Australian Government
Department of Industry, Innovation and Science

National Radioactive Waste Management Facility

JULY 2018

Lyndhurst site study

Site characterisation studies at Lyndhurst completed

Lyndhurst, located around 15km north-east of Kimba, is one of three sites in South Australia currently being considered as a potential location for a National Radioactive Waste Management Facility.

The Facility requires 100 hectares of land, 40 for the Facility footprint itself with a 60 hectare buffer zone. The nominated site area at Lyndhurst is 700 hectares in size, and located at 143 Bindawalla Gate Road, Moseley.

The current phase of the site selection process involves a detailed technical assessment of each nominated site, which has now been completed, and in-depth community consultation to inform and gauge community sentiment, which is ongoing and includes a community ballot in August 2018.

After completion of the technical assessments at Lyndhurst, the Department of Industry, Innovation and Science has been advised that with further assessment, any supporting infrastructure constraints and risks posed by environmental hazards such as seismic and flooding events, can be mitigated via design solutions.

Information about the nominated site of Lyndhurst, and a summary of the key facts and findings of the recent technical assessments, are detailed in this factsheet.

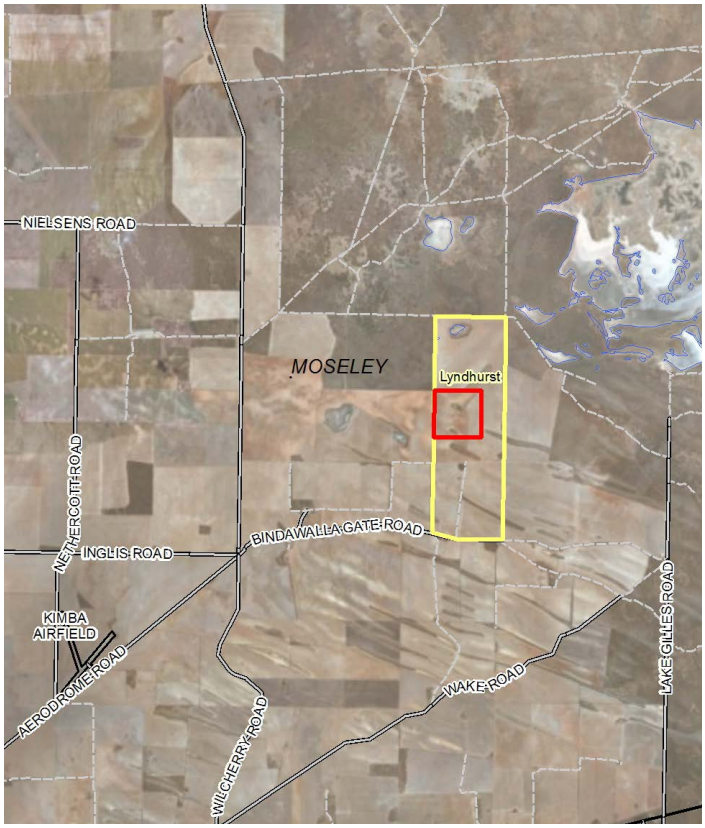
The full technical reports for all three nominated sites can be found at www.radioactivewaste.gov.au.

Overview of Lyndhurst

Lyndhurst is located about 15 kilometres north-east of Kimba, close to the local township that could provide an ongoing workforce, and which would benefit from the construction and operation of the Facility.

The 40 hectare Facility footprint would equate to a small area, of around 6 per cent, of the large, 700 hectare nominated site.

The Lyndhurst property comprises of cleared cropping paddocks, small areas of native vegetation that are typically located along sand ridges, and no creek lines on or near the site.



Map showing Lyndhurst site (yellow) and the 100 hectare study area (red)

Lyndhurst study area

Key facts and findings: **Lyndhurst**

No significant environmental hazards or enabling infrastructure constraints have been identified that would exclude a Facility being located at Lyndhurst.

Climate

The Lyndhurst site is characterised by hot summers, and low annual rainfall predominantly during the winter and spring months. A hotter and drier future climate is projected, with an increased intensity of infrequent and episodic heavy rainfall events.

Climate hazards can be addressed via the Facility design. Climate change impacts have been considered in the assessment of bushfire and flood risks.

Background radiation

Elevated background levels of radiation do not exist at the ground surface of the site and its surrounds. This will assist in effective future monitoring against the baseline conditions.

Bushfire risk

While a large area of native vegetation is located directly north-west of the site, this and the small patches of vegetation on and around the site are unlikely to sustain a fully developed fire front.

The Facility infrastructure can be protected if it is set back a sufficient distances from native vegetation, and protected by standard firefighting infrastructure.

Stability of the landscape

The local landscape is made of sand ridges which intersect the site, with a relatively shallow depth of dune sand material.

Therefore to minimise wind and water erosion in the future, vegetation cover would be maintained along sand dunes on the site and surrounds, and surface water runoff after rainfall would be managed around sealed developed areas.

Underground (subsurface) water

The water table is present at between 10 and 20 metres below the ground surface.

Groundwater in the water table and bedrock aquifers is highly saline (similar to that of seawater) and therefore would not realistically be able to be used.

Local roads and access

The site can be accessed from the main highway by unsealed local roads, which would require upgrades to accommodate vehicle movements needed for operation of the Facility.

Surface water (hydrology and flood risk)

There are no creeks at or in close proximity to the site. Lake Gilles, a saline and dry ephemeral lake, is located a few kilometres north-west of the site.

Flood risks were not considered significant enough to warrant the development of a hydrological model and the completion of hydraulic modelling during this assessment stage.

If Lyndhurst is selected, such works would be undertaken to inform the detailed design of the Facility, and to predict the nature and potential impact of any localised and catchment scale flood events. Design solutions can then be developed to address any flood hazards at the site.

Soils and geology

The ground conditions at the site do not present any unacceptable hazards or constraints to the Facility. The ground beneath the site is made up of fine sand (where sand ridges are located), and a mix of clay and sand, underlain by weathered rock in the form of clay.

Flora and fauna

Only 5 per cent of the 700 hectare site comprises of native vegetation, which is of variable condition and therefore unlikely to represent core habitats for any threatened species.

Some threatened species have been recorded in the broader area around the site and Kimba, and if the site was selected, further targeted surveys would determine their presence or absence.

Two Conservation Parks are present in the broad area but separate from the site, including Lake Gilles Conservation Park (2 kilometres to east) and Mootra Conservation Reserve (10 kilometres to west).

Land use

The site is well separated from development and sensitive land uses.

The nearest dwelling is located more than 2 kilometres from Lyndhurst.

There are a number of mineral leases or licenses in the local area which will be considered in detail in future, should they have the potential to proceed to development.

Power

The closest transmission substation and transmission line are respectively 45 kilometres and 55 kilometres from the site. Options for the most appropriate connections to transmission infrastructure are being assessed.

Other options would include renewable energy generation on site, as well as supporting energy storage technologies such as batteries (short-term) and diesel (long-term), which could provide both commercial and power reliability benefits for the Facility.

Seismic events

An on-ground seismic survey of the site confirmed, with a high-level of confidence, the absence of active faults within or near the foundation. Therefore, no special design or mitigation measures are advised as necessary.

Water

There is existing SA Water infrastructure that could be connected to within proximity of the site. A main of sufficient capacity for the Facility, which could be connected to without impact to the community, is located approximately 6 kilometres from the site.

Waste recycling and disposal

There is a waste transfer and recycling station operated in Kimba by the Kimba District Council. Certain ordinary waste types may need to be transported to other facilities in the region for recycling, treatment or disposal.

Communications (mobile telephone and internet)

National Broadband Network (NBN)'s fixed wireless service is scheduled to be provided to Kimba in the near future, and could be extended to the site.

Communications towers for data communications and mobile coverage are also being considered. The potential to extend benefits of such infrastructure to the community is being considered within a separate, more detailed assessment.

Other services

Wastewater will need to be collected and treated on-site. Stormwater runoff will need to managed onsite (e.g. through use of swales and detention basins).

Technical assessments

Engineering firm AECOM undertook the technical assessments of the sites, which involved:

- characterising the above-ground (surface) environment within and surrounding a 100 hectare study area, including surveying and documenting the flora, fauna and conservation values, and describing any hazards associated with the climate, bushfire, background radiation, flooding, and nearby human activities and land uses;
- characterising the below-ground (subsurface) environment within and surrounding a 100 hectare study area, including consideration of hazards associated with the long-term stability of the landscape and landforms, the soil, bedrock and underground water, and seismic (earthquake) activity; and
- a preliminary assessment of constraints and options for enabling (supporting) infrastructure that would be required for the Facility such as roads, power, water and telecommunications.

The works were undertaken to determine whether there were any significant issues or constraints that may preclude siting the Facility at any of the nominated parcels of land.

More information on what was involved in fieldwork can be found in the factsheet, *Site characterisation studies* and in the technical report available at www.radioactivewaste.gov.au.

▲ *Soil core and water bore drilling*

▲ *Soil core samples*

▲ *Geotechnical investigation test pit*

Cultural heritage assessment

The Australian Government is assessing the nature of any cultural heritage values at each of the nominated sites, to ensure that Aboriginal culture and values are protected, preserved and promoted.

While Native Title on the nominated sites Napandee and Lyndhurst has been extinguished, an assessment has been commissioned to look at cultural heritage on both sites. Expert heritage consultants from RPS were engaged by the Department of Industry, Innovation and Science to conduct an independent desktop assessment of Aboriginal cultural heritage within Napandee and Lyndhurst. The assessment confirms there are no registered heritage sites within or surrounding the Lyndhurst or Napandee study sites although unregistered heritage sites may exist.

Heritage assessments will continue at both sites with the department and its heritage consultants working with the Traditional Owners to determine if there is unregistered heritage that could be impacted by a Facility should the project proceed. A preliminary heritage assessment report has been prepared to inform future stages of heritage assessment.

More information on cultural heritage assessment is available in the *Heritage at Kimba factsheet,* available at www.radioactivewaste.gov.au.

Next steps

Later in 2018, following community ballots, Minister for Resources and Northern Australia, Matt Canavan, will make a decision on whether any of the three sites under consideration can be taken forward as the preferred site for the Facility.

At any selected site, further technical assessments will be conducted, and detailed design of the Facility and the enabling infrastructure will be undertaken, in consultation with the community. The process to obtain construction approvals will involve independent regulators including the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the Department of the Environment and Energy.

▼ *Lyndhurst site*

This document is part of a series of factsheets providing information on the process to site the National Radioactive Waste Management Facility.

For more information

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