approaches to planning. The challenge now is to transition from pilot to larger scale usage and thus to impact for NSW.

There are several ways to increase adoption of capabilities such as these:

- 1) raise awareness of these and the new evidence-based approaches and tools
- 2) incorporate the use of tools and platforms such as these into planning processes
- 3) establish an evidence-driven mindset where planning and resilience outcomes are quantified, measured and monitored over time (for examples using smart sensing)
- 4) requiring developers and infrastructure operators to collect and share data with planners and communities, for example with respect to environmental conditions (heat, air quality, water usage, green infrastructure etc)
- 5) Continuing to engage the NSW university sector in research and development of improved approaches and capabilities



- 6) Build technological capacity in local government to enable councils to actively participate in collecting data and applying local knowledge to planning processes. This is particularly needed in the smaller councils who lack skills and resource.

Recommendations

NSSN's specific recommendations relate to the use of smart sensing and similar technologies to support evidence-based planning that takes climate change into account:

- 1) **Engage the research and innovation sector** through the NSW Office of the Chief Scientist and Engineer, the NSW Smart Sensing Network, other innovation networks and universities. This may take the form of issuing “innovation challenges” that focus researchers on solving the specific needs of planners and others involved in planning. Innovation procurement programs such as the NSW Small Business Innovation & Research (SBIR) program is another example.
- 2) **Ensure that government agencies are funded adequately** to incorporate evidence based systems into their planning processes
- 3) **Encourage whole-of-government approaches to data platforms and data sharing**, not only to minimise cost but also to encourage collaboration and alignment between groups.
- 4) **Provide local government with the tools and capabilities** needed for them to participate in localised data collection and analysis. There are 128 councils in NSW and one state government. There are clear economic benefits in having the NSW government develop and operate a common base level of technology for local government. This is of particular value for the majority of councils which are too small to have sophisticated technological capability inhouse.

We welcome any opportunities to provide more information that may assist the inquiry.

Your sincerely,

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NSW Smart Sensing Network