GIRA
Gas Infrastructure Research Australia

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GIRA Overview and Research Update | POG Seminar

Doug Proud – GIRA Research Manager

History of collaborative research in the pipeline industry

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~1970s APIA: Strong history of supporting research (e.g. welding, computerised project planning tools)

1992 CRC for Materials Welding and Joining
- BHP, UoW, UoA, CSIRO

1999 CRC for Welded Structures
- APIA (now APGA), Bluescope, OneSteel, several others (including unis)

2009 Energy Pipelines CRC
- APGA Research & Standards Committee (RSC) & several universities

2018 Future Fuels CRC
- APGA RSC, ENA Gas Committee, GAMAA, State Govs & several universities

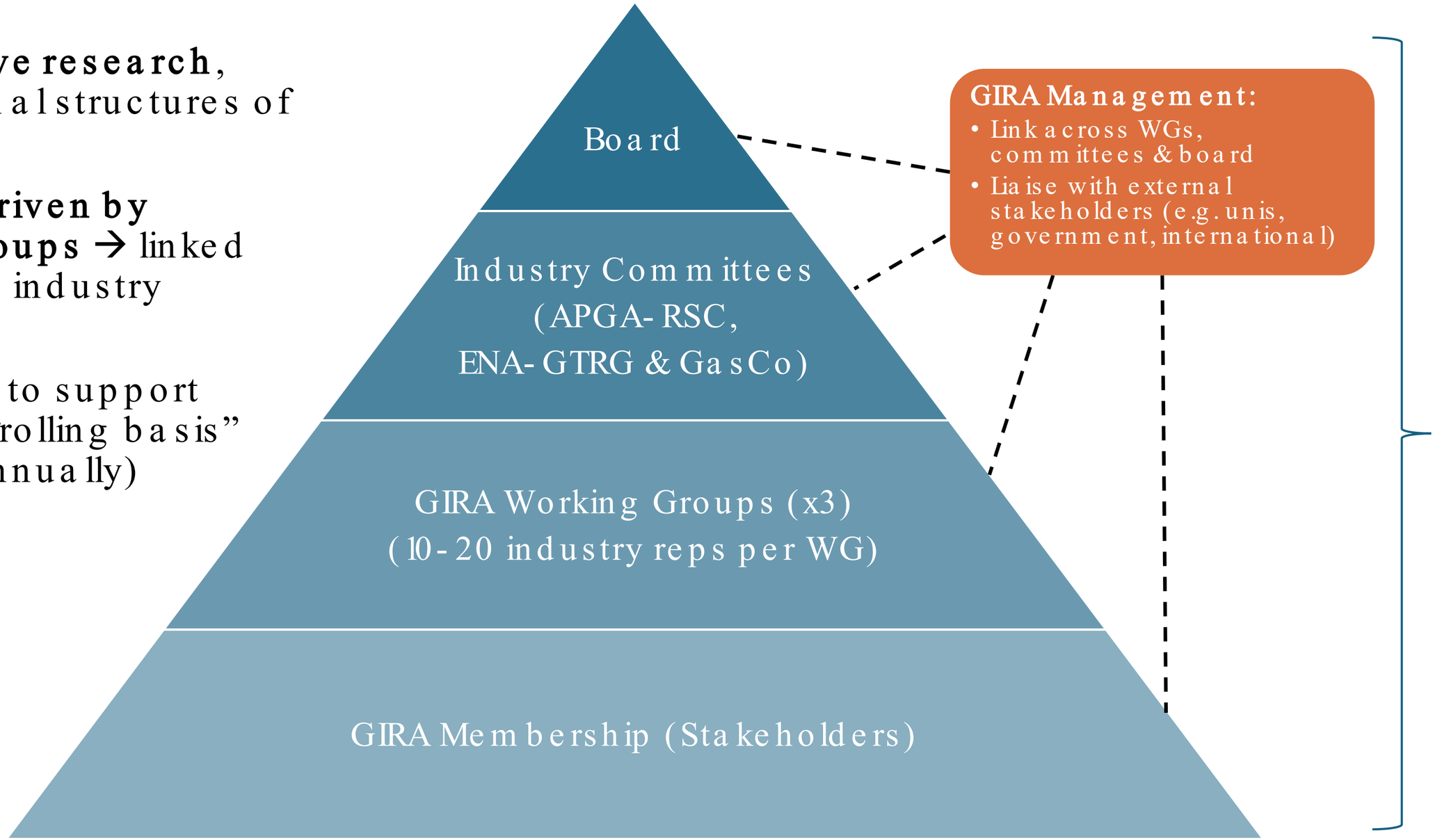
2025 Gas Infrastructure Research Australia (GIRA)
- APGA RSC & ENA Gas Committee (initially)

GIRA – Overview

- GIRA established in July 2025 as a new, **enduring and industry-led** research body
- Members include orgs within **APGA-RSC and ENA Gas Committee**
- Funding based on a **rolling 3-year commitment** of members, **~$2M p.a.** initially
- Now fully operational with **industry working groups** established to develop program
  - **WG1: Infrastructure Development** (e.g. design, materials, construction)
  - **WG2: Infrastructure Operations** (e.g. integrity management, maintenance, emissions)
  - **WG3: Strategic Research** (e.g. energy system modelling, policy, renewable gas pathways)

Structure and Approach: Industry-led Research

- **Collaborative research**, without formal structures of a CRC…
- **Proposals driven by Working Groups** → linked with existing industry committees
- **3-Year Plan** to support funding on "rolling basis" (updated annually)

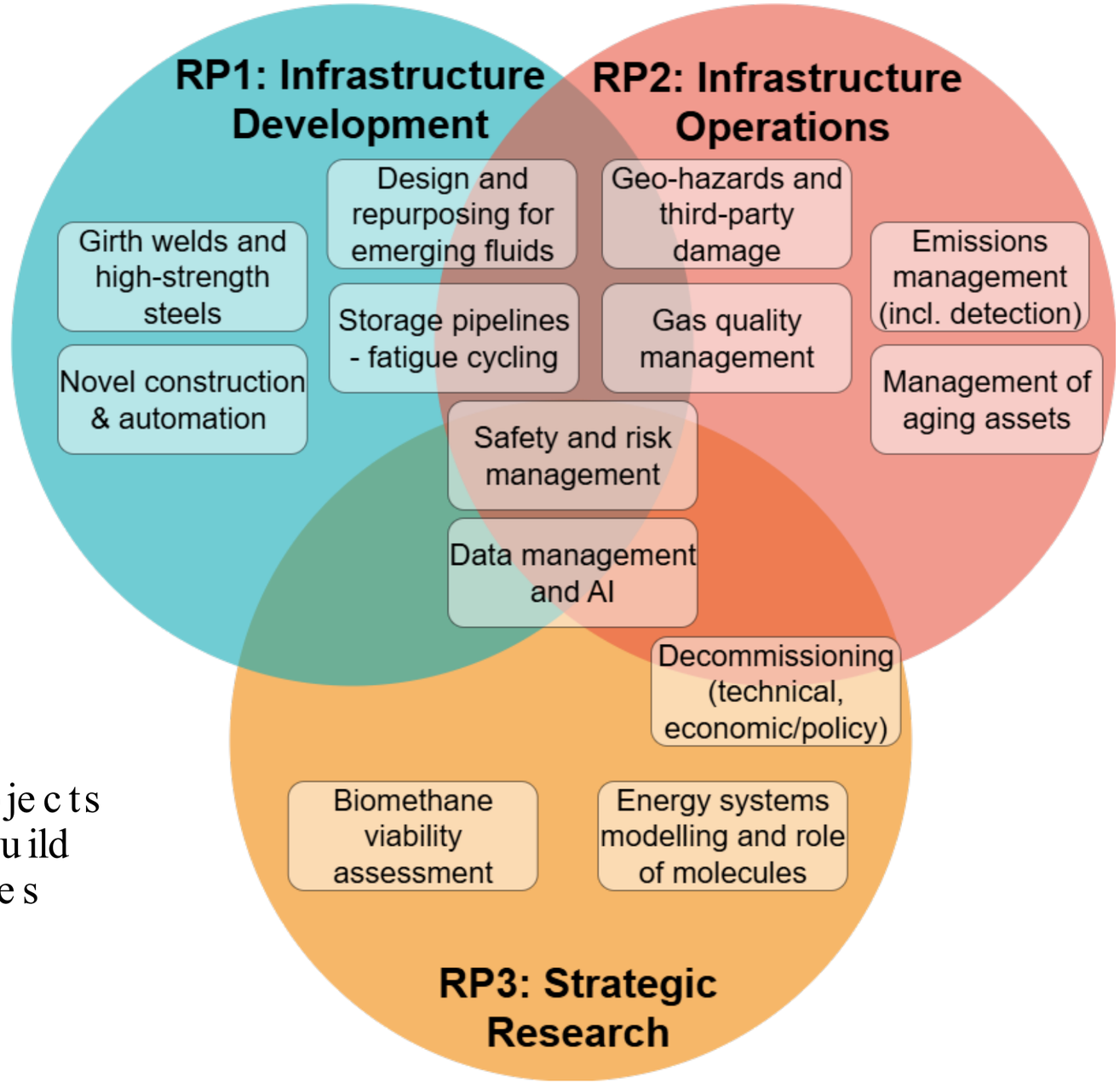


Scope of Research Program

Scope of research activities:

- Transmission pipelines to distribution networks (and facilities/system)
- Design to decommissioning
- Natural gas and "emerging fluids" (e.g. H_2, CO_2, biomethane)
- New infrastructure, existing assets and role in an uncertain future (linked with 3 RPs and WGs)

Board guidance: want to target research projects which demonstrate real-world impact and build industry capability in both equipment/facilities and people.



Active Research Projects

Three active GIRA-funded projects:

1. ***Extension of plastic pipes H_2 test bed*** ("sandpits") – Deakin University
2. ***Maximising opportunities for biomethane injection*** (mapping tools) – Adelaide University
3. ***Sociotechnical risk in the energy transition*** (Stage 2) – RMIT University

FFCRC research ongoing (GIRA to oversee completion):

- RP3.1-12: UoW lab-scale testing of steels in H_2 – **all testing now complete**
  → results being written up, future scope of work proposed under GIRA
- Several PhD projects ongoing – GIRA to receive copies of theses and manage dissemination (e.g. webinar presentations)

External and co-funded projects with GIRA involvement:

- UoW funding of $650k from NSW Gov for "3rd Party Damage in Hydrogen Pipelines" – complements lab-scale testing of steels in hydrogen
- International project on full-scale testing in hydrogen (PRCI JEFI-04-08)
- Deakin university "Australian Economic Accelerator" grant – validation and commercialisation of "**Closed-loop cathodic protection**" technology

Approved Research Projects (yet to commence)

1. *Arc Burns Risk Assessment (Literature Review)*

- Topic raised at 2025 stakeholder workshop – proposal developed with University of Wollongong
- Advisory team includes reps from APA, Epic, Jemena and Rosen
- Aims to provide guidance on repair requirements for weld arc burn defects on operating pipelines (and future updates to standard)
- Literature review as Stage 1 → expect to lead to larger scope of work (FEA modelling + testing) if value is justified

Arc burn examples:

2. PhD top-up: *Machine-Learning-based failure prediction in plastic pipes*

- Builds on previous work on plastics and elastomers by Deakin Uni researchers
- Large quantity of data from EPCRC+FFCRC research and contract research for industry
- Potential to use AI to complement datasets and correlate to real-world failure precursors
- Deakin Uni to provide majority of funding, GIRA contribution is $10k over 3.5 years (+ industry in-kind)
- PhD recruitment to commence after agreement is signed

Infrastructure Operations Working Group (WG2) - Overview

Status, membership and focus of WG

- Kick-off meeting held late-2025, follow-up meeting held Feb 2026
- 16 members in total, covering various operators (transmission + distribution), consultants, SMEs and regulators
- Several research ideas identified
  → next step is to build up set of proposals (Q2/Q3 2026)

Assessment criteria (for ideas/proposals)

- Safety
- Environment
- Security of supply
- Input to standards
- Input to policy
- Economic benefit
- **Consider "urgency"** when prioritising topics and ideas (e.g. meeting standards revision dates)

Research areas identified

- Pipeline integrity (corrosion)
- Pipeline integrity (materials/welding)
- Decommissioning
- Geohazards
- Risk assessment and processes
- Environment and emissions
- Station operations and maintenance
- Third-party interference

WG2 – Infrastructure Operations – Proposals & Ideas

Proposals drafted / in development:

1. *Benchmarking AS2885 against Geohazards Research & Standards*
   - Intend to commence tender process for consultant to deliver work

2. *Inclined SCC in Legacy Gas Pipelines*
   - Initial review of current state – then look at underlying causes and understanding susceptibility
   - **Research partner still TBC (seeking capability statements)**

3. *National pipeline material and mechanical properties database*
   - Seeking to survey POG members as part of initial scoping exercise

4. *Advancing Hydrogen Pipeline Integrity: Full-Scale Evidence and Multi-Level Assessment Tools* (Builds on UoW hydrogen testing program; 3-part proposal)

5. *Tensile Strain Capacity and Weld Undermatching* – ARC Linkage application submitted, still awaiting result before deciding next steps

Managed by WG1 (Development)

Other high-priority ideas:

- *Best practice and guidance for decommissioning and abandonment of pipelines*
  - Intend to separate transmission pipelines from distribution assets, and technical challenges from economics/policy
  - Operators and regulators involved in initial discussions to scope project
- *Screening tool and susceptibility flowchart for external MIC*
  - Early stages, project still to be scoped and research question defined
  - Potential to engage with international community (e.g. PRCI)
- *Guidance for performing SMS for high-consequence areas (managing urban encroachment risk)*
  - Need to confirm role of research as opposed to standards development

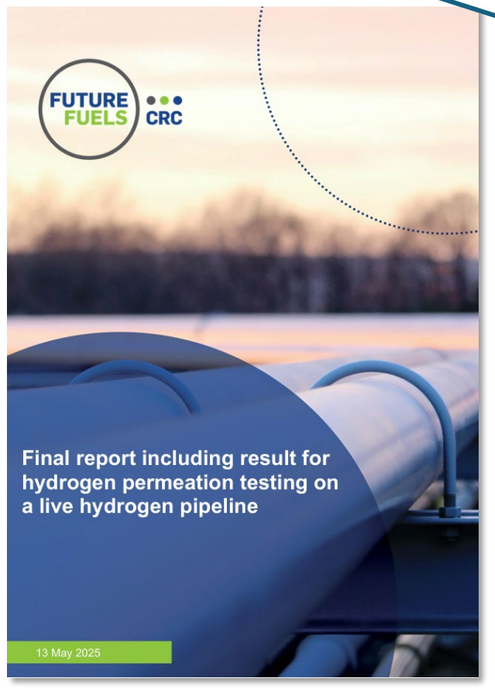
Note that GIRA has flexibility to pursue projects that might not traditionally be "research" - e.g. development of best practice guidelines or benchmarking standards (particularly where it builds on other research or leads to future research)

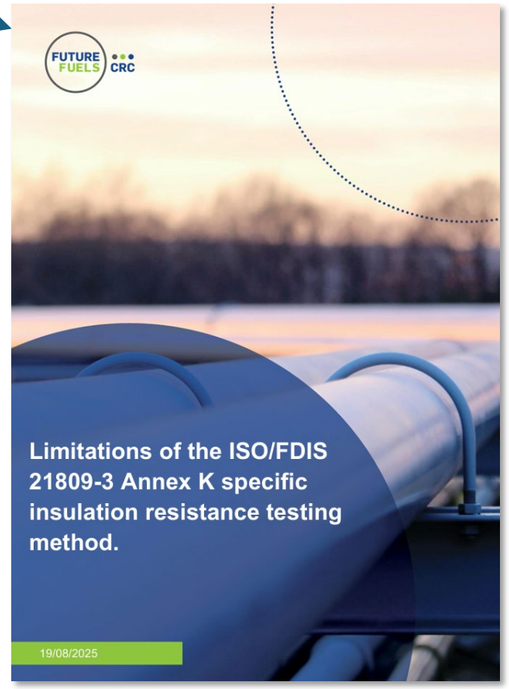
Recent research outputs & updates

Deakin coatings and corrosion research

- Final reports and outputs delivered in final months of FFCRC:
  - **RP3.4-04:** Keyhole coating damage treatment
  - **RP3.4-05:** Validation of Quality Assurance Tests for Two-Part Epoxy Coatings
  - **RP3.4-08:** Impact of internal H_2 and CP on external coatings
- **Available via FFCRC website (soon via GIRA)**

- ➢ PhD students continuing (thesis write-up → GIRA to disseminate)
- ➢ Further work ongoing to demonstrate and commercialise corrosion control technology (AEA grant)





Other items and next steps

Current focus for GIRA

- Prioritising proposal development for Q2/Q3 2026
- In parallel, refining longer-term plans (initial 3-Year Research Plan)
- Engagement with members (**and potential members!**)
- Continue to promote dissemination and uptake of research outcomes (including from FFCRC)
  - GIRA website "members area" in development → to be launched soon

Research plans and ideas

- Welcome input from broader community on research ideas (particularly operations-focused)

GIRA Research Seminar – 21 May 2026, Sydney

- Combined industry-research event with ENA-GTRG
- Free event for GIRA members
- Agenda to be circulated in coming weeks

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Link to website

www.gira.org.au

Thank you!