Engage with Indigenous Communities

By Antoinette Cole, University of Queensland School of Education

Cite as: Cole, A. (2026). Engage with Indigenous Communities. Zenodo. https://doi.org/10.5281/zenodo.24126693

Engaging with Aboriginal and Torres Strait Islander communities is a core component of responsible and ethical science, particularly in interdisciplinary and emerging fields where research intersects with people, systems, data, Country and future societal impacts. It involves building respectful, transparent, and reciprocal relationships with Aboriginal and Torres Strait Islander peoples, recognising them as knowledge holders and rights-holders, with authority over their cultures, knowledge systems, and data, not merely stakeholders. [1]

For example, in the field of quantum biotechnology, engagement is especially important because quantum-enabled technologies introduce new forms of visibility, measurement, and intervention in living systems, often at unprecedented resolution and scale. Ethical engagement ensures that rapidly advancing technological capability is matched with foresight, cultural respect, and shared benefit, supporting innovation that is scientifically robust, socially legitimate, and sustainable.

Why is it relevant?

Engaging respectfully with Indigenous communities is essential and matters because:

- Indigenous perspectives contribute to more holistic understandings of sustainability, risk, and benefit. [1]
- Indigenous peoples have rights to self-determination and control over knowledges and data relating to their peoples, lands, seas, and waterways (Country), and cultures as recognised nationally and internationally. [2]
- Engaging early helps identify values, risks, and implications before technologies become locked-in through infrastructure, data platforms, or commercial pathways.
- Technologies that enable unprecedented sensing, data capture, and biological interrogation can have long-term, cumulative impacts that are difficult to predict or reverse.

Practical Steps

Engagement should be proportionate, context – specific and embedded early. Practical steps include:

1. *Assess relevance early.* Consider whether your research involves biological materials, environmental sensing, sensitive data, or potential impacts on Country and communities
2. *Engage appropriate communities.* Indigenous communities are diverse. Seek guidance from Traditional Owners, Elders or relevant local organisations rather than assuming a single approach.
3. *Respect Indigenous data and knowledge sovereignty.* Indigenous knowledge is not open data. Data ownership, access, use, re-use, and benefit-sharing should reflect Indigenous governance principles.
4. *Avoid extractive research practices.* Where research affects communities, move beyond one-way consultation toward shared decision-making or culturally informed governance.
5. *Be transparent about uncertainty.* Clearly explain knowns, unknowns, and potential future implications associated with emerging quantum technologies.
6. *Plan for reciprocity and continuity.* Ethical engagement includes tangible community benefits and relationships that extend beyond a single project or funding cycle.

Case Study

Work on Jawoyn Country in southern Kakadu National Park demonstrates representative best practice for emerging technologies, where CSIRO researchers co-designed the ethical introduction of advanced sensing tools with Traditional Owners and Indigenous Rangers, embedding Indigenous leadership in field protocols and data governance. [3] [4] This approach provides a practical model for future technologies such as quantum biosensing, where early engagement supports ethical responsibility, trustworthy data interpretation, and socially legitimate innovation. [5]

References

1. Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS). *AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research*. Canberra: AIATSIS, October 2020. https://aiatsis.gov.au/sites/default/files/2020-10/aiatsis-code-ethics.pdf

2. United Nations General Assembly. (2007, 13 September). *United Nations Declaration on the Rights of Indigenous Peoples*. https://social.desa.un.org/sites/default/files/migrated/19/2018/11/UNDRIP_E_web.pdf

3. Commonwealth Scientific and Industrial Research Organisation (2021, October 11). *Enhancing Indigenous data sovereignty in environmental decision-making*. https://research.csiro.au/ri/indigenous-data-sovereignty/

4. Commonwealth Scientific and Industrial Research Organisation (2022, July 21). *Amplifying voices of Indigenous peoples key to managing the environment*. https://www.csiro.au/en/news/All/Articles/2022/July/responsible-innovation-on-country

5. Macdonald, J. M., Robinson, C. J., Perry, J., Lee, M., Barrowei, R., Coleman, B., … Douglas, M. (2021). Indigenous-led responsible innovation: lessons from co-developed protocols to guide the use of drones to monitor a biocultural landscape in Kakadu National Park, Australia. *Journal of Responsible Innovation*, *8*(2), 300–319. https://doi.org/10.1080/23299460.2021.1964321

6. National Health and Medical Research Council (NHMRC). *Ethical Conduct in Research with Aboriginal and Torres Strait Islander Peoples and Communities: Guidelines for Researchers and Stakeholders.* Canberra: Commonwealth of Australia, August 2018. https://www.nhmrc.gov.au/about-us/publications/ethical-conduct-research-aboriginal-and-torres-strait-islander-peoples-and-communities