APPENDIX H: SITING SIGNIFICANT FACILITIES—CASE STUDIES

This appendix presents the findings of six case studies. Five of the studies provide details of the processes used internationally to site new radioactive waste disposal facilities and the relevant aspects of community engagement of each case. The cases are:

- the ONKALO deep geological repository in Finland
- the Konrad deep geological repository in Germany
- the CaT Project surface repository in Belgium
- the CIGEO deep geological repository in France
- the Wolsong surface and geological repository in South Korea

The final study provides details of the approach used by Energy Resources of Australia in its engagement with Mirarr traditional owners regarding the Ranger uranium mine in Australia’s Northern Territory.

Together, these case studies provide valuable lessons on community engagement when siting any future nuclear development in South Australia. The cases show that proponents made mistakes in their early engagement with the affected communities, principally addressing technical issues and paying little attention to community concerns. These initial approaches resulted in either a failure to gain consent or, where the development proceeded, as in the case of the Konrad facility, a rejection of the siting process as illegitimate or unfair by the local community.

In most of the cases, siting approaches were revised to take into consideration the concerns, rights and interests of the affected communities. These changed approaches have resulted in successful facility siting in the Finnish, Belgian, French and South Korean cases.

The case studies support discussion in Chapter 5 and Chapter 6.

CASE STUDY 1
ONKALO DEEP GEOLOGICAL REPOSITORY AT OLKILUOTO, EURAJOKI, FINLAND

ONKALO (see Figure H.1) is expected to be the world’s first permanent deep geological repository for spent nuclear fuel. It is being developed in the municipality of Eurajoki, Finland. The proponent company, Posiva, was established in 1995 as the joint initiative of two Finnish electrical energy firms: Teollisuuden Voima Oyj (TVO) (60 per cent) and Fortum Power & Heat Oy (40 per cent). ONKALO is estimated to become operational in 2022–23 and will be closed (permanently sealed) in 2120.1 Eurajoki, which is an existing nuclear community—home to the Olkiluoto nuclear power plant—provided its consent to locate the facility in the municipality. In December 2000, the Finnish Government issued a ‘Decision-in-Principle’ in favour of the project.2 The closest village is 8 km from the facility area.3 The local economy is supported by industries including agriculture, forestry and tourism.4 Eurajoki is a popular holiday destination.5

Figure H.1: The ONKALO facility (foreground) with the Olkiluoto nuclear power plant above
Image courtesy of Posiva Oy6
Development of the project

Construction of the repository will commence in 2016 following receipt of the necessary licence in 2015.7 The entire project timeline is shown in Figure H.2.

The Nuclear Energy Act 1987 and the Nuclear Energy Decree 1988 govern nuclear developments in Finland, and are set by parliament, other relevant regulatory decrees are set by government. Regulatory oversight is provided by the Radiation and Nuclear Safety Authority (STUK). The licensing procedure is as follows:

1. Application for Decision(s)-in-Principle, both for development approval and final disposal plan; subsequent ratification by parliament
   • environmental impact assessment (EIA) to be conducted in accordance with the Act on the Environmental Impact Assessment Procedure 1994 and the Nuclear Energy Act
   • local municipality vote (veto right)—established in the constitution and the Nuclear Energy Act
   • safety appraisal by STUK (veto right)
2. Application for construction licence—issued by government, Preliminary Safety Analysis Report

Specific aspects of community engagement

Steps in the community engagement process are shown in Table H.1. Initial consultations with potential host communities commenced in 1987 following a self-selection process, which was preceded by a geological assessment by TVO. Posiva used an environmental impact assessment (EIA) process (1997–99) as a means of ascertaining community sentiment in four volunteer municipalities (Eurajoki, Lovisa, Aanekoski and Kuhmo).9 Posiva established proactive stakeholder engagement strategies aimed at promoting the benefits of the project to the municipalities in the knowledge that municipalities had a veto right. Posiva faced opposition from residents, councils and civil society organisations in three municipalities. Lovisa, Aanekoski and Kuhmo. There was no organised opposition in Eurajoki.10 Posiva sought to narrow the knowledge gap between nuclear experts and Eurajoki residents. The company linked the development of the repository to the local institutions and culture, in particular the restoration of a local mansion, and to the delivery of employment opportunities, increased tax revenues, and positive health and education impacts.11 Posiva was thoughtful in the way it engaged with the community and built trust in the ONKALO project.12 Several municipal politicians played a role in overturning an earlier ban on the disposal of used fuel in Eurajoki.13 The role of STUK was influential in engaging with residents and other citizens, and addressing concerns about risks. ‘STUK has been involved in the process from the very beginning and has been at the disposal of the citizens as an independent organisation giving information and being present when required. That has also created some confidence to citizens’.14 The 1999 and 2008 EIAs utilised a number of community engagement initiatives (e.g. meetings, a visitor centre, and a travelling exhibition) aimed at generating interaction with the community, soliciting resident input into project design, communicating expert knowledge and reducing misunderstandings about project risks.16

Preparation and implementation of the final disposal of used nuclear fuel

<table>
<thead>
<tr>
<th>Event</th>
<th>1980</th>
<th>2000</th>
<th>2020</th>
<th>2040</th>
<th>2060</th>
<th>2080</th>
<th>2100</th>
<th>2120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear power plant operation Lovisa 1–2</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Olkiluoto 1–2</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olkiluoto 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site investigations</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection of disposal site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of ONKALO, complementary characterisations and planning</td>
<td></td>
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<td></td>
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<tr>
<td>Construction and commissioning of repository</td>
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<td></td>
</tr>
<tr>
<td>Encapsulation and final disposal Lovisa 1–2</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Olkiluoto 1–2</td>
<td></td>
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</tr>
<tr>
<td>Olkiluoto 3</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Decommissioning and sealing of final disposal facility</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure H.2: ONKALO project timeline

Data supplied by Posiva Oy.
Newsletters were the main medium through which Posiva informed the public on the development of ONKALO.17

Perceptions of the Eurajoki municipal council and residents about hosting a repository changed following sustained engagement between TVO (later Posiva) and the community from 1985 to 2000. The project came to be seen as part of, and emerging from within, the community.18 Working and liaison groups between the companies and municipality contributed to changed perceptions, as did the engagement and communication tools—including language—used by Posiva to describe the development and its associated risks and opportunities.19 For example, Posiva used the term ‘final disposal’ instead of ‘nuclear waste’ or ‘spent fuel’ in its communication with Eurajoki residents.20

**Key lessons**

Several key lessons emerge for community engagement practice from this case study.

- There is a need to create a sense of shared ownership in order for community consent to be obtained and maintained. Accordingly, a development has to be seen to be built from within the community.
- Public trust in the credibility of the regulatory system was crucial to residents’ acceptance of ONKALO.
- Concerns about tourism, other local industries and the natural environment were not impediments to siting ONKALO.
- Due to the set timeframe for project delivery, the community (Eurajoki) was able to exercise its right to veto the development within two years of stating its favourable disposition toward the project. This meant that the community was not left with uncertainty.

Risks were discussed only in the context of assuring residents that the technical experts were competent. Posiva created a ‘collective cocoon of safety’ around the project.21

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**Table H.1: Points at which community engagement occurred**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late 1980s</td>
<td>Liaison group established by TVO and Eurajoki</td>
</tr>
<tr>
<td>1993</td>
<td>Following Eurajoki council elections in 1992, National Coalition Party councillors propose engagement with TVO about hosting a spent nuclear fuel repository</td>
</tr>
<tr>
<td>1994-12</td>
<td>Eurajoki overturns previous ban on hosting repository</td>
</tr>
<tr>
<td>1996-02</td>
<td>Eurajoki opinion on the repository formed (favourable)</td>
</tr>
<tr>
<td>1997-04</td>
<td>Posiva announces that municipal visions will be considered as part of the EIA process</td>
</tr>
<tr>
<td>1998-01-22</td>
<td>Vuojoki Working Party established by Eurajoki and TVO/Posiva to negotiate compensation agreement for hosting repository. 21 meetings held between 22 January 1998 and 24 January 2000</td>
</tr>
<tr>
<td>1998-12</td>
<td>Eurajoki’s Olkiluoto Vision approved by municipal council (20 votes in favour of the repository, 7 against)</td>
</tr>
<tr>
<td>1999-05-03</td>
<td>Vuojoki Agreement (compensation agreement) approved by Eurajoki municipal council</td>
</tr>
<tr>
<td>1999-05-26</td>
<td>Vuojoki Agreement signed by Posiva and Eurajoki municipal council</td>
</tr>
<tr>
<td>Community consent: 2000-01-24</td>
<td>Eurajoki municipal council approves a favourable statement on the Decision-in-Principle (veto right)</td>
</tr>
<tr>
<td>2000-12-21</td>
<td>Government approves the Decision-in-Principle</td>
</tr>
<tr>
<td>2001-05-18</td>
<td>Parliament ratifies the Decision-in-Principle</td>
</tr>
<tr>
<td>2008-03 / 05</td>
<td>Environmental Impact Assessment process (expansion)</td>
</tr>
</tbody>
</table>

Sources: Koj, Litmanen.15
CASE STUDY 2
KONRAD DEEP GEOLOGICAL REPOSITORY IN SALZGITTER, LOWER SAXONY, GERMANY

Konrad (Figure H.3) is an abandoned iron ore mine in Salzgitter, Lower Saxony, Germany, which is being converted into a low and intermediate level waste (LILW) repository. Disposal will occur in hard rock (coral oolith) at depth below –800 m, under a naturally occurring 400-metre-thick clay barrier. The repository will hold 303 000 cubic metres of radioactive waste at a planned disposal rate of 10 000 cubic metres per year of operation.

Konrad was granted a ‘plan-approval decision’ (licence) in 2002, after many years of legal hurdles and community opposition. In 1984, the German Government awarded German company DBE responsibility for the construction and operation of Konrad. Regulatory oversight is provided by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), while the Federal Office for Radiation Protection (BfS) is the implementing agency for radioactive waste management. The economy of Salzgitter is based on industrial activity, services, culture and history.

Development of the project

The licensing procedure was conducted in several stages (see Table H.2). It required consultation with the public and involvement of local authorities. Technical bodies also were involved at the national and Land (state) level. The licensing procedure in the Konrad case proceeded according to the processes established in a plan-approval application. The German Bundestag passed a new Repository Site Selection Act in 2013, which does not apply to Konrad.

Specific aspects of community engagement

The Konrad mine was first proposed by the local community as a potential site for a disposal facility following a favourable statement on its suitability by the then responsible agency, the Physikalisch-Technische Bundesanstalt. However, for most of the 1970s, ’80s and ’90s, there was limited engagement with the host community regarding the siting of Konrad. There has been community opposition to Konrad since the site was first selected. Environmental groups mobilised against Konrad due to concerns about its safety and the site selection process. According to AG Schacht Konrad, a group established to oppose the repository development,
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976–1982</td>
<td>Konrad is examined for its suitability as a repository for low and intermediate level waste</td>
</tr>
<tr>
<td>1982-08-31</td>
<td>Application filed to initiate a plan-approval procedure for disposal by Physikalisch-Technische Bundesanstalt, predecessor of the Federal Office for Radiation Protection, repository plan submitted to 70 authorities and nature conservation organisations for their opinions</td>
</tr>
<tr>
<td>1983-05</td>
<td>Information Centre for Nuclear Waste Management opens in Salzgitter</td>
</tr>
<tr>
<td>1989</td>
<td>Repository plan submitted to the Lower Saxony Environment Ministry for approval</td>
</tr>
<tr>
<td>1991</td>
<td>Germany’s Federal Administrative Court issues a directive to force the public display of the plan documents. Application documents are open for public inspection for two months, across Germany, 289,387 objections to the project are submitted</td>
</tr>
<tr>
<td>1992-09-25 – 1993-03-06</td>
<td>75-day public hearing on the repository proposal; objections raised by affected residents in their submissions and the statements of civil society organisations are discussed during the hearing</td>
</tr>
<tr>
<td>2000-06-14</td>
<td>German Government announces that the plan-approval process is complete</td>
</tr>
<tr>
<td>2002-05-22</td>
<td>Lower Saxony Environment Ministry grants approval for Konrad</td>
</tr>
<tr>
<td>2002–2006</td>
<td>Eight legal actions lodged against Konrad by communities, rural districts, churches and private individuals</td>
</tr>
<tr>
<td>2006-03-08</td>
<td>Lüneburg Higher Administrative Court dismisses actions and does not permit a revision; one claimant appeals to the Federal Administrative Court</td>
</tr>
<tr>
<td>2007-03-26</td>
<td>Federal Administrative Court upholds the Lüneburg Court’s decision; the plan-approval for Konrad is effective and enforceable</td>
</tr>
<tr>
<td>2007-04-03</td>
<td>Federal Administrative Court rejects non-admission complaint; City of Salzgitter begins proceedings against Konrad in Germany’s Constitutional Court</td>
</tr>
<tr>
<td>2007-05-30</td>
<td>Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) commissions BfS to begin construction of the repository, opening date of 2013 announced</td>
</tr>
<tr>
<td>2008-02-21</td>
<td>Constitutional Court rejects legal action brought against Konrad by City of Salzgitter</td>
</tr>
<tr>
<td>2008</td>
<td>Approval of operating plan</td>
</tr>
<tr>
<td>2011-05-27</td>
<td>Announcement of Konrad Repository Foundation: €100 million (A$147.8 million) will be paid to City of Salzgitter over 35 years</td>
</tr>
<tr>
<td>2013-05-15</td>
<td>BMUB announces new opening date [2021], with delay due to need for mine site shaft remediation</td>
</tr>
<tr>
<td>2013-10</td>
<td>Construction firm DBE announces new estimated costs for Konrad. The new year for completion is announced as 2022. DBE is required to re-engineer the project to correct assumptions that were made about the project in the 1980s and ‘90s, and to account for scientific and technological advances, as well as amended legislative requirements</td>
</tr>
</tbody>
</table>

Table H.2: Konrad project timeline and points at which community engagement occurred

Sources: BfS, AG Schacht Konrad

31
the project still does not have the support of the host community or the City of Salzgitter.\(^{36}\)

In 2011, the German Government announced that the City of Salzgitter would receive €100 million (A$147.8 million) over 35 years (majority of funds paid by electric utilities) in return for hosting the repository.\(^{37}\)

**Key lessons**

Several key lessons emerge from this case study for community engagement practice:

- Local confidence in the agents responsible for the site selection process was diminished following the ‘top-down’ siting process, which was viewed by the community as being ‘unfair’.\(^{38}\)

- There is a need for a formal site selection procedure, which engages with prospective host communities. Such a procedure has now been developed by Germany for the selection of a future repository site for disposal of high level waste (HLW).

- The community’s perceived lack of engagement from project proponents and concerns about the repository’s development resulted in legal actions being brought against the project. These actions have caused significant delays in project delivery.

**CASE STUDY 3**

**THE CAT PROJECT SURFACE REPOSITORY IN DESSEL, ANTWERP, BELGIUM**

The Belgian program for the disposal of low level radioactive waste (the Cat Project) is an integrated project for surface disposal of Category A waste (low and intermediate level short-lived waste) in Dessel, Belgium (see Figure H.4).

The facility is designed to hold 70 500 m\(^3\) of waste, and is expected to be operational in 2022.\(^{39}\) Disposal will occur over an indicative duration of 50 years, with a nuclear regulatory control phase involving monitoring and surveillance to continue for 250 years after repository closure. The project integrates technical considerations with socioeconomic aspects, and is a consequence of a unique local partnership process involving the proponent, ONDRAF/NIRAS, and the host community of Dessel, which was established by the Belgian Government. Dessel has a long history with nuclear research and industry, including nuclear fuel production (all activities stopped in 2012) and storage facilities for high level, intermediate level and low level waste. Site selection was driven by community support.\(^{40}\)

**Development of the project**

ONDRAF/NIRAS is the independent national agency (answerable to the Ministers for Economic Affairs and Energy) responsible for the management of radioactive waste and enriched fissile materials in Belgium.\(^{41}\) The Federal Agency for Nuclear Control (FANC) is responsible for licensing, control and surveillance of nuclear activities, including waste management and disposal. The licensing procedure for radioactive waste management and disposal facilities is as follows:

1. licence application submitted to FANC. FANC reviews application and seeks advice of the Scientific Council for Ionizing Radiation (a body of 22 experts in nuclear safety, radiological protection and environmental protection)
2. licence application and preliminary safety advice forwarded to municipal authorities for public enquiry and advice
3. application forwarded to provincial authority for advice. International treaty consultations occur at this time.

![Figure H.4: Artist’s impression of the proposed surface repository in Dessel after closure](Image courtesy of ONDRAF/NIRAS)
Table H.3: The cAt Project timeline and points at which community engagement occurred

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-01-16</td>
<td>Belgian Government announces start of process to identify location for a repository for Category A waste; Minister of the Economy tasks ONDRAF/NIRAS with overseeing this process</td>
</tr>
<tr>
<td>1999-09</td>
<td>Municipality of Dessel and ONDRAF/NIRAS establish the local partnership, STOLA-Dessel</td>
</tr>
<tr>
<td>2004-11</td>
<td>STOLA-Dessel publicly states support for siting of repository in Dessel and presents concept proposal</td>
</tr>
<tr>
<td>Community consent: 2005-01-27</td>
<td>Dessel municipal council unanimously endorses STOLA-Dessel proposal to develop repository</td>
</tr>
<tr>
<td>2005-04</td>
<td>STORA, successor organisation to STOLA-Dessel, founded</td>
</tr>
<tr>
<td>2006-06-23</td>
<td>Belgian Government selects Dessel, an existing nuclear community, as the location of the surface repository</td>
</tr>
<tr>
<td>2007-2011</td>
<td>Detailed site studies conducted</td>
</tr>
<tr>
<td>2010-03</td>
<td>cAt Project master plan released</td>
</tr>
<tr>
<td>2011–2012</td>
<td>The Organisation for Economic Co-operation and Development - Nuclear Energy Agency (OECD–NEA) reviews key aspects of the safety case at the request of the Belgian Government</td>
</tr>
<tr>
<td>2012</td>
<td>Safety case adapted in response to OECD–NEA’s peer review questions/comments, these have been addressed by ONDRAF/NIRAS and its technical support organisations</td>
</tr>
<tr>
<td>2013-01-31</td>
<td>ONDRAF/NIRAS submits the adapted safety case to the Federal Agency for Nuclear Control (FANC) as part of the request for a licence to build and operate the surface repository</td>
</tr>
<tr>
<td>2013–2016</td>
<td>ONDRAF/NIRAS and its technical support organisations carry out additional safety calculations based on FANC’s review comments</td>
</tr>
<tr>
<td>2017</td>
<td>Expected date to submit safety case to the Scientific Council for Ionizing Radiation</td>
</tr>
<tr>
<td>2018</td>
<td>Expected date to obtain nuclear licence for surface disposal</td>
</tr>
<tr>
<td>2022</td>
<td>Expected date when repository is operational</td>
</tr>
</tbody>
</table>

Sources: ONDRAF/NIRAS, NIRAS, OECD–NEA, STORA

Specific aspects of community engagement

Following the failure of site surveys in the 1980s and early 1990s to identify a repository site that had community support, the Belgian Government announced in 1998 that it would concentrate its site selection process for a repository on existing nuclear and volunteer communities, and involve these communities in the process.

Local partnerships were established in three volunteer communities (Dessel, Mol and Fleurus–Farciennes), each partnership signed an agreement with ONDRAF/NIRAS. The partnerships were required to develop technical conceptual proposals for final disposal facilities that also addressed socioeconomic considerations. Municipal councils were required to approve or reject the proposals. The Belgian Government decided final site selection based on an assessment of community consent following community council deliberation. The process resulted in the selection of the municipality of Dessel in June 2006, based on the concept developed by STOLA-Dessel.

Partnerships were tasked with:
- evaluating concepts for disposal facilities integrating technical considerations (design, safety, environmental aspects)
and health) and social aspects (socioeconomic added value and ecological preconditions)
• facilitating radioactive waste management research complementary to ONDRAF/NIRAS’ research
• being forums for structured project negotiation and local consultation
• communicating with local residents.

The key features of the partnership process were:
• the partnership methodology was developed by researchers at two universities in consultation with ONDRAF/NIRAS
• each partnership received an annual budget of ~€250 000 (A$370 000) from ONDRAF/NIRAS to cover operational, staffing and logistical costs. A one-off payment of ~€150 000 (A$222 000) was provided to develop the conceptual proposal and to conduct a socioeconomic assessment
• membership of the partnerships was open to any resident, and was voluntary; neighbouring communities could observe the process
• partnerships had two full-time paid staff (drawn from the ~€250 000), they had general assemblies of the membership and boards of directors, and established working groups on topics of importance to partnership members
• ONDRAF/NIRAS staff were members of both the partnerships proper and the individual working groups, the agency had a veto over project safety
• external experts were invited to explain and discuss many different aspects of radioactive waste management (waste characteristics, repository safety, construction, properties of engineered barriers, transport etc.)
• members of the communities could approach the partnerships with questions and they were answered
• the timeframe for partnerships to develop concepts was extended by several years to allow for communities to become sufficiently aware of the proposal
• there were ongoing community engagement programs developed by the successful partnership

Outcomes include:
• a successful social learning process involving knowledge transfer from experts to residents and vice-versa, because of local partnership involvement, the project became technically better and received broad support across the community
• changes to the ONDRAF/NIRAS preliminary technical design proposal to include a stronger engineered control system and ongoing monitoring systems
• voting of the general assembly of the local partnership and the municipal council indicated receipt of community consent. In Dessel, the general assembly of the local partnership and the municipal council expressed unanimous support for the STOLA-Dessel proposal.

The successful municipality, Dessel, established the STOLA-Dessel partnership, which comprised 76 representative members from more than 20 local organisations and ONDRAF/NIRAS. Dessel has 9250 residents, of whom 1600 are employed in the nuclear industry (including waste processing and storage, and nuclear fuel fabrication until 2012) and research (Belgian Nuclear Research Centre SCK•CEN).

STOLA-Dessel’s remit expired early in 2005. Recognising the need for ongoing community engagement, in April 2005 a new community–ONDRAF/NIRAS partnership, STORA (Study and Consultation Radioactive Waste Dessel), was established to oversee nuclear issues in Dessel. STORA has a general assembly composed of 20 local social, economic, cultural and political organisations. There is a board of directors and three working groups (‘follow-up of the disposal site’, ‘radioactive waste’ and ‘communication’). STORA receives its budget from ONDRAF/NIRAS.

In 2010, STORA and ONDRAF/NIRAS released the cAt Project master plan. Key features include:
• continuing partnership between the Dessel community and ONDRAF/NIRAS
• a multifunction community centre and theme park aimed at showcasing Dessel as a nuclear town through interactive exhibitions
• a sustainable development fund (private foundation overseen by a board of directors) with an initial capital value of between €90 million (A$132.9 million) and €110 million (A$162.5 million) to provide finance for community projects
• change to the town’s zone classification to allow for housing and employment growth
• the development and long-term maintenance of nuclear knowledge within the community
• continuous environmental, safety and health monitoring, including free annual health check-ups for residents.
Key lessons

This case study demonstrates the following lessons for community engagement practice:

- Local stakeholders can provide knowledge regarding socioeconomic circumstances, interests and community priorities, as well as physical and technical characteristics (e.g. local hydrogeology, monitoring and control systems), as the STOLA-Dessel partnership did when amending the initial conceptual design.61

  - The regulator, FANC, was included in the learning process from the outset of the partnerships, and engaged in an active dialogue with the community. This improved the overall scientific rigour of the safety case, promoted trust among parties involved in developing and reviewing the safety case, and enhanced the effectiveness of the regulatory review process.

  - To build knowledge and gain confidence in the long-term safety of the proposed repository requires time (from the project start in 1998 until the expected date of receiving the licence to build and operate in 2018).62

  - The partnership process took an expansive view of the term ‘stakeholder’, such that neighbouring communities were able to receive scientific rigour of the safety case, promoted trust among parties involved in developing and reviewing the safety case, and enhanced the effectiveness of the regulatory review process.

  - Despite the initial challenges associated with radioactive waste management, local residents can develop highly creative and innovative solutions if a framework has been put in place that allows genuine engagement in the project design and management process.63

  - The repository is being viewed by the community as an opportunity to advance community development for many generations to come.64

  - Substantiating the safety case is central to community consent.65

  - Partnerships will continue to provide input to some aspects of the broader disposal project, such as the multifunctional community centre and oversight of the sustainable development fund.

CASE STUDY 4
CIGEO DEEP GEOLOGICAL REPOSITORY IN BURE, MEUSE/HAUTE-MARNE, FRANCE

CIGEO (Industrial Centre for Geological Disposal) will be a deep geological repository for the disposal of high level waste (HLW) and intermediate level (ILW) long-lived waste in the vicinity of the village of Bure, eastern France (see Figure H.5). Once operated and closed, the repository will hold 11,000 m$^3$ of vitrified HLW and 110,000 m$^3$ of long-lived ILW waste.66 Disposal will occur at a depth of ~500 m in clay. A key feature of the repository design (specified in law) is the ability to reverse the disposal to retrieve waste packages for up to 100 years.67 The progressive approach to reversibility was published in a position paper in 2016.68 The site was selected by the French Government following community consultation on the basis of its geological conditions.69 Andra, the French National Radioactive Waste Management Agency, is responsible for developing and managing the repository in conjunction with its prime contractor.
Gaiya—a joint venture formed by Technip and Ingerop. The region hosting the facility produces cheese, among which is the world-famous ‘Brie de Meaux’ cheese.

**Development of the project**

Licensing of CIGEO is an iterative process involving the regulator, the proponent, the local community and various levels of government. Table H.4 shows the CIGEO project timeline and community engagement points. Stages proceed on the basis of the results of public inquiries and the enactment of specific laws and decrees, which authorise each phase of the development.

The repository will be licensed as a basic nuclear installation (INB). Licensing of INBs is granted within the framework of the decree of 2 November 2007 in application of the Transparency and Security in the Nuclear Field Act 2006 (France). The licensing procedure is as follows:

1. construction licence (authorisation decree)
2. operation licence (commissioning licence)
3. shut-down and decommissioning licences
4. end licences.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-12-30</td>
<td>Waste Act 1991 passed by the French parliament, which establishes three fields of research for the management of radioactive waste</td>
</tr>
<tr>
<td>1993-01</td>
<td>Siting process starts in 30 volunteer territorial administrative units</td>
</tr>
<tr>
<td>1994-1996</td>
<td>Andra carries out geological investigations at four volunteer sites (validated by the French Government) to identify suitable conditions for repository siting</td>
</tr>
<tr>
<td>1996-05-10</td>
<td>Decree 96-388 passed requiring public consultation prior to siting of nuclear installations</td>
</tr>
<tr>
<td>1997-01-05</td>
<td>Public inquiry into the underground research laboratory (URL) licence application filed by Andra in conjunction with three volunteer host communities</td>
</tr>
<tr>
<td>1998-12-09</td>
<td>French Government authorises construction of URL on the Meuse/Haute-Marne site; retrievability of waste is mandated</td>
</tr>
<tr>
<td>1999-08-03</td>
<td>Decree of 3 August 1999 authorises Andra to build and operate the URL in the village of Bure</td>
</tr>
<tr>
<td>1999</td>
<td>Local Information and Oversight Committee (CLIS) established (structure modified by the 2006 Planning Act)</td>
</tr>
<tr>
<td>2001-12</td>
<td>Andra submits safety file to the regulator, the Nuclear Safety Authority (ASN), for review. It was also peer reviewed under the aegis of the Organisation for Economic Co-operation and Development – Nuclear Energy Agency</td>
</tr>
<tr>
<td>2005</td>
<td>‘Dossier 2005’ released. Andra demonstrates to the satisfaction of the ASN that it is feasible and safe to construct a deep geological disposal facility on the Meuse/Haute-Marne site (1 km² zone)</td>
</tr>
<tr>
<td>2005-09 – 2006-01</td>
<td>Public debate on the management of high level waste, administered by the National Commission on Public Debate (CNDP); 13 public meetings held</td>
</tr>
<tr>
<td>2006-06-28</td>
<td>Planning Act on the Sustainable Management of Radioactive Materials and Waste 2006 passed, which adopts reversible deep geological disposal for the management of HLW and long-lived ILW</td>
</tr>
<tr>
<td>2006-12-23</td>
<td>Decree of 23 December 2006 extends Bure URL licence until 31 December 2011</td>
</tr>
<tr>
<td>2007</td>
<td>Perennial Observatory of the Environment established on the Meuse/Haute-Marne site to undertake environmental monitoring for at least 100 years</td>
</tr>
<tr>
<td>2009-06</td>
<td>Technological Exhibition Facility (in addition to the existing visitor centre) on the Meuse/Haute-Marne site opens to public</td>
</tr>
</tbody>
</table>
Specific aspects of community engagement

Following the failure of an earlier process to identify a repository site, the French parliament in 1991 passed the Waste Act, which specified that there would be no decision on site selection for 15 years. The Act also required that communities be consulted prior to any site investigations.

There is no community right of veto in France. Instead, a public inquiry and debate process results in government decrees, which direct Andra to undertake specified work as agreed by the community during the inquiry process. Two mandated public debates have been held (2005—national level; 2013—district and national level). Following the 2013 public debate, four requirements were added to the project concept:

- development of a pilot plant to prove disposal concept before receipt of an operation licence
- development and regular revision during the operation of the facility of an operational master plan
- schedule changes to allow for the submission of the construction licence in three stages—initial licence application (licence to create) in 2018, then the licence to operate the pilot phase in 2025 and the full licence to operate in 2030
- additional community engagement in the decision-making process

In addition to these changes, the community engagement process has resulted in:

- the requirement that disposal be reversible for up to 100 years, to be clarified via the scheduled 2016 law on the subject
- Andra’s plan to connect CIGEO to the national rail network to enable waste packages to be delivered by rail

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009–2010</td>
<td>French Government approves the 30 km² zone of interest proposed by Andra for studying the installation of CIGEO’s underground facilities. Site location determined in consultation with community</td>
</tr>
<tr>
<td>2011</td>
<td>Industrial design phase for CIGEO starts</td>
</tr>
<tr>
<td>2011-12-22</td>
<td>Decree of 22 December 2011 extends Bure URL licence until 31 December 2030</td>
</tr>
<tr>
<td>2013–05-15 / 12-15</td>
<td>Second public debate on CIGEO, also administered by the CNDP</td>
</tr>
</tbody>
</table>
A local information and oversight committee (CLIS) to facilitate community engagement was established in the village of Bure in 1999 in accordance with the 1991 Waste Act. However, CLIS is sometimes confused with the proponent, Andra, in community engagement processes.  

The nuclear industry in France contributes to the economic development of the Meuse/Haute-Marne districts through two community development funds: Objectif Meuse and GIP (Public Interest Group) Haute-Marne. These two districts with more than 300 townships representing 380,000 residents (2006 figures) are designated as affected and are entitled to receive benefits. However, the operation of the funds is not well understood in the community (including by town mayors) and awareness of nuclear industry-funded projects is low, which has resulted in expressions of concern about the project’s value to the community.  

Key lessons  
The following lessons emerged from this case study:  
- Proponents need to provide details of what benefits (positive socioeconomic impacts) are funded or facilitated as a result of the development. CLIS and the GIPs have no formal links with each other, which means that benefits arising from the project are not communicated to affected communities.  
- A sustained information program is necessary to communicate benefits in order to maintain community consent for the project.  
- Reversibility of disposal was not a technical requirement: it emerged as a social requirement through the community engagement process.  
- While a strict timetable for project delivery provides for stakeholder certainty, it can also result in lower community confidence if community members believe that the process is rushed and that their voices are not being heard.  
- There is a need for clear allocation of responsibilities among the involved parties and various stakeholders.  
- Committed involvement of political representatives and decision-makers is required at both the local and national level.  
- There is a need for a continuous assessment process for the performance of the system, based on available knowledge (for example, on waste forms and geology), engineering works and safety approaches and assessment.

CASE STUDY 5  
WOLSONG LOW AND INTERMEDIATE LEVEL WASTE DISPOSAL CENTER SURFACE AND GEOLOGICAL REPOSITORY IN GYEONGJU CITY, NORTH GYEONGSANG PROVINCE, SOUTH KOREA  
The Wolsong Low and Intermediate Level Waste (LILW) Disposal Center (WLDC) is a surface and geological repository located in Gyeongju City, south-east South Korea (see Figure H.6). Construction is occurring in stages: stage one (underground disposal silos at a depth of −80 m to −130 m) started operation in 2014; construction of stage two (near-surface and rock cavern disposal) is ongoing. The repository, which is adjacent to the Wolsong nuclear power plant, is licensed to hold 800,000 barrels (200 L each) or 214,000 m³. The Korea Radioactive Waste Agency (KORAD) is responsible for developing and managing the WLDC (answerable to the Ministry of Trade, Industry and Energy); the regulator is the Nuclear Safety and Security Commission (NSSC). Gyeongju City is a popular tourism and resort destination, and hosts sites on the World Heritage List. Agriculture, manufacturing and the services industry also contribute significantly to the local economy.

Development of the project  
The Minister of Trade, Industry and Energy issues licences for nuclear facilities. The licensing process is as follows:  
1. site selection process  
2. application for construction permit  
   • Korean Institute for Nuclear Safety (KINS) reviews technical files  
   • NSSC approves KINS report  
3. Minister of Trade, Industry and Energy issues construction permit  
4. application for operating licence, which follows above procedure.
Between 1986 and 2004, there was a single site selection process for a repository for high level waste (HLW) and LILW, which resulted in nine failed siting attempts: eight due to community opposition, one due to the discovery of an active fault. However, in 2004, the process was split between the search for a site for disposal of LILW waste and the search for a site for disposal of HLW (the latter process is ongoing and is subject to the Public Engagement Commission on Spent Nuclear Fuel Management).

The Special Act on Support for Areas Hosting the Low and Intermediate Level Radioactive Waste (LILW) Disposal Facility 2005 (South Korea) states that a HLW repository cannot be built in the locality that hosts the LILW repository. The South Korean Government selected Gyeongju City for the WLDC based on the results of a referendum held in four volunteer cities. Table H.5 shows the project timeline and community engagement.

Specific aspects of community engagement

Earlier attempts to site a repository (particularly because of the inclusion of HLW) failed due to inadequate community engagement about the risks and opportunities of the proposed facility. The nine failed siting attempts were “top-down approaches that did not involve substantial public input and explanation of relative risks and benefits.”

In contrast, in 2005, the South Korean Government changed its site selection strategy. The government ‘provided veto power to local residents by introducing a local referendum for the final site selection [LILW] and accepted all local communities that applied for the project as possible candidates.’ This raised local residents’ perceptions of process fairness and strengthened perceptions about the voluntary nature of the siting procedure.

The South Korean Government additionally offered a package of benefits to the successful host city in order to increase community support for the repository project. The package comprised:

- a special support fund: ₩300 billion (A$352.8 million)
- a local support fee: ₩637 500 (A$749.7) per 200 L drum disposed. A total of 800 000 drums is valued at approximately A$600 million
- community project support: ₩3.2 trillion (A$3.76 billion) to fund 55 local projects
- relocation of the head office of Korean Hydro and Nuclear Power (electric power utility) to Gyeongju City
- a proton accelerator project

Four cities (comprising the local governments and assemblies, as well as citizen/resident groups) actively campaigned against each other in order to raise resident support to host the repository and to receive the benefits package.
Factors leading to the successful site selection and factors leading to failure in the previous attempts are elaborated below.\(^{106}\)

**Success factors:**
- separation of LILW and HLW
- enactment of a special law for community benefits package
- free decision of the community as a result of the local referendums
- introduction of a competitive siting process
- trust in the government and regulator.

**Failure factors:**
- disquiet about long-term safety (risk perception)
- lack of community confidence in the proposed benefits
- lack of community participation in the decision-making process
- lack of transparency in decision making
- lack of trust in the regulator.

**Key lessons**

Two key lessons emerge from this case study:

- Where the community perceives the benefit from hosting a nuclear development to be greater than its perception of the risks arising from a development, it may provide community consent.\(^{107}\)
- The South Korean Government developed a benefits package to incentivise volunteer communities.
The package was developed prior to the site selection process without community consultation and therefore was not viewed as a ‘bribe’ by volunteer cities.\(^{108}\)

- The change of site selection strategy (separating LILW from HLW; establishing a community engagement and bid solicitation process) resulted in successful site selection.\(^{109}\)

CASE STUDY 6
RANGER MINE AT JABIRU, ALLIGATOR RIVERS REGION, NORTHERN TERRITORY

Ranger uranium mine (Figure H.7) is located 260 km south-east of Darwin in the Alligator Rivers Region of the Northern Territory, and started operations in 1980.\(^{110}\) To date, more than 120,000 tonnes of uranium oxide has been produced from processing ore from Pits 1 and 3.\(^{111}\) In 2011, Ranger’s operator, Energy Resources of Australia (ERA)—a member of the Rio Tinto Group—proposed investigations into the redevelopment of the open cut mine to extract the Ranger 3 Deeps resource (approximately 44,000 tonnes contained uranium oxide) via underground methods.\(^{112}\) Ranger is surrounded by the World Heritage listed Kakadu National Park. The mine and the previously proposed development of the adjacent Jabiluka uranium deposit have been the focus of anti-nuclear, environmental and Aboriginal land rights campaigns since the 1970s.\(^{113}\)

Development of the project

The history of Ranger and the associated proposal to mine Jabiluka is important background context to the proposed Ranger 3 Deeps underground mine.\(^{114}\) Development of Ranger was recommended by the Ranger Uranium Environmental Inquiry (‘the Fox report’) in 1977. While the Fox report found traditional owners opposed developing Ranger, it also determined the project was in the national interest and, therefore, Aboriginal opposition should not be allowed to prevail.\(^{115}\) The Mirarr traditional owners were denied the right to veto Ranger under subsection 40(6) of the Aboriginal Land Rights (Northern Territory) Act 1976; this right exists for all other Northern Territory traditional owners whose land is subject to the Aboriginal Land Rights Act.\(^{116}\)

Table H.6 shows the Ranger mine timeline.

Aware that open cut mining at Ranger would finish in 2012, ERA proposed investigations to determine the feasibility of mining Ranger 3 Deeps via underground methods in 2011.\(^{117}\) ERA approved an exploration decline—a tunnel to aid characterisation of the ore body—in June 2012; this was completed in 2014.\(^{118}\) ERA conducted a pre-feasibility study during this period.\(^{119}\) Mirarr did not object to constructing the decline.

Figure H.7: An aerial view of the Ranger uranium mine in the Northern Territory

Image courtesy of Glenn Campbell/Fairfax Syndication
### Table H.6: Ranger mine timeline and points at which community engagement occurred

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>Ranger Uranium Environmental Inquiry recommends construction of the Ranger uranium mine</td>
</tr>
<tr>
<td>1978-11-03</td>
<td>Ranger Agreement signed enabling development of Ranger</td>
</tr>
<tr>
<td>2000-08</td>
<td>ERA and its owner, North Limited, are acquired by the Rio Tinto Group</td>
</tr>
<tr>
<td>2011-08-25</td>
<td>ERA approves $120 million to construct an exploration decline to examine the Ranger 3 Deeps resource</td>
</tr>
<tr>
<td>2012-06-14</td>
<td>ERA commits $57 million for a pre-feasibility study of Ranger 3 Deeps</td>
</tr>
<tr>
<td>2013-01</td>
<td>ERA submits ‘Notice of Intent’ and ‘Referral’ to the Northern Territory Environment Protection Authority and the former Australian Government Department of Sustainability, Environment, Water, Population and Communities</td>
</tr>
<tr>
<td>2013-03-13</td>
<td>Australian Government announces that Ranger 3 Deeps is a controlled action and requires assessment under the Environment Protection and Biodiversity Conservation Act 1999 (Cth)</td>
</tr>
<tr>
<td>2013-08</td>
<td>Environmental Impact Statement (EIS) guidelines finalised and issued</td>
</tr>
<tr>
<td>2013-12-07</td>
<td>Leach tank failure at the Ranger mine, operations suspended pending regulatory and ERA review</td>
</tr>
<tr>
<td>2014-06-05</td>
<td>Regulators approve restart of operations</td>
</tr>
<tr>
<td>2014-10-03</td>
<td>ERA submits Draft EIS for public and regulatory review</td>
</tr>
<tr>
<td>2014-12-13</td>
<td>Review period on Draft EIS closes</td>
</tr>
<tr>
<td>2015-06-11</td>
<td>ERA announces that it will not proceed to a final feasibility study of Ranger 3 Deeps</td>
</tr>
<tr>
<td>2015-06-11</td>
<td>Rio Tinto releases media statement withdrawing support for Ranger 3 Deeps</td>
</tr>
<tr>
<td>2015-06-12</td>
<td>ERA Board responds to Rio Tinto’s media release, reaffirming its commitment to its approach to Ranger 3 Deeps</td>
</tr>
<tr>
<td>2015-06-12</td>
<td>GAC announces that Mirarr do not support any extended term of mining at Ranger beyond 2021</td>
</tr>
<tr>
<td>2015-06-22</td>
<td>Three independent members of ERA Board resign</td>
</tr>
<tr>
<td>2015-10-15</td>
<td>GAC announces that it cannot consider an extension to the Ranger Authority without the support of Rio Tinto</td>
</tr>
<tr>
<td>2015-10</td>
<td>ERA commissions strategic review of operations</td>
</tr>
</tbody>
</table>

Note: GAC = Gundjeihmi Aboriginal Corporation
Sources: ERA, Mudd, Kyle, Smith, GAC, Rio Tinto
Regulatory approval for Ranger 3 Deeps was pursued according to the Environmental Assessment Act (NT) and the Environment Protection and Biodiversity Conservation Act (Cth). This process required ERA to submit an environmental impact statement with a social impact assessment component.121

Unlike other mines in Australia, Ranger is not subject to a mineral lease. Instead, it has an Authority to Mine under the Atomic Energy Act 1953 (Cth). This Authority expires in January 2026.122 While the initial objective was to execute the proposed Ranger 3 Deeps project within the existing Authority, ERA later commenced a process to seek an extension to the Authority in order to optimise the economics of the project.123 This would require an amendment to the Atomic Energy Act.124

In June 2015, ERA announced that the Ranger 3 Deeps project would not proceed to final feasibility study in the then current operating environment and the infrastructure was placed on care and maintenance.125 The decision was based on two principal factors: uncertain market conditions and the economics of the project requiring operations beyond the current Ranger Authority.126 The company stated that it would revisit its economics over time.127 The June 2015 announcement also advised ERA had commenced discussions with representatives of the traditional owners and the Australian Government regarding a possible extension to the Ranger Authority.

On the same day, Rio Tinto announced that it agreed with the decision not to progress studies on Ranger 3 Deeps and that it did not support any further study or the future development of Ranger 3 Deeps due to the project’s economic challenges.128 Following Rio Tinto’s decision to withdraw its support for the Ranger 3 Deeps project, three independent ERA board members (including the chair) resigned due to disagreement with Rio Tinto about the future of the project and the difficulty for ERA to pursue its stated approach without the support of its major shareholder.129

In October 2015, the representative body of the Mirarr Aboriginal people—the Gundjeihmi Aboriginal Corporation (GAC)—announced that Mirarr traditional owners would not ‘consider any possible extension to the Authority to mine on the Ranger Project area in the absence of support from’ Rio Tinto.130 ERA initiated a strategic review of its operations following communication from the traditional owners; this is due to finish in the March quarter 2016.131

Specific aspects of community engagement

The focus of the following discussion is engagement between ERA and Mirarr traditional owners.

The Mirarr traditional owners opposed operations at Ranger when the mine was first proposed in the 1970s.132 The Aboriginal Land Rights Act specifically excluded the Ranger site from the ‘right of veto’ provisions contained in that Act. The Australian Government determined that Ranger should proceed as it was in the national interest. The Mirarr felt they had little choice but to agree to the Ranger Agreement, signed in 1978 between the Australian Government and the Northern Land Council,133 which sets out certain terms and conditions for the mine’s operations. As a result, for at least the first two decades of Ranger’s operational life, relationships between all parties were often characterised by ‘acrimony’, ‘distrust’, and ‘mutual disengagement’.134

Following its acquisition of ERA’s owner, North Limited, in 2000, Rio Tinto assumed a majority shareholding in ERA. Rio Tinto applied its community engagement framework to ERA, which has resulted in closer relationships between ERA and traditional owners and their representatives over the last 15 years, particularly 2008 to 2013.135 In this period, ERA and the GAC established new dialogue channels and participated in joint initiatives on environmental and cultural heritage management.136 ERA entered into a cultural heritage protocol with the GAC in 2006.137 Such initiatives built trust between traditional owners and ERA, and led to cultural solutions to problems that are also technically sound.138 ERA continues to provide cultural awareness training for all employees.139

Building on the improved relationship, in January 2013 ERA and the GAC signed a new Ranger Agreement. While the terms of the agreement were confidential, it established a ‘Relationship Committee’ to facilitate dialogue between ERA personnel and traditional owners, and granted more rights and control to the Mirarr over operations at Ranger.140 The agreement also established the West Arnhem Social Trust, into which ERA undertook to deposit funds to improve Aboriginal social development across the Alligator Rivers Region.141

Over the years, ERA has developed an indigenous employment strategy, which includes flexible work arrangements, a mentoring program, workplace literacy and numeracy training, and work experience and school-based apprenticeship support for local students.142 At 31 December 2015 approximately 13 per cent of ERA’s workforce were Aboriginal employees.143
The Mirarr have historically refused to participate in periodic social impact assessments (SIAs) due to their belief that to do so would confer legitimacy on ERA’s operations.\textsuperscript{145} ERA has used its own social assessments (outside regulatory requirements) to identify better ways in which to engage with the community.\textsuperscript{146} In 2013, ERA contracted social consultancy Banarra to undertake an SIA (a regulatory requirement) for the proposed Ranger 3 Deeps underground mine. The SIA determined the potential positive social impacts outweighed the negative impacts.\textsuperscript{147} GAC Board members were consulted as part of the Ranger 3 Deeps SIA.\textsuperscript{148}

A leach tank failure in December 2013 at Ranger set back relationships between ERA and Mirarr. In ERA’s 2013 Annual Report, the then chair, Peter McMahon, acknowledged ‘the incident re-awakened latent opposition to uranium mining at Ranger, and it has at least interrupted the developing trust between ERA and its community stakeholders, including representatives of the Mirarr people.’\textsuperscript{149}

Historically, there have been conflicts within the Alligator Rivers Aboriginal communities (between Mirarr and other groups) regarding the distribution and use of Ranger benefits/royalties and claims about the definition of ‘area affected’—those who are entitled to have a say in Ranger’s operations and to receive benefits.\textsuperscript{150} In 2015, ERA paid $179 million in royalties.\textsuperscript{151} Despite the economic benefit associated with the Ranger operation, Aboriginal disadvantage is still prevalent in the region.\textsuperscript{152}

**Key lessons**

This case study provides the following lessons:

- There is a need to enshrine community consent provisions at the start of development proposals to avoid ongoing community opposition and potential project failure.
  
  » Ranger was constructed without the consent of Mirarr traditional owners.
  
  » Engagement with traditional owners throughout the life of a project is essential.
  
  » The personal relationships between ERA and GAC personnel, strengthened following Rio Tinto’s acquisition of ERA, were crucial to improved project outcomes.
  
  » ERA’s experience post-2000 shows that community engagement is not a cost, but rather an opportunity.

- Mirarr traditional owners have chosen to engage with ERA through the agency of the GAC. This is not considered ‘text book’ community engagement practice.\textsuperscript{153} However, Mirarr view direct engagement with the company as an unwanted social impact. This again shows that there is no one-size-fits-all approach to community engagement.
  
  » Corporate community engagement frameworks do not necessarily align with Aboriginal world views. Proponents need to work with host communities and their representatives to establish culturally appropriate engagement methods.
  
  » Engagement with particular community representative groups can precipitate or perpetuate cultural conflicts and disputes about the distribution of benefits.
  
  » Determining the community affected and who speaks for that community is difficult and time consuming.

- ERA has found it difficult to effectively communicate the risks and benefits of its operations to traditional owners, such that their sentiment towards Ranger has not substantially changed since the 1970s.
  
  » Participation in joint initiatives and adopting cultural solutions to technical problems raised Mirarr traditional owners’ trust in ERA.

- There is a need for ongoing social risk and impact monitoring in the same way that environmental and safety risks and impacts are overseen and monitored.
NOTES


5 Posiva, Expansion of the repository for spent nuclear fuel: Environmental impact assessment report, p. 91.


8 OECD–NEA, Radioactive waste management and decommissioning in Finland OECD–NEA, p. 5.


12 ibid., p. 133.

13 ibid., p. 138.

14 Transcript: Aikos & Hautukanges, p. 1438.


18 ibid., p. 138.

19 ibid., p. 142.

20 ibid., pp. 138, 142.


23 ibid.


29 A plan—approval was a licence for nuclear developments that focused on safety, security, environmental, construction and operation considerations. The responsible authority for the plan approval was and is the Ministry of the Environment at the Länder level (Lower Saxony). International Atomic Energy Agency (IAEA), Licensing in Germany: legal aspects and procedures of assessment, http://www.ionea.org/ins/tutorials/regcontrol/regbody/reg2225.htm


STORA, ‘History’, http://www.stora.org/en/content/history


http://toolbox.ippaproject.eu/files/LocalPartnership_CaseStudy_Site-selection-LLW-Belgium_20130312.pdf


OECD–NEA, Radioactive waste repositories and host regions, p. 16.

ibid., p. 13.

OECD–NEA, Radioactive waste repositories and host regions, p. 15.


ibid., p. 15.


OECD–NEA, Radioactive waste repositories and host regions, p. 16.

ibid., p. 44.


ibid., p. 21.


ibid., p. 21.


ibid., p. 21.

This contributed to the lack of relationship between ERA and the Mirarr, as well as the poor social development outcomes. See: Graetz, ‘Ranger uranium mine and the Mirarr (Part 1), 1970–2000’, p. 139.


148 Banarra, Ranger 3 Deeps underground mine, Appendix D, p. 40.

149 ERA, Annual report 2013, p. 4.


151 ERA, Annual report 2015, p. 35. For a breakdown on the royalty payments, see: ERA, Annual report 2015, p. 95.

152 Y Margarula, Jabiru: Traditional owner statement, in Mirarr fighting for country, protect our living tradition, information kit module 3: statements and map. GAC, Jabiru, p. 3; Y Margarula, Foreword, in GAC, Submission to House of Representatives Standing Committee on Industry and Resources Inquiry into developing Australia’s non-fossil fuel energy industry, May 2005, p. 2.