Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthammar, Sweden;
- Oikiluoto, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
Project Description

In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a pre-requisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

Public Perception

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

Although not specifically relating to the storage of spent nuclear fuel, but rather nuclear power in general, the 1980 Swedish referendum firmly concluded that nuclear power should be phased out.

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principle of ‘mediation by dialogue’\(^1\) to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised though the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\(^2\). Related developments to accompany the site outlined by the municipality include\(^3\):

- Repair work on the main road linking Östhammar to Upsalla;
- Attractive housing developments;
- Entrepreneurial skills training at schools to encourage the creation of local businesses; and
- Establishing business networks in the northern valley region.

SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either For or Definitely for has steadily increased from 65% in 2003 to 79% in 2009.

**Fig A1: The change in Östhammar residents perceptions (Source: SKB)**

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1. EC Community research (ARGONA), *Mediation by Demonstration and Dialogue: an evaluation of practices*, 2009
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The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

\(^4\) Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\(^5\) found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\(^6\).

Another study in 2000 found that 78% of people in Eurajoki were willing to accept the building of the final disposal facility Olkiluoto provided that the safety of the project is verified through research and an official safety assessment\(^7\).

The research undertaken in Finland has outlined the following success factors in gaining the public’s trust in the location process and ultimate support for the facility\(^8\):

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- Where risks are present it is crucial that a level of trust in the regulatory body is built and maintained;
- It is essential to highlight the alternative options (or lack of) in a process to help guide local residents through the decision making process;
- Differences between risk perception by experts and the lay people have to be understood and public concerns need to be taken into account;
- Locations that are already exposed to nuclear technologies are far more likely to be accepting of a repository than those that are not;
- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

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\(^7\) Ibid.

\(^8\) Patrakka. E, *posiva Oy, Towards implementation of spent nuclear fuel management in Finland*, 2007
• Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and
• Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed\(^9\).

\(^9\) Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spent nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
Project Description

The Ince Resource Recovery Park (IRRP) will be run by Ince Park LLP, a joint venture partnership between Covanta Energy and Peel Environment. The proposed biomass plant will take up to 175,000 tonnes of fuel per annum which will in turn provide enough renewable electricity to meet the needs of 37,000 homes and be able to supply heat to nearby industry and businesses.

The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England. After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units

10 IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an ‘anchor tenant’ for a far greater technology cluster.

**Public Perception**

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint\(^{11}\). The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application\(^{12}\).

The opposition was led by the group Residents Against Incinerators (RAIN) and the initial planning submission was refused by Cheshire County Council in 2006. This was due to lack of clarification over mitigating measures to address opposition concerns.

Peel Environment submitted a revised proposal arguing that without the facility, waste sent to the plant would go to landfills – and that this was not an economically or environmentally sustainable solution. Peel argued that the area already hosted significant industrial development including Shell at Stanlow and Ineos Chlor at Runcorn. The proposal also stated that 188 acres of the site will also include a nature reserve either site of the park\(^{13}\).

The Park was granted outline planning permission in August 2009 and the specific application for the 20 MW biomass plant hosted in the site is currently being considered.

Ince Park LLP has developed a local community forum to provide an interface between local communities and the Resource Recovery Park. This was a requirement attached to the Secretary of State’s conditions when planning permission was granted. The forum consists of local councillors and non-voting members such as the Environment Agency and Cheshire West and Chester Council.

If any local residents have any concerns then they can use the community forum online portal\(^{14}\) to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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\(^{11}\) Centre for Public Health, *Health Risk Perceptions and Environmental Problems: Findings from ten case studies in the North West of England, 2009*

\(^{12}\) Ibid.

\(^{13}\) Property week, *Peel lays waste to objections over £400m power plant*, 13 Nov 2009

\(^{14}\) [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

**Lessons Learnt**

The following summarised the key lessons learnt from the IRRP:

- Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

- Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

- A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
Project Description

The Sizewell Nuclear site is located north of the fishing village of Sizewell on the coast of Suffolk in East Anglia. The site is 2 miles west of Leiston.

The first power station in the area, Sizewell A, was commissioned in 1966 and after 40 years of operation it was decommissioned in 2006. Following one of the lengthiest public Inquires in UK history, Sizewell B is the UK’s newest nuclear power station and was commissioned and built between 1987 and 1995.

The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth.\(^\text{15}\)

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
- the number and topics of complaints received by Nuclear Electric;
- issues raised in within the Sizewell B Local Consultative Committee; and
- direct sample surveys of local resident’s views.

Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

As the construction phase progressed, the poor behaviour of the construction workforce was awarded most attention. As the site neared to the commissioning date the press focused on operational safety concerns and worries about the loss of construction employment once complete.

Between 1987 and 1993 Nuclear Electric received 350 telephone complaints of which 40% were related to road traffic. Over time, the number of complaints fell and complaints regarding worker behaviour issues became more common.

The Sizewell B Local Consultative Committee met on a quarterly basis and provided a vehicle for two-way dialogue between local representatives and the site. Subjects covered were similar to those identified in other methods.

Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.

\(^{15}\) Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, *Impact Assessment and Project Appraisal*, volume 23, number 3 September 2005
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

• Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

• Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

• There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;

• The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/ residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

• Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
Project Description

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

Public Perception

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute-Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons16:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
- Concerns of an insufficient environmental impact assessment (over 4,000).

Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardennes, the regional council for Haute Marne, voted in favour of the Bure site. Loraine, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons:

- There has not been wide-spread comprehensive public consultation;
- Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
- Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
- Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilitates that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

**Lessons Learnt**

The following summarised the key lessons learnt from ANDRA’s experience:

- The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
- The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust form the public; and
- Financial incentives to compensate local communities should be used carefully so as not to be misconstrued as bribery.

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17 Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)
Project Description

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as a vital cost element of any major civil engineering project.\(^\text{18}\)

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel.\(^\text{19}\)

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger


approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable.²⁰

Lessons Learnt

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

- Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

- A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

- The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

- Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
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\begin{figure}[h]
\centering
\includegraphics[width=0.6\textwidth]{fig_a1.png}
\caption{The change in Östhammar residents perceptions (Source: SKB)}
\end{figure}

\begin{itemize}
\item For
\item Definitely for
\end{itemize}

\begin{table}[h]
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\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
\hline
For & 65 & 70 & 75 & 80 & 82 & 85 & 89 \\
Definitely for & 0 & 5 & 10 & 15 & 20 & 25 & 30 \\
\hline
\end{tabular}
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\textsuperscript{1} EC Community research (ARGONA), \textit{Mediation by Demonstration and Dialogue: an evaluation of practices}, 2009
\textsuperscript{2} Östhammars Kommun Presentation, 2009
\textsuperscript{3} Uppsala Regional Council, \textit{Final Storage of Nuclear Waste at Forsmark, Sweden},
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- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

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7 Ibid.
8 Patrakka, E, posiva Oy, *Towards implementation of spent nuclear fuel management in Finland*, 2007
• Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and
• Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed⁹.

⁹ Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spend nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
**Project Description**

The Ince Resource Recovery Park (IRRP) will be run by Ince Park LLP, a joint venture partnership between Covanta Energy and Peel Environment. The proposed biomass plant will take up to 175,000 tonnes of fuel per annum which will in turn provide enough renewable electricity to meet the needs of 37,000 homes and be able to supply heat to nearby industry and businesses.

The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England\(^\text{10}\).

**Fig C1: Location map of the Ince Resource Recovery Park**

After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units.

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\(^{10}\) IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an ‘anchor tenant’ for a far greater technology cluster.

Public Perception

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint. The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

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If any local residents have any concerns then they can use the community forum online portal to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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12 Ibid.
13 Property week, Peel lays waste to objections over £400m power plant, 13 Nov 2009
14 http://www.inceparkcommunityforum.org
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Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

Lessons Learnt

The following summarised the key lessons learnt from the IRRP:

- Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

- Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

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The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth.\(^{15}\)

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
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Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

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Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.

\(^{15}\) Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, Impact Assessment and Project Appraisal, volume 23, number 3 September 2005
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming Pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.

Source: Glasson and Chadwick (1995)
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

- Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;
- Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;
- There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;
- The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/residents and ensure that a wider scope of opinion and perceptions are acknowledged; and
- Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
**Project Description**

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

**Public Perception**

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute-Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
- Concerns of an insufficient environmental impact assessment (over 4,000).

Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardenne, the regional council for Haute Marne, voted in favour of the Bure site. Lorainne, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

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16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons:

- There has not been wide-spread comprehensive public consultation;
- Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
- Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
- Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilities that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

**Lessons Learnt**

The following summarised the key lessons learnt from ANDRA’s experience:

- The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
- The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust from the public; and
- Financial incentives to compensate local communities should be used carefully so as not to be misconstrued as bribery.

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**Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)**
Project Description

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project\(^\text{18}\).

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel\(^\text{19}\).

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger


approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable\textsuperscript{20}.

**Lessons Learnt**

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

- Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

- A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

- The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

- Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthammar, Sweden;
- Oikiluoto, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
**Project Description**

In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a prerequisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

**Public Perception**

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

Although not specifically relating to the storage of spent nuclear fuel, but rather nuclear power in general, the 1980 Swedish referendum firmly concluded that nuclear power should be phased out.

In the 1990s SKB altered its approach to assessing the feasibility of the project, and installed a process that placed a far greater emphasis on achieving acceptance by the local residents, businesses and community groups.

Working closely together the Uppsalla regional council and the municipality of Östhammar, SKB began an intensive public consultation process based upon the
principle of 'mediation by dialogue'\textsuperscript{1} to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised though the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\textsuperscript{2}. Related developments to accompany the site outlined by the municipality include\textsuperscript{3}:

- Repair work on the main road linking Östhammar to Upsalla;
- Attractive housing developments;
- Entrepreneurial skills training at schools to encourage the creation of local businesses; and
- Establishing business networks in the northern valley region.

SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either \textit{For} or \textit{Definitely for} has steadily increased from 65\% in 2003 to 79\% in 2009.

\textbf{Fig A1: The change in Östhammar residents perceptions (Source: SKB)}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figA1.png}
\caption{The change in Östhammar residents perceptions (Source: SKB)}
\end{figure}

\textsuperscript{1} EC Community research (ARGONA), \textit{Mediation by Demonstration and Dialogue: an evaluation of practices}, 2009
\textsuperscript{2} Östhammars Kommun Presentation, 2009
\textsuperscript{3} Uppsala Regional Council, \textit{Final Storage of Nuclear Waste at Forsmark, Sweden},
Lessons Learnt

The following summarised the key lessons learnt from the Östhammar:

- Long term consultation, informing the public form the earliest possible stage can help generate support and alleviate some of the fears held within communities;
- Close working partnership between site management and local government and relevant stakeholders is crucial, especially when supported by a funded programme of activities;
- Open communication at all times – informing communities, residents and businesses of latest progress on a regular basis over a long period of time – can build trust in the long term; and
- Highlighting not just the direct impacts but the associated developments and benefits that the site will facilitate, is important.
Project Description

In 2000, the municipality of Eurajoki in Finland approved an application submitted by the waste management company, Posiva, for a final repository site in Olkiluoto. The site was one of four sites considered following the Finnish Government’s 1983 policy decision over spent nuclear fuel. The policy specifies that power plant companies must set aside funds and begin planning immediately for disposal. The municipality is already host to two Nuclear Power Plants.

Construction of the site began in 2004 and it is expected to be fully operational in 2020. Total investment costs are expected to be €503m (£433m). The operational phase is expected to last until at least 2120, with a total operational cost estimated at €1923m (£1655m) throughout its lifetime.

Posiva is responsible for completing the research, development, site investigations and, crucially, for ensuring political and public acceptance at each stage of the process.

Public Perception

Under Finnish Nuclear energy law, before making the decision in principle for the site, the local municipality can exercise its veto-right for the local community. The local community has a right to view all financial, socio-economic, technological and safety documents surrounding the site selection without risk that the Government is able to force the creation of the facility against their collective will. This is a crucial factor in creating trust within the local community and allowing individuals to make an informed decision. In practice, Eurajoki, did not choose to exercise its veto because of the strong initial support from local residents.

The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

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4 Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\(^5\) found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\(^6\).

Another study in 2000 found that 78% of people in Eurajoki were willing to accept the building of the final disposal facility Olkiluoto provided that the safety of the project is verified through research and an official safety assessment\(^7\).

The research undertaken in Finland has outlined the following success factors in gaining the public’s trust in the location process and ultimate support for the facility\(^8\):

- Demonstrable and evidence based national need, supported by legislation with clear responsibilities;
- Quality and transparency of scientific and technological programme;
- Open and public process;
- Co-ordination and cooperation between local and national government;
- Evidence based local socio-economic benefits.

**Lessons Learnt**

The following summarises the key lessons learnt from Olkiluoto:

- Where risks are present it is crucial that a level of trust in the regulatory body is built and maintained;
- It is essential to highlight the alternative options (or lack of) in a process to help guide local residents through the decision making process;
- Differences between risk perception by experts and the lay people have to be understood and public concerns need to be taken into account;
- Locations that are already exposed to nuclear technologies are far more likely to be accepting of a repository than those that are not;
- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;


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\(^\text{12}\) Ibid.

\(^\text{13}\) Property week, *Peel lays waste to objections over £400m power plant*, 13 Nov 2009

\(^\text{14}\) [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
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Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

- Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

- Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

- There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;

- The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/ residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

- Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
Project Description

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

Public Perception

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
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Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardennes, the regional council for Haute Marne, voted in favour of the Bure site. Lorainne, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

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16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons:

• There has not been wide-spread comprehensive public consultation;
• Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
• Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
• Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilitates that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

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17 Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)
Project Description

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project.

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel.

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger

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approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable\(^2\).

**Lessons Learnt**

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

- Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

- A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

- The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

- Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthammar, Sweden;
- Olkiluoto, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
Project Description

In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a prerequisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

Public Perception

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

Although not specifically relating to the storage of spent nuclear fuel, but rather nuclear power in general, the 1980 Swedish referendum firmly concluded that nuclear power should be phased out.

In the 1990s SKB altered its approach to assessing the feasibility of the project, and installed a process that placed a far greater emphasis on achieving acceptance by the local residents, businesses and community groups.

Working closely together the Uppsalla regional council and the municipality of Östhammar, SKB began an intensive public consultation process based upon the
principle of ‘mediation by dialogue’\(^1\) to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised though the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\(^2\). Related developments to accompany the site outlined by the municipality include\(^3\):

- Repair work on the main road linking Östhammar to Upsalla;
- Attractive housing developments;
- Entrepreneurial skills training at schools to encourage the creation of local businesses; and
- Establishing business networks in the northern valley region.

SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either For or Definitely for has steadily increased from 65% in 2003 to 79% in 2009.

Fig A1: The change in Östhammar residents perceptions (Source: SKB)

\(^1\) EC Community research (ARGONA), *Mediation by Demonstration and Dialogue: an evaluation of practices*, 2009
\(^2\) Östhammars Kommun Presentation, 2009
\(^3\) Uppsala Regional Council, *Final Storage of Nuclear Waste at Forsmark, Sweden*,
Lessons Learnt

The following summarised the key lessons learnt from the Östhammar:

- Long term consultation, informing the public form the earliest possible stage can help generate support and alleviate some of the fears held within communities;
- Close working partnership between site management and local government and relevant stakeholders is crucial, especially when supported by a funded programme of activities;
- Open communication at all times – informing communities, residents and businesses of latest progress on a regular basis over a long period of time – can build trust in the long term; and
- Highlighting not just the direct impacts but the associated developments and benefits that the site will facilitate, is important.
Project Description

In 2000, the municipality of Eurajoki in Finland approved an application submitted by the waste management company, Posiva, for a final repository site in Olkiluoto. The site was one of four sites considered following the Finnish Government’s 1983 policy decision over spent nuclear fuel. The policy specifies that power plant companies must set aside funds and begin planning immediately for disposal. The municipality is already host to two Nuclear Power Plants.

Construction of the site began in 2004 and it is expected to be fully operational in 2020. Total investment costs are expected to be €503m (£433m). The operational phase is expected to last until at least 2120, with a total operational cost estimated at €1923m (£1655m) throughout its lifetime.

Posiva is responsible for completing the research, development, site investigations and, crucially, for ensuring political and public acceptance at each stage of the process.

Public Perception

Under Finnish Nuclear energy law, before making the decision in principle for the site, the local municipality can exercise its veto-right for the local community. The local community has a right to view all financial, socio-economic, technological and safety documents surrounding the site selection without risk that the Government is able to force the creation of the facility against their collective will. This is a crucial factor in creating trust within the local community and allowing individuals to make an informed decision. In practice, Eurajoki, did not choose to exercise its veto because of the strong initial support from local residents.

The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

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4 Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\(^5\) found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\(^6\).

Another study in 2000 found that 78% of people in Eurajoki were willing to accept the building of the final disposal facility Olkiluoto provided that the safety of the project is verified through research and an official safety assessment\(^7\).

The research undertaken in Finland has outlined the following success factors in gaining the public’s trust in the location process and ultimate support for the facility\(^8\):

- Demonstrable and evidence based national need, supported by legislation with clear responsibilities;
- Quality and transparency of scientific and technological programme;
- Open and public process;
- Co-ordination and cooperation between local and national government;
- Evidence based local socio-economic benefits.

**Lessons Learnt**

The following summarises the key lessons learnt from Olkiluoto:

- Where risks are present it is crucial that a level of trust in the regulatory body is built and maintained;
- It is essential to highlight the alternative options (or lack of) in a process to help guide local residents through the decision making process;
- Differences between risk perception by experts and the lay people have to be understood and public concerns need to be taken into account;
- Locations that are already exposed to nuclear technologies are far more likely to be accepting of a repository than those that are not;
- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

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\(^7\) Ibid.

\(^8\) Patrakka, E, posiva Oy, *Towards implementation of spent nuclear fuel management in Finland*, 2007.
• Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and
• Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed.⁹

⁹ Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spent nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
Project Description

The Ince Resource Recovery Park (IRRP) will be run by Ince Park LLP, a joint venture partnership between Covanta Energy and Peel Environment. The proposed biomass plant will take up to 175,000 tonnes of fuel per annum which will in turn provide enough renewable electricity to meet the needs of 37,000 homes and be able to supply heat to nearby industry and businesses.

The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England\(^\text{10}\).

**Fig C1: Location map of the Ince Resource Recovery Park**

After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units.

\(^{10}\) IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an ‘anchor tenant’ for a far greater technology cluster.

**Public Perception**

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint. The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application.

The opposition was led by the group Residents Against Incinerators (RAIN) and the initial planning submission was refused by Cheshire County Council in 2006. This was due to lack of clarification over mitigating measures to address opposition concerns.

Peel Environment submitted a revised proposal arguing that without the facility, waste sent to the plant would go to landfills – and that this was not an economically or environmentally sustainable solution. Peel argued that the area already hosted significant industrial development including Shell at Stanlow and Ineos Chlor at Runcorn. The proposal also stated that 188 acres of the site will also include a nature reserve either site of the park.

The Park was granted outline planning permission in August 2009 and the specific application for the 20 MW biomass plant hosted in the site is currently being considered.

Ince Park LLP has developed a local community forum to provide an interface between local communities and the Resource Recovery Park. This was a requirement attached to the Secretary of State’s conditions when planning permission was granted. The forum consists of local councillors and non-voting members such as the Environment Agency and Cheshire West and Chester Council.

If any local residents have any concerns then they can use the community forum online portal to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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11 Centre for Public Health, _Health Risk Perceptions and Environmental Problems: Findings from ten case studies in the North West of England, 2009_
12 Ibid.
13 _Property week, Peel lays waste to objections over £400m power plant, 13 Nov 2009_
14 [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

**Lessons Learnt**

The following summarised the key lessons learnt from the IRRP:

- Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

- Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

- A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
Project Description

The Sizewell Nuclear site is located north of the fishing village of Sizewell on the coast of Suffolk in East Anglia. The site is 2 miles west of Leiston.

The first power station in the area, Sizewell A, was commissioned in 1966 and after 40 years of operation it was decommissioned in 2006. Following one of the lengthiest public Inquires in UK history, Sizewell B is the UK’s newest nuclear power station and was commissioned and built between 1987 and 1995.

The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth.\(^{15}\)

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
- the number and topics of complaints received by Nuclear Electric;
- issues raised in within the Sizewell B Local Consultative Committee; and
- direct sample surveys of local resident’s views.

Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

As the construction phase progressed, the poor behaviour of the construction workforce was awarded most attention. As the site neared to the commissioning date the press focused on operational safety concerns and worries about the loss of construction employment once complete.

Between 1987 and 1993 Nuclear Electric received 350 telephone complaints of which 40% were related to road traffic. Over time, the number of complaints fell and complaints regarding worker behaviour issues became more common.

The Sizewell B Local Consultative Committee met on a quarterly basis and provided a vehicle for two-way dialogue between local representatives and the site. Subjects covered were similar to those identifies in other methods.

Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.

\(^{15}\) Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, *Impact Assessment and Project Appraisal*, volume 23, number 3 September 2005
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming Pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

- Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;
- Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;
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In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a pre-requisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

Public Perception

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

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principle of ‘mediation by dialogue’\(^1\) to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised through the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\(^2\). Related developments to accompany the site outlined by the municipality include\(^3\):

- Repair work on the main road linking Östhammar to Upsalla;
- Attractive housing developments;
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SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either For or Definitely for has steadily increased from 65% in 2003 to 79% in 2009.

Fig A1: The change in Östhammar residents perceptions (Source: SKB)

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\(^1\) EC Community research (ARGONA), *Mediation by Demonstration and Dialogue: an evaluation of practices*, 2009

\(^2\) Östhammars Kommun Presentation, 2009

\(^3\) Uppsala Regional Council, *Final Storage of Nuclear Waste at Forsmark, Sweden*,
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- Long term consultation, informing the public form the earliest possible stage can help generate support and alleviate some of the fears held within communities;
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The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

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4 Posiva, Cost estimate of OlkiluotoDisposal Facility for Spent nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\(^5\) found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\(^6\).

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- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

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\(^8\) Patrakka, E, *posiva Oy, Towards implementation of spent nuclear fuel management in Finland*, 2007
Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and

Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed⁹.

⁹ Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spent nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
Project Description

The Ince Resource Recovery Park (IRRP) will be run by Ince Park LLP, a joint venture partnership between Covanta Energy and Peel Environment. The proposed biomass plant will take up to 175,000 tonnes of fuel per annum which will in turn provide enough renewable electricity to meet the needs of 37,000 homes and be able to supply heat to nearby industry and businesses.

The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England.  

Fig C1: Location map of the Ince Resource Recovery Park

After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units.

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10 IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an 'anchor tenant' for a far greater technology cluster.

**Public Perception**

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint\(^\text{11}\). The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application\(^\text{12}\).

The opposition was led by the group Residents Against Incinerators (RAIN) and the initial planning submission was refused by Cheshire County Council in 2006. This was due to lack of clarification over mitigating measures to address opposition concerns.

Peel Environment submitted a revised proposal arguing that without the facility, waste sent to the plant would go to landfills – and that this was not an economically or environmentally sustainable solution. Peel argued that the area already hosted significant industrial development including Shell at Stanlow and Ineos Chlor at Runcorn. The proposal also stated that 188 acres of the site will also include a nature reserve either site of the park\(^\text{13}\).

The Park was granted outline planning permission in August 2009 and the specific application for the 20 MW biomass plant hosted in the site is currently being considered.

Ince Park LLP has developed a local community forum to provide an interface between local communities and the Resource Recovery Park. This was a requirement attached to the Secretary of State’s conditions when planning permission was granted. The forum consists of local councillors and non-voting members such as the Environment Agency and Cheshire West and Chester Council.

If any local residents have any concerns then they can use the community forum online portal\(^\text{14}\) to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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\(^{12}\) Ibid.

\(^{13}\) Property week, *Peel lays waste to objections over £400m power plant*, 13 Nov 2009

\(^{14}\) [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

Lessons Learnt

The following summarised the key lessons learnt from the IRRP:

• Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

• Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

• A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
Project Description

The Sizewell Nuclear site is located north of the fishing village of Sizewell on the coast of Suffolk in East Anglia. The site is 2 miles west of Leiston.

The first power station in the area, Sizewell A, was commissioned in 1966 and after 40 years of operation it was decommissioned in 2006. Following one of the lengthiest public inquiries in UK history, Sizewell B is the UK’s newest nuclear power station and was commissioned and built between 1987 and 1995.

The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth.\textsuperscript{15}

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
- the number and topics of complaints received by Nuclear Electric;
- issues raised in within the Sizewell B Local Consultative Committee; and
- direct sample surveys of local resident’s views.

Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

As the construction phase progressed, the poor behaviour of the construction workforce was awarded most attention. As the site neared to the commissioning date the press focused on operational safety concerns and worries about the loss of construction employment once complete.

Between 1987 and 1993 Nuclear Electric received 350 telephone complaints of which 40% were related to road traffic. Over time, the number of complaints fell and complaints regarding worker behaviour issues became more common.

The Sizewell B Local Consultative Committee met on a quarterly basis and provided a vehicle for two-way dialogue between local representatives and the site. Subjects covered were similar to those identifies in other methods.

Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.

\textsuperscript{15} Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, \textit{Impact Assessment and Project Appraisal}, volume 23, number 3 September 2005
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming Pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

• Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

• Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

• There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;

• The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

• Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
Project Description

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

Public Perception

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute-Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
- Concerns of an insufficient environmental impact assessment (over 4,000).

Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardenne, the regional council for Haute Marne, voted in favour of the Bure site. Lorainne, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

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16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons17:

• There has not been wide-spread comprehensive public consultation;
• Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
• Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
• Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilities that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

Lessons Learnt

The following summarised the key lessons learnt from ANDRA’s experience:

• The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
• The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust from the public; and
• Financial incentives to compensate local communities should be used carefully so as not to be misconstrued as bribery.

17 Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)
**Project Description**

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overrun significantly from an expected £4.7bn to a final figure of £9.5bn.

**Public Perception**

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project.\(^{18}\)

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel.\(^{19}\)

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger

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approach in managing the impacts and risks of disruptions and disadvantages that 
accompanied construction. Public opinion, although not entirely swayed by positive 
PR, was more likely to see the project as unviable\textsuperscript{20}.

**Lessons Learnt**

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to 
  produce a far more positive impact on public perception. It is less likely to make 
  the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an 
  agreed approach on communications with the public, governmental agencies 
  and the press.

*Proceedings of the ICE – Civil Engineering*, Volume 114 Issue 1, pages 12-17
Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

• Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

• A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

• The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

• Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthammar, Sweden;
- Oiikiluoto, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
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\end{figure}

\textsuperscript{1} EC Community research (ARGONA), Mediation by Demonstration and Dialogue: an evaluation of practices, 2009
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The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England\textsuperscript{10}.

Fig C1: Location map of the Ince Resource Recovery Park

After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units.

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\textsuperscript{10} IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an 'anchor tenant' for a far greater technology cluster.

**Public Perception**

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint\(^{11}\). The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application\(^{12}\).

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\(^{12}\) Ibid.

\(^{13}\) Property week, *Peel lays waste to objections over £400m power plant*, 13 Nov 2009

\(^{14}\) [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

**Lessons Learnt**

The following summarised the key lessons learnt from the IRRP:

- Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;
- Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and
- A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
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The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

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The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread...
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth\textsuperscript{15}.

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

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\textsuperscript{15} Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, Impact Assessment and Project Appraisal, volume 23, number 3 September 2005
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming Pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.
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- Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

- Ameliorative measures that recognise the inconvenience caused to the public are welcome. However, it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

- There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from construction workers was not anticipated. However, monitoring quickly revealed it as an issue allowing quick action to intervene;

- The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

- Broad public support cannot be taken for granted. In this case, public opinion changed several times – focusing on a range of subjects.
Project Description

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

Public Perception

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute-Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
- Concerns of an insufficient environmental impact assessment (over 4,000).

Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardenne, the regional council for Haute Marne, voted in favour of the Bure site. Lorainne, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

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16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons:\(^\text{17}\):

• There has not been wide-spread comprehensive public consultation;
• Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
• Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
• Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilitates that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

Lessons Learnt

The following summarised the key lessons learnt from ANDRA’s experience:

• The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
• The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust form the public; and
• Financial incentives to compensate local communities should be used carefully so as not to be misconstrued as bribery.

\(^{17}\) Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)
Project Description

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project18.

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel19.

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger

approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable\textsuperscript{20}.

**Lessons Learnt**

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

• Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

• A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

• The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

• Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthammar, Sweden;
- Oiikiluoto, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
Project Description

In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a pre-requisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

Public Perception

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

Although not specifically relating to the storage of spent nuclear fuel, but rather nuclear power in general, the 1980 Swedish referendum firmly concluded that nuclear power should be phased out.

In the 1990s SKB altered its approach to assessing the feasibility of the project, and installed a process that placed a far greater emphasis on achieving acceptance by the local residents, businesses and community groups.

Working closely together the Uppsala regional council and the municipality of Östhammar, SKB began an intensive public consultation process based upon the
principle of ‘mediation by dialogue’\textsuperscript{1} to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised though the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\textsuperscript{2}. Related developments to accompany the site outlined by the municipality include\textsuperscript{3}:

- Repair work on the main road linking Östhammar to Upsalla;
- Attractive housing developments;
- Entrepreneurial skills training at schools to encourage the creation of local businesses; and
- Establishing business networks in the northern valley region.

SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either For or Definitely for has steadily increased from 65\% in 2003 to 79\% in 2009.

**Fig A1: The change in Östhammar residents perceptions (Source: SKB)**

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figA1.png}
\caption{The change in Östhammar residents perceptions (Source: SKB)}
\end{figure}

\begin{itemize}
\item EC Community research (ARGONA), *Mediation by Demonstration and Dialogue: an evaluation of practices*, 2009
\item Östhammars Kommun Presentation, 2009
\item Uppsala Regional Council, *Final Storage of Nuclear Waste at Forsmark, Sweden*, 2009
\end{itemize}
Lessons Learnt

The following summarised the key lessons learnt from the Östhammar:

- Long term consultation, informing the public form the earliest possible stage can help generate support and alleviate some of the fears held within communities;
- Close working partnership between site management and local government and relevant stakeholders is crucial, especially when supported by a funded programme of activities;
- Open communication at all times – informing communities, residents and businesses of latest progress on a regular basis over a long period of time – can build trust in the long term; and
- Highlighting not just the direct impacts but the associated developments and benefits that the site will facilitate, is important.
Project Description

In 2000, the municipality of Eurajoki in Finland approved an application submitted by the waste management company, Posiva, for a final repository site in Olkiluoto. The site was one of four sites considered following the Finnish Government’s 1983 policy decision over spent nuclear fuel. The policy specifies that power plant companies must set aside funds and begin planning immediately for disposal. The municipality is already host to two Nuclear Power Plants.

Construction of the site began in 2004 and it is expected to be fully operational in 2020. Total investment costs are expected to be €503m (£433m). The operational phase is expected to last until at least 2120, with a total operational cost estimated at €1923m (£1655m) throughout its lifetime.\(^4\)

Posiva is responsible for completing the research, development, site investigations and, crucially, for ensuring political and public acceptance at each stage of the process.

Public Perception

Under Finnish Nuclear energy law, before making the decision in principle for the site, the local municipality can exercise its veto-right for the local community. The local community has a right to view all financial, socio-economic, technological and safety documents surrounding the site selection without risk that the Government is able to force the creation of the facility against their collective will. This is a crucial factor in creating trust within the local community and allowing individuals to make an informed decision. In practice, Eurajoki, did not choose to exercise its veto because of the strong initial support from local residents.

The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

\(^4\) Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent Nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\textsuperscript{5} found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\textsuperscript{6}.

Another study in 2000 found that 78% of people in Eurajoki were willing to accept the building of the final disposal facility Olkiluoto provided that the safety of the project is verified through research and an official safety assessment\textsuperscript{7}.

The research undertaken in Finland has outlined the following success factors in gaining the public’s trust in the location process and ultimate support for the facility\textsuperscript{8}:

- Demonstrable and evidence based national need, supported by legislation with clear responsibilities;
- Quality and transparency of scientific and technological programme;
- Open and public process;
- Co-ordination and cooperation between local and national government;
- Evidence based local socio-economic benefits.

**Lessons Learnt**

The following summarises the key lessons learnt from Olkiluoto:

- Where risks are present it is crucial that a level of trust in the regulatory body is built and maintained;
- It is essential to highlight the alternative options (or lack of) in a process to help guide local residents through the decision making process;
- Differences between risk perception by experts and the lay people have to be understood and public concerns need to be taken into account;
- Locations that are already exposed to nuclear technologies are far more likely to be accepting of a repository than those that are not;
- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

\textsuperscript{5} Finnish Energy industries Federation, *Energy attitudes 1999: Results of a follow-up study concerning Finnish attitudes towards energy issues 1983-1999*,

\textsuperscript{6} Vasiliev, E, *Public opinion surveys in Spent nuclear Fuel Management*, 2002

\textsuperscript{7} Ibid.

\textsuperscript{8} Patrakka, E, posiva Oy, *Towards implementation of spent nuclear fuel management in Finland*, 2007
Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and

Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed. 

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9 Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spent nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
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**Fig C1: Location map of the Ince Resource Recovery Park**

![Location map of the Ince Resource Recovery Park](image)

Source: IRRP

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\(^{10}\) IRRP, **Partnership formed to develop Eco-Park and Energy-from-Waste Facility**, Press Release, June 2010
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\textsuperscript{12} Ibid.

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\textsuperscript{14} http://www.inceparkcommunityforum.org
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Source: Glasson and Chadwick (1995)
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• The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/ residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

• Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
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The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

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In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

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- Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilitates that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

**Lessons Learnt**

The following summarised the key lessons learnt from ANDRA’s experience:

- The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
- The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust form the public; and
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Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project\(^\text{18}\).

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel\(^\text{19}\).

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger


approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable²⁰.

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The following summarised the key lessons learnt from the Channel Tunnel:

• Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

• If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

• Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

• A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

• The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

• Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthammar, Sweden;
- Oulkiluoto, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
Project Description

In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a prerequisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

Public Perception

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

Although not specifically relating to the storage of spent nuclear fuel, but rather nuclear power in general, the 1980 Swedish referendum firmly concluded that nuclear power should be phased out.

In the 1990s SKB altered its approach to assessing the feasibility of the project, and installed a process that placed a far greater emphasis on achieving acceptance by the local residents, businesses and community groups.

Working closely together the Uppsala regional council and the municipality of Östhammar, SKB began an intensive public consultation process based upon the
principle of ‘mediation by dialogue’\(^1\) to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised though the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\(^2\). Related developments to accompany the site outlined by the municipality include\(^3\):

\begin{itemize}
  \item Repair work on the main road linking Östhammar to Upsalla;
  \item Attractive housing developments;
  \item Entrepreneurial skills training at schools to encourage the creation of local businesses; and
  \item Establishing business networks in the northern valley region.
\end{itemize}

SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either For or Definitely for has steadily increased from 65% in 2003 to 79% in 2009.

**Fig A1: The change in Östhammar residents perceptions (Source: SKB)**

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1. EC Community research (ARGONA), *Mediation by Demonstration and Dialogue: an evaluation of practices*, 2009
2. Östhammars Kommun Presentation, 2009
Lessons Learnt

The following summarised the key lessons learnt from the Östhammar:

• Long term consultation, informing the public form the earliest possible stage can help generate support and alleviate some of the fears held within communities;
• Close working partnership between site management and local government and relevant stakeholders is crucial, especially when supported by a funded programme of activities;
• Open communication at all times – informing communities, residents and businesses of latest progress on a regular basis over a long period of time – can build trust in the long term; and
• Highlighting not just the direct impacts but the associated developments and benefits that the site will facilitate, is important.
Project Description

In 2000, the municipality of Eurajoki in Finland approved an application submitted by the waste management company, Posiva, for a final repository site in Olkiluoto. The site was one of four sites considered following the Finnish Government’s 1983 policy decision over spent nuclear fuel. The policy specifies that power plant companies must set aside funds and begin planning immediately for disposal. The municipality is already host to two Nuclear Power Plants.

Construction of the site began in 2004 and it is expected to be fully operational in 2020. Total investment costs are expected to be €503m (£433m). The operational phase is expected to last until at least 2120, with a total operational cost estimated at €1923m (£1655m) throughout its lifetime⁴.

Posiva is responsible for completing the research, development, site investigations and, crucially, for ensuring political and public acceptance at each stage of the process.

Public Perception

Under Finnish Nuclear energy law, before making the decision in principle for the site, the local municipality can exercise its veto-right for the local community. The local community has a right to view all financial, socio-economic, technological and safety documents surrounding the site selection without risk that the Government is able to force the creation of the facility against their collective will. This is a crucial factor in creating trust within the local community and allowing individuals to make an informed decision. In practice, Eurajoki, did not choose to exercise its veto because of the strong initial support from local residents.

The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

⁴ Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\(^5\) found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\(^6\).

Another study in 2000 found that 78% of people in Eurajoki were willing to accept the building of the final disposal facility Olkiluoto provided that the safety of the project is verified through research and an official safety assessment\(^7\).

The research undertaken in Finland has outlined the following success factors in gaining the public’s trust in the location process and ultimate support for the facility\(^8\):

- Demonstrable and evidence based national need, supported by legislation with clear responsibilities;
- Quality and transparency of scientific and technological programme;
- Open and public process;
- Co-ordination and cooperation between local and national government;
- Evidence based local socio-economic benefits.

**Lessons Learnt**

The following summarises the key lessons learnt from Olkiluoto:

- Where risks are present it is crucial that a level of trust in the regulatory body is built and maintained;
- It is essential to highlight the alternative options (or lack of) in a process to help guide local residents through the decision making process;
- Differences between risk perception by experts and the lay people have to be understood and public concerns need to be taken into account;
- Locations that are already exposed to nuclear technologies are far more likely to be accepting of a repository than those that are not;
- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

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\(^7\) Ibid.

\(^8\) Patrakka, E, posiva Oy, *Towards implementation of spent nuclear fuel management in Finland*, 2007
• Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and

• Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed⁹.

⁹ Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spend nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
**Project Description**

The Ince Resource Recovery Park (IRRP) will be run by Ince Park LLP, a joint venture partnership between Covanta Energy and Peel Environment. The proposed biomass plant will take up to 175,000 tonnes of fuel per annum which will in turn provide enough renewable electricity to meet the needs of 37,000 homes and be able to supply heat to nearby industry and businesses.

The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England\(^\text{10}\).

**Fig C1: Location map of the Ince Resource Recovery Park**

After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units.

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\(^\text{10}\) IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an ‘anchor tenant’ for a far greater technology cluster.

Public Perception

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint. The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application.

The opposition was led by the group Residents Against Incinerators (RAIN) and the initial planning submission was refused by Cheshire County Council in 2006. This was due to lack of clarification over mitigating measures to address opposition concerns.

Peel Environment submitted a revised proposal arguing that without the facility, waste sent to the plant would go to landfills – and that this was not an economically or environmentaly sustainable solution. Peel argued that the area already hosted significant industrial development including Shell at Stanlow and Ineos Chlor at Runcorn. The proposal also stated that 188 acres of the site will also include a nature reserve either site of the park.

The Park was granted outline planning permission in August 2009 and the specific application for the 20 MW biomass plant hosted in the site is currently being considered.

Ince Park LLP has developed a local community forum to provide an interface between local communities and the Resource Recovery Park. This was a requirement attached to the Secretary of State’s conditions when planning permission was granted. The forum consists of local councillors and non-voting members such as the Environment Agency and Cheshire West and Chester Council.

If any local residents have any concerns then they can use the community forum online portal to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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12 Ibid.
13 Property week, Peel lays waste to objections over £400m power plant, 13 Nov 2009
14 http://www.inceparkcommunityforum.org
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

**Lessons Learnt**

The following summarised the key lessons learnt from the IRRP:

• Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

• Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

• A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
Project Description

The Sizewell Nuclear site is located north of the fishing village of Sizewell on the coast of Suffolk in East Anglia. The site is 2 miles west of Leiston.

The first power station in the area, Sizewell A, was commissioned in 1966 and after 40 years of operation it was decommissioned in 2006. Following one of the lengthiest public inquiries in UK history, Sizewell B is the UK’s newest nuclear power station and was commissioned and built between 1987 and 1995.

The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth.\(^\text{15}\)

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
- the number and topics of complaints received by Nuclear Electric;
- issues raised in within the Sizewell B Local Consultative Committee; and
- direct sample surveys of local resident’s views.

Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

As the construction phase progressed, the poor behaviour of the construction workforce was awarded most attention. As the site neared to the commissioning date the press focused on operational safety concerns and worries about the loss of construction employment once complete.

Between 1987 and 1993 Nuclear Electric received 350 telephone complaints of which 40% were related to road traffic. Over time, the number of complaints fell and complaints regarding worker behaviour issues became more common.

The Sizewell B Local Consultative Committee met on a quarterly basis and provided a vehicle for two-way dialogue between local representatives and the site. Subjects covered were similar to those identifies in other methods.

Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.

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\(^\text{15}\) Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, Impact Assessment and Project Appraisal, volume 23, number 3 September 2005
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming Pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

• Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

• Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

• There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;

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- The Eurotunnel Project, UK.
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In June 2009, the Swedish town of Östhammar, 150km north of Stockholm, was confirmed as the host of a final nuclear waste repository that is due to store Sweden’s Nuclear Waste for the next 100,000 years. The construction of a final repository is a prerequisite in law for the development of new nuclear power plants in Sweden as a result of the Nuclear Power Stipulation Act, passed by the Swedish Parliament in 1977.

The Östhammar site is located near the Forsmark nuclear facility and the geology is suitable for storing spent nuclear fuel as it is dry and relatively free of fractures. This offers a useful comparison with the potential GDF in Cumbria and the Sellafield facility.

The site has also been chosen as a comparator because of the extensive public consultation and awareness raising programmes implemented to aid the bid. According to Swedish Nuclear Fuel and waste management company SKB, construction on site is due to begin in 2016 and the facility could be operational by 2022. The construction and operation of the Repository is expected to cost SEK 24bn (£10.3bn).

Public Perception

In the early 1980s SKB began a lengthy feasibility study, involving extensive drilling, into potential locations for a final repository site across Sweden. The feasibility study was purely of a technical nature and the views and perceptions of local residents were largely ignored.

Although not specifically relating to the storage of spent nuclear fuel, but rather nuclear power in general, the 1980 Swedish referendum firmly concluded that nuclear power should be phased out.

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Working closely together the Uppsalla regional council and the municipality of Östhammar, SKB began an intensive public consultation process based upon the
principle of ‘mediation by dialogue’\(^1\) to tackle the concerns of the public. SKB held two public consultation sessions a year that were open to all. The sessions were clearly advertised throughout the town and the sessions were publicised though the county administrative board, municipalities, public authorities, NGOs and members of the public. The sessions addressed issues such as location, project scale, design elements and environmental impact, radioactive safety, health effects and, crucially, socio-economic effects. In addition to the public meetings, brochures and newsletters were regularly distributed. A tailored information campaign was also targeted at local high school students.

The local government was keen to outline the three main socio-economic benefits of the scheme including job creation, increased road and communication investment and attracting new residents to the area. The whole consultation project was awarded an annual budget of 500,000 euros\(^2\). Related developments to accompany the site outlined by the municipality include\(^3\):

- Repair work on the main road linking Östhammar to Upsalla;
- Attractive housing developments;
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SKB tracked public perception and support for the programme since from 2003. Figure A1 below shows that the proportion of local residents who are either For or Definitely for has steadily increased from 65% in 2003 to 79% in 2009.

**Fig A1: The change in Östhammar residents perceptions (Source: SKB)**

\(^1\) EC Community research (ARGONA), *Mediation by Demonstration and Dialogue: an evaluation of practices*, 2009

\(^2\) Östhammars Kommun Presentation, 2009

\(^3\) Uppsala Regional Council, *Final Storage of Nuclear Waste at Forsmark, Sweden*, 2009
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The following summarised the key lessons learnt from the Östhammar:

• Long term consultation, informing the public form the earliest possible stage can help generate support and alleviate some of the fears held within communities;
• Close working partnership between site management and local government and relevant stakeholders is crucial, especially when supported by a funded programme of activities;
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The public were also asked to participate in the Environmental Impact Assessment (EIA). Through methods of information, consultation and participation the public’s views and opinions were considered and recorded.

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\(^{4}\) Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent nuclear Fuel, 2005
In 1999, a study entitled “Energy attitudes of the Finns”\(^5\) found that 62% of people living in Eurajoki accepted the proposed location of the repository. This was one of the deciding factors in choosing to locate the site in Olkiluoto. The high proportion of acceptance amongst local people may be due to the fact that the area already hosts two nuclear power plants and they are therefore used to the thought of nuclear technologies being nearby\(^6\).

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- Differences between risk perception by experts and the lay people have to be understood and public concerns need to be taken into account;
- Locations that are already exposed to nuclear technologies are far more likely to be accepting of a repository than those that are not;
- Supporters of the project usually have more knowledge about the risks and processes associated with the facility than those who are opposed. This does not necessarily indicate ignorance but education and understanding the cultural basis for resistance is crucial in mediation;

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\(^7\) Ibid.

\(^8\) Patrakka. E, posiva Oy, *Towards implementation of spent nuclear fuel management in Finland*, 2007
• Public surveys monitoring the opinions of local residents can act as a way of increasing trust and acceptance as individuals feel that their concerns and opinions have been considered; and
• Active public participation and communication is still necessary after site selection to ensure public acceptance is maintained and concerns for future generations are addressed\(^9\).

\(^9\) Kojo, M. Kari, M. Litmanen, T. The socio-economic and communication challenges of spend nuclear fuel management in Finland. The post site selection phase of the repository project in Eurajoki. 2010
**Project Description**

The Ince Resource Recovery Park (IRRP) will be run by Ince Park LLP, a joint venture partnership between Covanta Energy and Peel Environment. The proposed biomass plant will take up to 175,000 tonnes of fuel per annum which will in turn provide enough renewable electricity to meet the needs of 37,000 homes and be able to supply heat to nearby industry and businesses.

The 333 acre park, anticipated to be the UK’s largest resource recovery park, is located on the eastern edge of Ellesmere Port on the south bank of the Manchester Ship Canal. It is expected to deliver £500m of investment in the North West of England.\(^\text{10}\)

**Fig C1: Location map of the Ince Resource Recovery Park**

After an initial failure to secure planning permission in 2006, the venture was granted outline planning consent in August 2009. The footprint of the energy plant will cover 14% of the total land earmarked for development at Ince. The remainder includes large sites reserved for energy-related occupiers and a business park with smaller units.

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\(^{10}\) IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
for academic and research consultants. In this respect, the biomass plant represents an ‘anchor tenant’ for a far greater technology cluster.

Public Perception

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint\(^\text{11}\). The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application\(^\text{12}\).

The opposition was led by the group Residents Against Incinerators (RAIN) and the initial planning submission was refused by Cheshire County Council in 2006. This was due to lack of clarification over mitigating measures to address opposition concerns.

Peel Environment submitted a revised proposal arguing that without the facility, waste sent to the plant would go to landfills – and that this was not an economically or environmentally sustainable solution. Peel argued that the area already hosted significant industrial development including Shell at Stanlow and Ineos Chlor at Runcorn. The proposal also stated that 188 acres of the site will also include a nature reserve either site of the park\(^\text{13}\).

The Park was granted outline planning permission in August 2009 and the specific application for the 20 MW biomass plant hosted in the site is currently being considered.

Ince Park LLP has developed a local community forum to provide an interface between local communities and the Resource Recovery Park. This was a requirement attached to the Secretary of State’s conditions when planning permission was granted. The forum consists of local councillors and non-voting members such as the Environment Agency and Cheshire West and Chester Council.

If any local residents have any concerns then they can use the community forum online portal\(^\text{14}\) to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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\(^{12}\) Ibid.

\(^{13}\) Property week, *Peel lays waste to objections over £400m power plant*, 13 Nov 2009

\(^{14}\) [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

**Lessons Learnt**

The following summarised the key lessons learnt from the IRRP:

- Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

- Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

- A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
Project Description

The Sizewell Nuclear site is located north of the fishing village of Sizewell on the coast of Suffolk in East Anglia. The site is 2 miles west of Leiston.

The first power station in the area, Sizewell A, was commissioned in 1966 and after 40 years of operation it was decommissioned in 2006. Following one of the lengthiest public inquiries in UK history, Sizewell B is the UK’s newest nuclear power station and was commissioned and built between 1987 and 1995.

The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs through the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth. The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
- the number and topics of complaints received by Nuclear Electric;
- issues raised in within the Sizewell B Local Consultative Committee; and
- direct sample surveys of local resident’s views.

Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

As the construction phase progressed, the poor behaviour of the construction workforce was awarded most attention. As the site neared to the commissioning date the press focused on operational safety concerns and worries about the loss of construction employment once complete.

Between 1987 and 1993 Nuclear Electric received 350 telephone complaints of which 40% were related to road traffic. Over time, the number of complaints fell and complaints regarding worker behaviour issues became more common.

The Sizewell B Local Consultative Committee met on a quarterly basis and provided a vehicle for two-way dialogue between local representatives and the site. Subjects covered were similar to those identifies in other methods.

Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.

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The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming Pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

• Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

• Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

• There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;

• The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

• Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
**Project Description**

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

**Public Perception**

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute-Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
- Concerns of an insufficient environmental impact assessment (over 4,000).

Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardennes, the regional council for Haute Marne, voted in favour of the Bure site. Loraine, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

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16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons17:

- There has not been wide-spread comprehensive public consultation;
- Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
- Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
- Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilities that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

Lessons Learnt

The following summarised the key lessons learnt from ANDRA’s experience:

- The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
- The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust form the public; and
- Financial incentives to compensate local communities should be used carefully so as not to be misconstrued as bribery.

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17 Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)
Project Description

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formerly opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project. The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel.

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger

approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable\(^{20}\).

**Lessons Learnt**

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

- Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

- A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

- The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

- Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.
Appendix A: Case Studies

Appendix A provides six case studies of sites across Europe that are considered to be the best comparators for the proposed Geological Disposal Facility in Cumbria. The case studies are of a similar size and scale and over half of the sites concern the construction of a nuclear waste disposal facility of nuclear reactor. Each case study includes a brief description of the project followed by a discussion on public perception including how it has changed and how it was managed over time. Each case study concludes with a summary of lessons learnt that may be applicable for the site in Cumbria in the future.

The six case studies are as follows:

- Osthmmar, Sweden;
- Oilkilo, Finland;
- Ince Resource Recovery Park, Cheshire, UK;
- Sizewell B, Suffolk, UK;
- Centre de la Manche and Centre de l’Aube, France; and
- The Eurotunnel Project, UK.
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4 Posiva, Cost estimate of Olkiluoto Disposal Facility for Spent nuclear Fuel, 2005
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\(^{10}\) IRRP, Partnership formed to develop Eco-Park and Energy-from-Waste Facility, Press Release, June 2010
Public Perception

The venture was first introduced to local residents in 2006. It quickly invoked strong opposition and local authorities received approximately 2,000 letters of complaint\(^{11}\). The majority of concerns were centred on the negative impacts relating to health and emissions from the proposed incinerator and aesthetic impairments from chimneys.

The local PCTs commissioned a rapid health impact assessment exploring the public’s concerns and concluded that the major health effects did not derive from the incinerator itself but from the stress and anxiety experienced by the local population in relation to the application\(^{12}\).

The opposition was led by the group Residents Against Incinerators (RAIN) and the initial planning submission was refused by Cheshire County Council in 2006. This was due to lack of clarification over mitigating measures to address opposition concerns.

Peel Environment submitted a revised proposal arguing that without the facility, waste sent to the plant would go to landfills – and that this was not an economically or environmentally sustainable solution. Peel argued that the area already hosted significant industrial development including Shell at Stanlow and Ineos Chlor at Runcorn. The proposal also stated that 188 acres of the site will also include a nature reserve either site of the park\(^{13}\).

The Park was granted outline planning permission in August 2009 and the specific application for the 20 MW biomass plant hosted in the site is currently being considered.

Ince Park LLP has developed a local community forum to provide an interface between local communities and the Resource Recovery Park. This was a requirement attached to the Secretary of State’s conditions when planning permission was granted. The forum consists of local councillors and non-voting members such as the Environment Agency and Cheshire West and Chester Council.

If any local residents have any concerns then they can use the community forum online portal\(^{14}\) to register their concern or question. The benefits of the forum include providing residents with up to date information ensuring the development process remains transparent and that local residents feel that their concerns are being considered and addressed.

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\(^{12}\) Ibid.

\(^{13}\) Property week, *Peel lays waste to objections over £400m power plant*, 13 Nov 2009

\(^{14}\) [http://www.inceparkcommunityforum.org](http://www.inceparkcommunityforum.org)
Throughout the construction phase the forum will be developed further to include a consultation portal that provides relevant planning documentation for new developments within the park. Residents will be able to comment and ask questions in relation to the new developments. The forum will also host a social monitoring tool that will analyse any relevant social media comments via Facebook or Twitter.

Finally, Peel Environment will circulate a newspaper to all local residents providing up to date information about the park and will also invite them to complete a survey to monitor any changes in perceptions.

Lessons Learnt

The following summarised the key lessons learnt from the IRRP:

- Terminology used in communication with the public should be clearly explained. For example, Peel Environment was keen to move away from the ‘incinerator’ as the label for the plant to ‘energy from waste’ facility to reflect the renewable nature of the facility;

- Rapid response to public concerns is vital. The Health Impact Assessment made some progress in addressing local concerns over the health impacts of the incinerator; and

- A large scale community forum with a physical and online presence is an innovative tool to ensure that the development process remains transparent, considers a wide spectrum of the local community’s opinions and develops confidence and trust between parties.
Project Description

The Sizewell Nuclear site is located north of the fishing village of Sizewell on the coast of Suffolk in East Anglia. The site is 2 miles west of Leiston.

The first power station in the area, Sizewell A, was commissioned in 1966 and after 40 years of operation it was decommissioned in 2006. Following one of the lengthiest public inquiries in UK history, Sizewell B is the UK’s newest nuclear power station and was commissioned and built between 1987 and 1995.

The construction of Sizewell B made it one of the largest engineering projects in Europe during the early 1990s. It cost over £2bn to construct and has created almost 20,000 jobs though the construction and operational phases.

Fig D1: Arial view of Leiston and the Sizewell B nuclear site

Public Perception

The large and often vocal opposition that is often expected around major schemes was not present with local residents at Sizewell, largely because the local community had lived with the presence of Sizewell A since the 1960s. Despite widespread
support, British Energy/ Nuclear Electric (and other former incarnations) was keen to explore the impacts of the new station on the local community, to assess methods of interaction and communication with the local community and the resulting lessons to be learnt regarding management.

The Impact Assessment Unit from Oxford Brookes University was appointed to undertake an in-depth study into the local socio-economic impacts of Sizewell B. The study ran for 9 years and is an exceptional study given its longevity and breadth\footnote{Glasson, J. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station, Impact Assessment and Project Appraisal, volume 23, number 3 September 2005}.

The study developed various ‘barometers of local opinion’ to monitor changing public perceptions of Sizewell B. These included:

- the magnitude and direction of local press coverage;
- the number and topics of complaints received by Nuclear Electric;
- issues raised in within the Sizewell B Local Consultative Committee; and
- direct sample surveys of local resident’s views.

Local press analysis revealed that, in the early years of the construction of Sizewell B construction, regular traffic congestion, negative effects on nearby beaches and increased noise levels received bad press. However, employment opportunities were well received by local journalists.

As the construction phase progressed, the poor behaviour of the construction workforce was awarded most attention. As the site neared to the commissioning date the press focused on operational safety concerns and worries about the loss of construction employment once complete.

Between 1987 and 1993 Nuclear Electric received 350 telephone complaints of which 40% were related to road traffic. Over time, the number of complaints fell and complaints regarding worker behaviour issues became more common.

The Sizewell B Local Consultative Committee met on a quarterly basis and provided a vehicle for two-way dialogue between local representatives and the site. Subjects covered were similar to those identifies in other methods.

Leiston High School sixth formers conducted number of local resident surveys to explore any issues relating to the construction of Sizewell B. As figure D1 shows, between 1988 and 1991 the positive views of the site remained largely consistent, although as time progresses the benefits to local businesses were increasingly recognised and a larger proportion of residents recognised and appreciated the ameliorative measures instigated by Nuclear Electric. The negative impacts show a clear switch of concerns from accommodation and traffic to crime and disturbances from site workers.
The ameliorative measures included training and skills packages for local employees, funding for the Leiston Training Centre, village hall improvement projects, the refurbishment of Leiston Cinema and full funding for a new swimming pool in Leiston. These projects were completed in recognition of the pressure and inconvenience placed on local residents in Sizewell and Leiston.

Source: Glasson and Chadwick (1995)
Lessons Learnt

The following summarises the key lessons learnt from Sizewell B and the Impact Assessments Unit’s extensive monitoring study:

- Tracking perceptions gives real-time information on the views of the public and allows immediate action to respond to concerns;

- Ameliorative measures that recognise the inconvenience caused to the public are welcome. However it is important to ensure that these are not the major reason for public acceptance, otherwise questions around bribery are likely to be raised;

- There are likely to be unforeseen impacts. In the case of Sizewell B, disruptive behaviour from constructions workers was not anticipated. However monitoring quickly revealed it as an issue allowing quick action to intervene;

- The Oxford Brookes Impact Assessment Unit Study employed a range of ‘barometers of local opinion’. Rather than focusing on one method such as residential surveys, it is useful to include a range of methods to reach a wider number of stakeholders/residents and ensure that a wider scope of opinion and perceptions are acknowledged; and

- Broad public support cannot be taken for granted. In this case public opinion changed several times – focusing on a range of subjects.
Project Description

The National Radioactive Waste Management Agency (ANDRA) is the national agency responsible for the management of all radioactive waste in France. ANDRA is currently investigating the Geological properties in a Underground Research Laboratory (URL) in Bure on the border of the Meuse and Haute Marne districts. The €1 billion laboratory is testing the soundness of the rock formations to host a high and medium level nuclear waste repository by 2025.

The site was originally one of four sites chosen in 1994 to develop a URL to examine the suitability of the geology to host a high level nuclear waste repository. The Government granted the URL’s implementation and operating licence in 1999.

Public Perception

Article 8 of the 1991 law relating to the construction of the URLs requires a strict public inquiry process to receive a construction licence. In March 1997 the first public inquiry took place in Meuse and Haute-Marne. In Meuse, Approximately 10,000 arguments were made opposing the siting of the URL in Bure for the following reasons:

- Perceived lack of public participation (4,800)
- Bribery because of financial compensations made (2,000)
- Concerns of an insufficient environmental impact assessment (over 4,000).

Following the public inquiry the local councils has the opportunity to vote on further proceedings. Champagne-Ardennes, the regional council for Haute Marne, voted in favour of the Bure site. Loraine, the regional council for Meuse, voted against the plans however the vote occurred after the deadline had collapsed therefore it had no legal power. The Government then agree to the URL in 1999 to allow research begin into the possibility of the deep geological disposal site been located in the region. Although granted permission, there was still opposition in Meuse culminating in a demonstration names “La Marche pour la Vie” in the city of Verdun in 1999.

Unlike some other European countries, French communities do not have veto power and cannot legally stop the development of the disposal facility. However a local

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16 Laka Foundation, Decisions on Nuclear Waste A survey on public participation, decision-making, and discussions in eight countries, 2002
information and oversight committee (CLIS) has been set up in Bure with representatives from regional, departmental and local government, Parliament Environmental groups, trade unions and ANDRA. The CLIS is responsible for obtaining the maximum amount of research on the area of management and radioactive waste from relevant experts and providing it in an accessible form to the public. The CLIS has a budget of €300,000 per year.

In parallel with the CLIS a Public Interest Group (GIP) has been set up in both Meuse and Haute Marne districts with the remit of favouring the economic development of the districts through analysing and supporting a wide range of projects. Between 1999 and 2006 each GIP received €9.1m from taxes paid on nuclear facilities to promote the local economy. Projects that have received funding include road improvements, schools and protecting water supplies. From 2007 until 2015, when an expected decision regarding the deep disposal unit is made, each GIP will receive €20m each.

Throughout the site selection of the URL and the resulting research informing the future disposal facility public acceptance of the project, and specifically ANDRA, has been slow to emerge for the following reasons:

- There has not been wide-spread comprehensive public consultation;
- Local councillors felt that the fact that the research facility would lead to a waste disposal facility was not clearly communicated at the time the URL siting process;
- Some local stakeholders feel that ANDRA is only addressing transparency of its actions due to legislative pressure; and
- Many critics are uncomfortable with the level of ANDRA sponsorship in sports and cultural facilities that should be funded by the state.

A public debate is due to take place in Meuse/ Haute Marne in 2013 regarding the disposal facility. It will be organised and facilitated by the National Commission on Public Debate (CNDP).

**Lessons Learnt**

The following summarised the key lessons learnt from ANDRA’s experience:

- The public must be given the opportunity to voice their opinions and concerns to increase the likelihood of acceptance of the management organisation and proposed project;
- The managing organisation of the project must enforce transparency through regular communication of its own accord and not through legislature or Government pressure to gain trust form the public; and
- Financial incentives to compensate local communities should be used carefully so as not to be misconstrued as bribery.

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17. Buclet.N & Bouzidi, Y. Confidence, Actors’ Beliefs and Transparency: the Case of ANDRA, (No date provided)
Project Description

The Channel Tunnel is the undersea rail tunnel linking Folkestone in Kent with Coquelles, Pas de Calais. There are two 50km tunnels for passenger and roll-on/roll-off rail service between the two countries and one smaller service tunnel.

The origins of the project can be traced back to 1802 when the French Mining Engineer Albert Mathieu proposed a tunnel between England and France. In 1974 a UK and French based scheme was proposed but quickly cancelled. However, 12 years later the Treaty of Canterbury was signed to allow the project to go ahead.

Construction began in 1988 and the tunnel was formally opened in 1994. As one of the largest construction projects of its time, the construction cost overran significantly from an expected £4.7bn to a final figure of £9.5bn.

Public Perception

The experience of the Channel Tunnel has been cited as an influential case highlighting why image management is now seen as vital cost element of any major civil engineering project\(^\text{18}\).\(^\text{18}\)

The development of the Channel Tunnel initially provoked adverse public opinion relating to cost, quality, safety and other physical issues but also issues relating to the individuals identities of the UK and France. Opinion polls prior to the opening indicated that fears of terrorism and claustrophobia would prevent people from using the tunnel. The project has always evoked outspoken public reaction since the 1880s. The previous attempts to the 1975 project were aborted due to public fear of military invasion through the tunnel\(^\text{19}\).\(^\text{19}\)

At the time of construction, the owner, Eurotunnel, and the contractor, TML, often had a turbulent partnership. The press picked up on this and negative stories fuelled a defensive and reactive communications approach from the organisations. Little resource was put in to creating a positive approach to stress the benefits to the public and country of the project. Similarly there could have been a stronger


approach in managing the impacts and risks of disruptions and disadvantages that accompanied construction. Public opinion, although not entirely swayed by positive PR, was more likely to see the project as unviable.

**Lessons Learnt**

The following summarised the key lessons learnt from the Channel Tunnel:

- Proactive Image management rather than reactive communication is likely to produce a far more positive impact on public perception. It is less likely to make the public feel that they are being manipulated.

- If working in partnership with other organisations, it is imperative to have an agreed approach on communications with the public, governmental agencies and the press.

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Summary Findings

The case studies provide a number of key learning points that are applicable to any large capital infrastructure project, particularly in the nuclear industry, involving public perceptions and opinions. These are summarised below:

• Transparency within the management organisation builds trust with the public and increases the likelihood of acceptance amongst local people. A proactive approach to consultation is far more beneficial than a reactive approach after concerns have been raised.

• A variety of communication and consultation methods reaches a wider demographic and not just those members of the community who are likely to voice their opinions. For example innovative techniques such as online forums and social media make it easier for some groups to voice their opinions.

• The public are far more likely to see the benefits of a repository if they are already exposed to the nuclear industry and are well informed of the potential risks.

• Monitoring public opinion is useful for management companies to foresee any unintended impacts. This is the case even after the construction phase is complete.