NATURAL HAZARD EXPOSURE INFORMATION MODELLING FRAMEWORK

Dr Krishna Nadimpalli

Geoscience Australia, Canberra

PROJECT TEAM

Research Manager: Michael Rumsewicz, BNHCRC

Lead User Representative: Leesa Carson, GA
                              Ralph Smith, WA-DFES

Lead Researcher: Michael Griffith, Uni. of Adelaide

Project Leader: Krishna Nadimpalli, GA

Research Team: Itismita Mohanty, Uni. Of Canberra
                              Abbas Rajabifard, Uni. Of Melbourne
                              Mohsen Kalantari, Uni. Of Melbourne
                              Yogi Vidyattama, Uni. Of Canberra

End Users: Elliott Simons, NSW-SES
                              Shane Turner, SA-DPTI
                              Corey Shackleton, NSW-Rural Fire Service
                              Greg Howard, SA Metropolitan Fire Service
                              Matt Hayne, AGD
                              Greg Buckley, NSW Fire & Rescue

PROBLEM STATEMENT

- Government, researchers and industry often do not have the data and information they need to make critical, strategic and operational decisions.

- There is a clear expectation that policy and practice will be based on evidence supported by knowledge including data and information. Currently, this expectation is not consistently met.

- The data that is collected is not in a clear, coherent and accessible platform that supports government, agencies, stakeholders and partners in decision-making, monitoring, evaluation, reporting, research and improvement.

RESEARCH OBJECTIVE

To develop a nationally consistent exposure information framework that *enables more robust, reliable and operational* capabilities to address disaster preparedness, planning, response and recovery for all levels of government (local, state and federal), industry and research.

RESEARCH TASKS

1) To develop a built environment exposure information framework consists of buildings, infrastructure and population

2) To develop a business exposure framework to assess the business continuity, disruption, resilience and recovery

3) To develop national standards and data dictionaries for the exposure information to ensure consistency

4) To develop exposure data reliability assessment framework to assist the understanding of data reliability for various uses

PROJECT TIMELINE
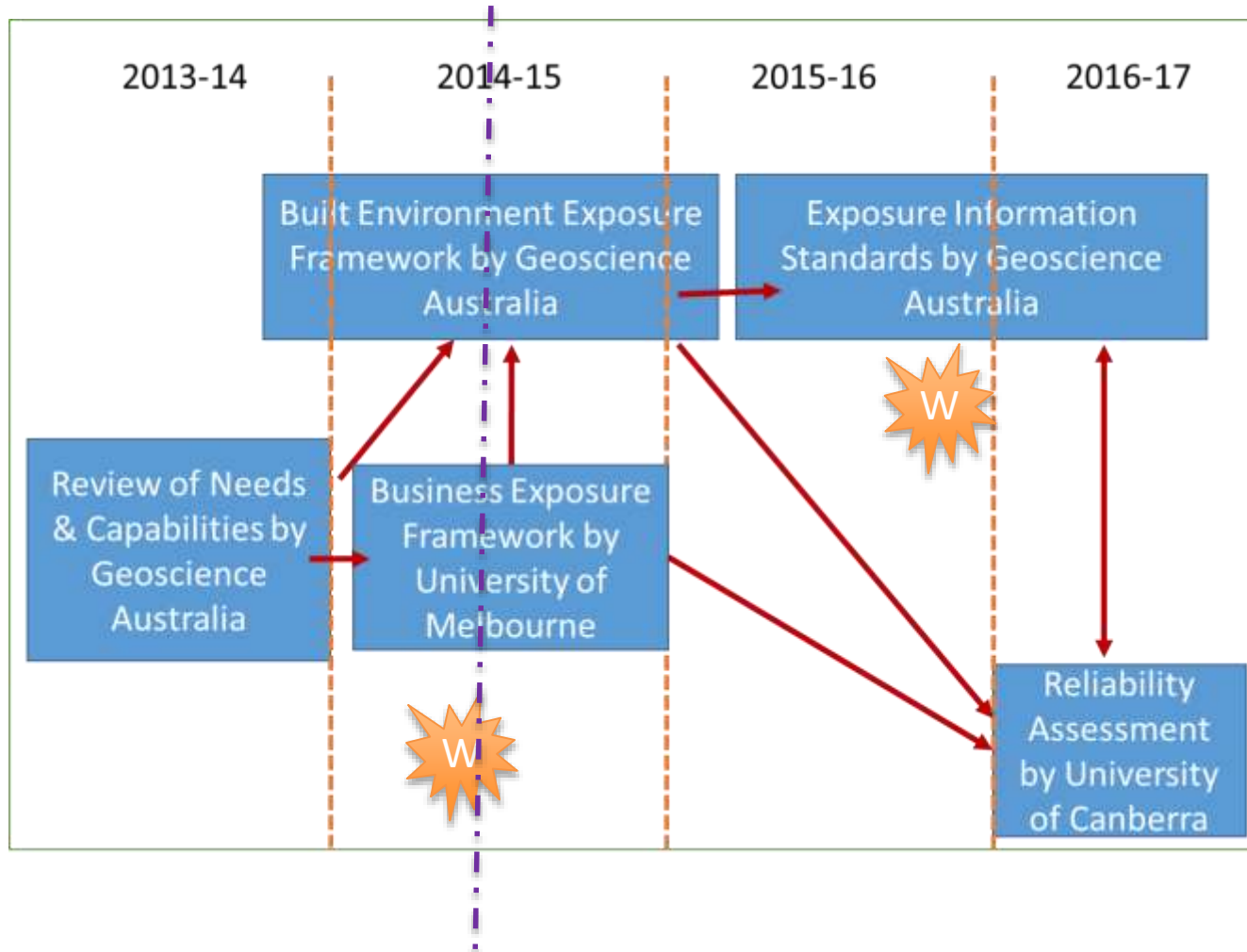
TASK PROGRESS – LITERATURE REVIEW

International

– Hygo Framework,

- Global Exposure Database Framework,

- Global Assessment Report (GAR),

- NIST-Disaster Resilience Workshops,

- Integrated Risk Information System & Airborne Chemical Exposure

- RiskScape – NIWA, New Zealand

- Land Use in Rural New Zealand

- Pacific Exposure Database

- Open Street Map

- Population Dynamics, Oakridge National Laboratories,

Australia

– NRAG

- National Exposure Information System (NEXIS), GA

- Emergency Management Information Development Plan, ABS

- Queensland Disaster Management Plan

- Victorian Government Risk Management Framework

- Land Use of Australia, ABARE – BRS

- Energy Efficiency Reports

TASK PROGRESS - EXISTING CAPABILITIES REVIEW

Online Survey

Objectives

- To assess authoritative data and information capabilities that support emergency management decision making
- To review current practices and perform a gap analysis for future emergency planning, preparation, response and recovery activities
- to develop strategies to develop nationally consistent, robust, reliable and sustainable exposure information capabilities in Australia.

Participants (Invited 30 organisations)

- 30 organisations Invited &18 Responded
- Federal – GA, ABS, AMSA
- States – EICU, NSW SES, TAS-DPI, ACT-SG, VIC-SES, SA-DEWNR, WA-Landgate, WA-DFES, QLD-DNRM,
- Industry – PSMA, ACTEW, WillisRe
- Research – University of Melbourne Deakin Uni.,

TASK PROGRESS - EXISTING CAPABILITIES REVIEW

Highlights

- No agency is managing exposure data with national coverage consistently
- GA – NEXIS has a statistical version on buildings and population, location information for some infrastructure data available
- NSW EICU – Comprehensive for Sydney and location information of infrastructure for other areas in NSW.
- State Spatial organisations have location information for infrastructure
- State Emergency Management Organisations has some level of information
- Researchers have no fundamental information to provide for disaster management

Gaps

- No agency is managing comprehensive exposure data for national coverage consistently

TASK PROGRESS – EXPOSURE WORKSHOP

1) First workshop convened 2nd December.
2) 35 participants (research, government, EM, industry).
3) Objective to capture high level business needs and exposure information requirements for:
    - Buildings and demographics
    - Infrastructure
    - Business exposure
4) Workshop proceedings to be published in March 2015 and findings incorporated in framework.
5) Represents commencement of stakeholder engagement. This will entail follow-up with workshop participants and engagement within the CRC of project with exposure information requirements. Specific need to formally engage with social science community.

LINKAGES TO BNHCRC PROJECTS
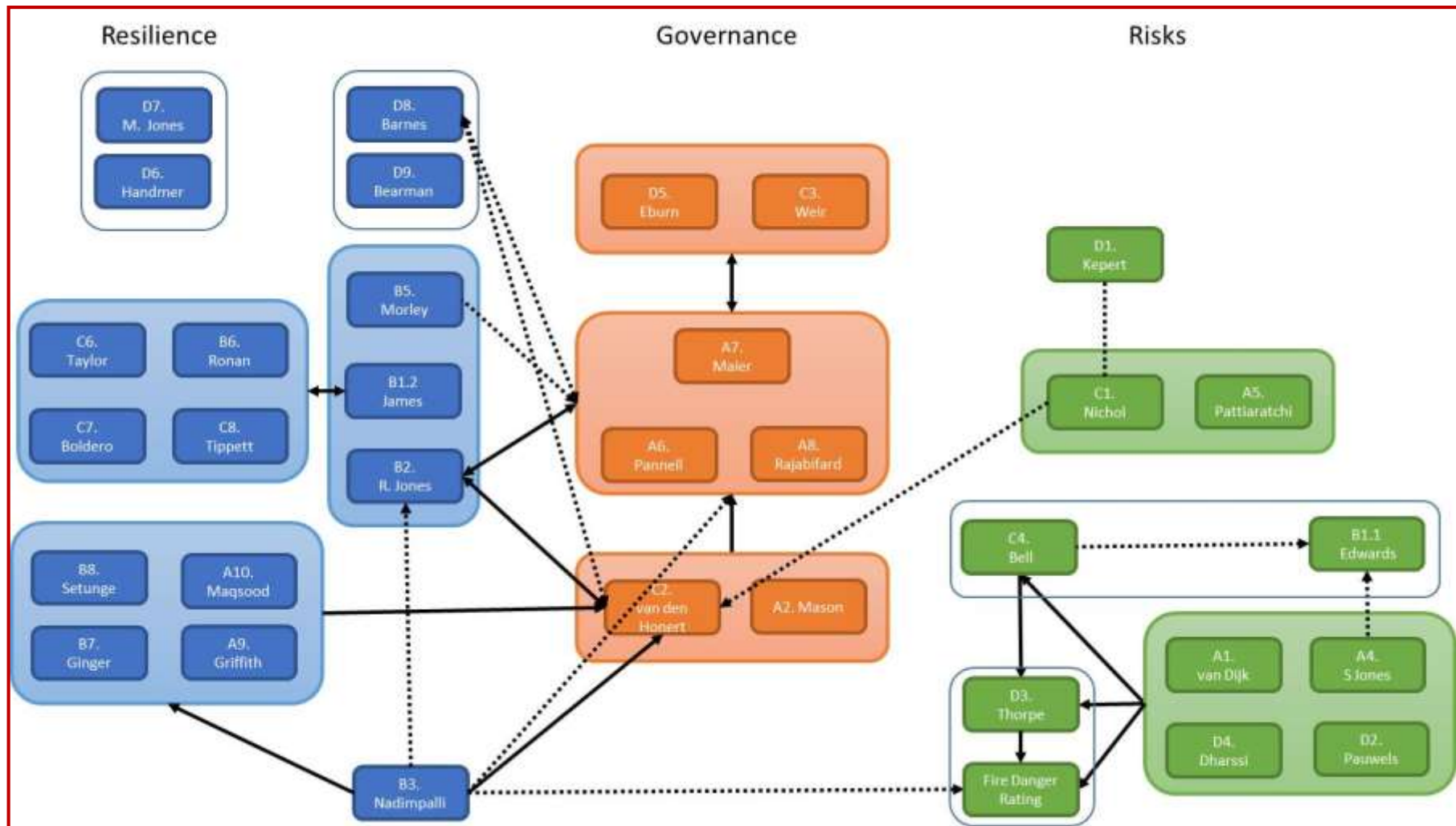
RESEARCH OUTCOMES SOUGHT

1) Underpinning of vulnerability assessments for disaster risk reduction and socio-economic impact analysis to support policy development.

2) Robust, Reliable and Sustainable exposure information capabilities - population, buildings assets, essential infrastructure and associated activities exposed to natural hazards.

3) Pathways to enable location based exposure information capabilities to be transitioned into federated data distribution networks with open access for use at national, state and local government levels.

OUTCOMES – ROAD MAP
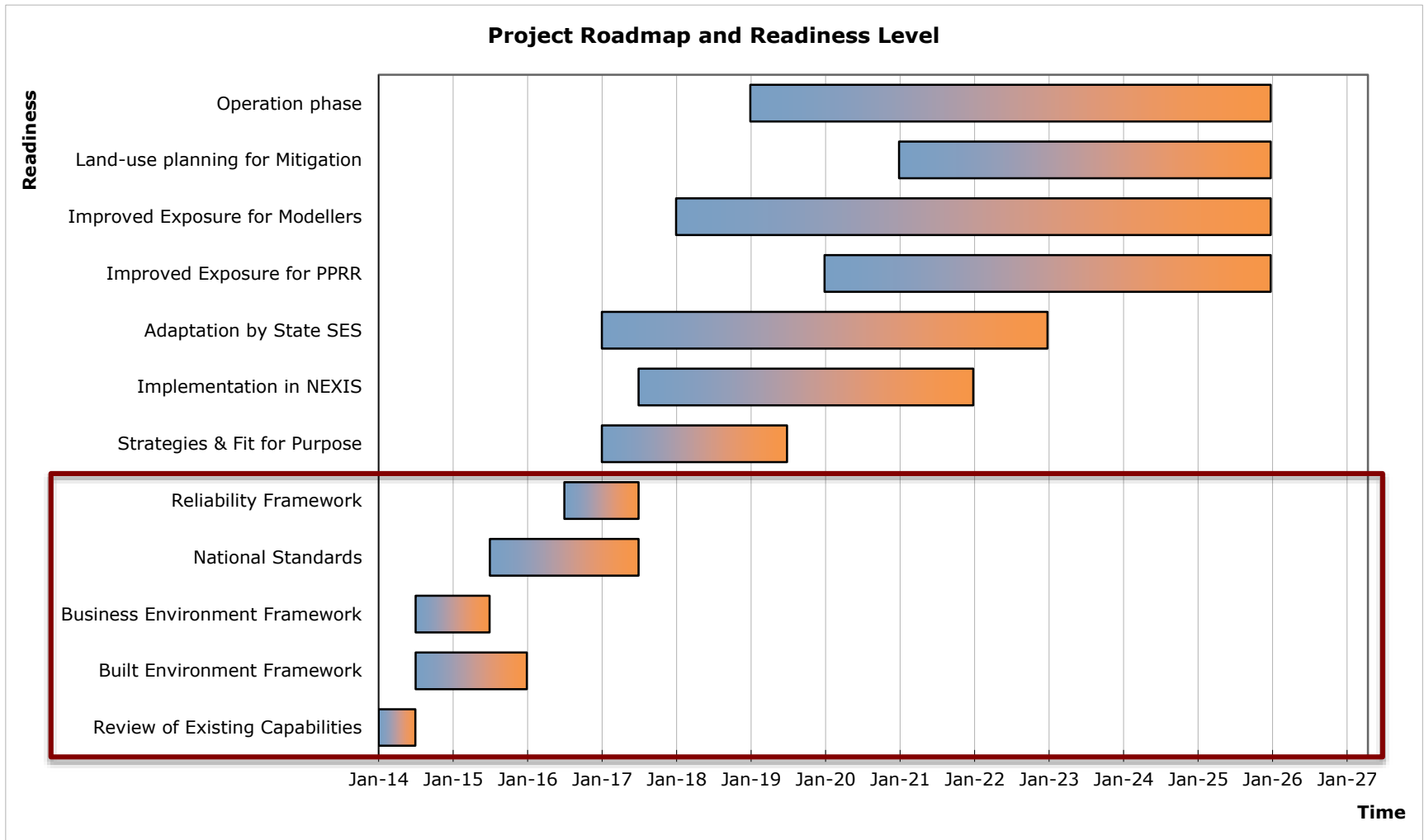
SUMMARY

1) Research program on track.

2) Engagement has commenced with a successful workshop. There is a need to explore further engagement with social science community to better capture their needs.

3) Linkages will be sought with other CRC projects that have exposure information needs to capture these in the framework.

THANKYOU

Phone: +61 2 6249 9732

Web: www.ga.gov.au

Email: Krishna.Nadimpalli@ga.gov.au

Address: Cnr Jerrabomberra Avenue and Hindmarsh Drive, Symonston ACT 2609

Postal Address: GPO Box 378, Canberra ACT 2601