DOC20/577006-19

The Senior Environmental Assessment Officer
Industry Assessments
Department of Planning, Industry and Environment

By Major Projects Portal

Dear Ms Luu

Re Blue Bush Project - SSD ID No 8968782 (SEAR's)

I refer to your email dated 7 October 2020 to the Environment Protection Authority (EPA) requesting our information requirements for the Secretary's Environmental Assessment Requirements to be prepared for the proposed hazardous waste repository known as the Blue Bush Project near Broken Hill.

We note the proposal includes transporting up to 200,000 tonnes of hazardous waste by rail to Broken Hill over a 25 year period to the Blue Bush Transfer Station (located west of Broken Hill) for sorting and processing and then transported by road for surface storage or placement into a sub-surface repository known as the Blue Bush Facility, 45 kilometres south of Broken Hill. The repository would be created by mining a kaolin clay formation by open cut methods to form pits which would become repository cells.

We have considered the details of the proposal as described in the information provided with your email and information gathered at the project scoping meeting on 31 July 2020 and a follow-up meeting on 9 September 2020 with the proponent. We have identified the information required for the Environmental Assessment (EA) which is outlined in Attachment 'A'. The EPA's key information requirements for the project are as follows.

1. Justification for and a complete description of the overall project, including how the geological repository will meet or exceed;
    - the requirements outlined in the EPA's *Environmental Guidelines: Solid Waste Landfills, Second edit*ion (EPA, 2016);
    - all relevant statutory requirements including the *Environmentally Hazardous Chemicals Act 1985*, Stockholm Convention on Persistent Organic Pollutants and the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal; and
    - International best practice guidelines for geological repositories.
2. A detailed description of each waste stream, its classification, the proposed immobilisation or transformation of waste and any approvals needed.

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3. Demonstrate the project will incorporate international best practice for the management of each type of waste proposed to be stored, including how it will ensure higher order outcomes consistent with the waste hierarchy such as re-use, recycling, energy recovery and treatment to remove or destroy contaminants will not be undermined by the project over its lifetime.
4. A comprehensive hydrogeological impact assessment of local and regional groundwaters at the repository site including a detailed assessment of the site's geology and suitability to permanently isolate the waste.
5. An air quality impact assessment that models the potential odour, particulate and other air impacts from the project at all stages.
6. A comprehensive assessment of the leachate and contaminated storm water collection systems. The assessment must include all transfer and processing facilities and the repository.
7. An assessment of the potential noise impacts on sensitive receptors from all activities associated with the project, including road and rail movements.

In carrying out the assessment the proponent should refer to the relevant guidelines identified at Attachment 'B'.

The proponent should be made aware that any commitments made in the EA may be formalised as approval conditions and may also be included as formal conditions of an environment protection licence.

The proponent should also be aware that, consistent with provisions under Part 9.4 of the *Protection of the Environment Operations Act 1997* (the Act) the EPA may require a financial assurance and/or assurances for all potential environmental liabilities. The amount and form of the assurance(s) would be determined through an independent assessment consistent with appropriate international guidelines for estimating financial assurances. The final amount of the financial assurance required by the EPA would take into consideration the potential risks and liabilities associated with the proposed development.

In addition, as a requirement of an environment protection licence, the EPA will require the proponent to prepare and implement comprehensive strategies and management plans which will ensure the effective containment of the waste in perpetuity.

If you have any further enquiries about this matter please contact Darren Wallett by telephoning 02 6969 0700 or by electronic mail at riverina.farwest@epa.nsw.gov.au.

Yours sincerely

JESSICA CREED
A/Manager Regional West Operations
Regulatory Operations Regional

20 October 2020

ATTACHMENT 'A'

Description of the proposal

The description of the proposal should be clearly stated and refer to:

- Details of the Blue Bush siting identification process used to select the site and ensure the facility will provide the containment and isolation necessary for storage of the waste in perpetuity, including the:
    - site selection process;
    - site survey process: mapping and screening;
    - site characterisation;
    - uncertainties and unknowns.
- All site details about the transfer station and ancillary infrastructure required by the proposal.
- The construction activities required, the size and type of transfer station processing facility and the blue bush repository storage site including maps of each site's configuration.
- A site characterisation assessment including local and regional geology, topography, geomorphology (landform change over time), hydrology, geochemistry, groundwater, ecological information, meteorological data and surrounding land uses.
- The kaolin clay mining methods and pit (cell) construction.
- All waste operations to be undertaken, the types of wastes received and their source, details about all transfer stations, the proposed transport, handling, storage and deposit of waste, resource recovery activities, the nature of any processes, filling plans and site rehabilitation and any products, by-products or wastes produced by the project.
- The proposed repository immobilisation and disposal/storage methods.
- The proposal's use or recycling of by-products.
- The staging and timing of the whole proposal and any plans for future expansion including staging and storage (short and long term), handling, processing, treatment, internment (disposal/permanent isolation).
- The proposal's relationship to any other industry or facility and how these will interact with the Blue Bush facility.
- Discussion around the closure plan, proposed rehabilitation and a final site layout, post closure monitoring and relinquishment criteria.
- Details of seasonal and long-term variations for relevant site characterisation parameters.
- How the proposal will meet or exceed the requirements outlined in the *EPA's Environmental Guidelines: Solid Waste Landfills, Second edition*.

Site Specific Risk Assessment

Isolation of wastes from the biosphere is the ultimate objective for the final disposal of wastes in the Blue Bush Project underground repository.

A site specific and multi-disciplinary risk assessment should be undertaken and include:

- the hazard (those associated with the deposited wastes);
- the receptors (the biosphere, groundwater);
- the pathways by which substances from the wastes may reach the biosphere; and
- the assessment of impact of substances that may reach the biosphere.

The site-specific risk assessment of the facility must be carried out for both the operational and post-operational phases of the project. This requires a demonstration of the suitability of the strata for establishing a repository, i.e. an assessment of the risks to containment, considering the overall system of waste treatment, immobilisation, segregation and disposal, engineered structures and the host strata.

Incidents that might lead to the development of a pathway between the wastes and the biosphere in the operational phase should be identified. The different types of potential operational risks should

be summarised in specific categories and their possible effects should be evaluated. It should be shown that there is no unacceptable risk that the containment of the wastes will be breached. Contingency measures should be provided for all identified risks.

Chemical transformation, reaction, and interaction between wastes and their contaminants, chemical treatment media and geological strata must be considered and assessed. The potential for impacts to the environment, human health and geographical features such as the integrity of the containment structure must also be considered and assessed.

Assessment of potential repository impacts

The EA must identify and assess all possible impacts the repository will have on the site and surrounding location of the project. The assessment must include:

- impacts to mineral resource potential in the rock strata below the host rock. Mineral content and future economic values of any minerals present should be determined;
- identification and consideration of geothermal resources; and
- impacts to aquifers below or near to the project site and location.

Design safety and verification

The design of storage, stockpiles, and containment facilities should consider relevant hazards and associated risks. The following design issues should be considered during design or construction verification processes:

- human health, public health, and worker safety;
- environment;
- construction;
- operations and maintenance, including the potential for leachate extraction and longer-term decontamination/remediation;
- durability;
- monitoring systems, including leak detection for emissions to air, soils, groundwater, surface water, stormwater, and sewerage systems.

A conceptual model for the project must be developed to ensure the appropriate level of control and monitoring is applied to protect and preserve the passive features of the project, the environment, human health and property. The model must include:

- Identification and characterisation of the waste in terms of inventory, waste form and package.
- Characterisation of the disposal site by the necessary parameters, including geology, hydrogeology, geochemistry, tectonics and seismicity, surface processes, meteorology, ecology and distribution of local populations and their social and economic practices. This site information is needed to define pathways and receptors and thus to develop a conceptual physical, chemical and biological model of the site.
- Specification of facility design. The design should be specified in terms of the material used and the components of the system.

A safety assessment must be conducted to identify and assess safety risks associated with the near surface disposal facility, and to evaluate the performance of the isolation and disposal system and its potential impact on human health and the environment.

The timescales of the safety assessment needed to be considered must include:

- the duration of the operational period;
- the duration of the institutional control period after closure of the disposal facility;

- the duration for which post-closure impact assessment is undertaken. Impacts must be considered in perpetuity for wastes whose hazards associated with the waste storage will remain.

Uncertainties and data gaps should also be identified and assessed. The principals and purpose of the proposed management and control strategies must be clearly defined and justified.

Intergenerational equity and social justice issues should be acknowledged and justified in the context of the project, its design and the proposed controls.

Threats to the integrity of the repository

The EA must identify and assess all possible threats to the integrity of the geological repository. The assessment must include details of site selection and site baseline information and consider issues such as:

- geological stability, faulting, diapirism, seismicity, tectonics;
- host rock thermal properties and engineering properties;
- host rock water content;
- host rock dimensions, shape, homogeneity;
- hydrological characteristics of host rock and surrounding formations;
- hydrogeological conditions, including:
    - the nature and type of aquifers in the vicinity of the project locations and how movement of water into and out of aquifers will be prevented;
    - relevant groundwater chemistry and kinetics.
- past mining, drilling or other relevant operations at the site, including the location of all past mining and drilling operations in the vicinity of the site;
- potential for excessive erosion, and how the proposed depth will not be susceptible to this;
- other ambient conditions at the site such as local climate;
- climate change and potential changes in climate, including resulting in significant changes to hydrological processes and vegetation;
- risk of magma intrusion, meteor strike, glacial action and other potential events experienced over geological timescales; and
- waste specific properties and risks such as those associated with:
    - biodegradation and chemical reactions;
    - change in form, stability, and physical properties; and
    - interaction and reaction between wastes, waste by products, waste reaction products, chemical treatment media, and host rock.

Contingencies and strategies for project failure, disruption or other risks

The EA must identify and assess all possible scenarios where the project may fail, be disrupted, or be impacted by other significant risk factors, including during each stage of the project. The assessment must include details of contingencies and strategies that will be implemented under these circumstances.

The EA must include details of environmental management, maintenance, and operating strategies to manage each element of the facility. The strategies must cover all aspects and stages of maintenance and operation over the life of the facility. The strategies must be designed so they are consistent with current best practice, include continual improvement and transition strategies, address identified issues and can identify and incorporate future advances and knowledge.

Knowledge and technology gaps must be identified and assessed. Applied research strategies to key uncertainties must be implemented and completed.

Justification, risk, maintenance and long-term ownership

Justification for the proposal must be made and address:

- The need for a geological repository in NSW.
    - Demonstrate that there is a demand for such a facility in NSW.
    - Identify the current gaps in the waste market in NSW and why this is the best treatment or disposal option for that waste.
    - Demonstrate why current waste management strategies and practices can't be applied to manage hazardous waste within NSW.

- Justification for the effectiveness of geological repositories.
    - Geological repositories are generally not common or a well-established technology for use in hazardous waste disposal.
    - Deep geological repositories have been used generally for long term storage of radioactive waste which generally has no other management option. Deep geological repositories are suited to provide a high level of long-term isolation and containment with minimal future maintenance. This is because the greater the depth of the repository, the greater the assurance of isolation.
    - Unlike radioactive waste, wastes containing persistent contaminants such as heavy metals, do not lose their hazardous characteristics, such as toxicity over time. Thus, any hazardous waste repository has inherent risks associated with it in perpetuity, unlike radioactive waste repositories.
    - Geological repositories located at or near the earth's surface are associated with significantly increased risk having their integrity compromised due to infiltration, erosion, and exposure to other surficial mechanisms and processes. Long term risk associated with such facilities is not able to be quantified due to the variable nature of these processes, which are influenced by factors including wind, fluvial, marine, glacial and chemical processes, and variabilities associated with the fluxional nature of the earth's climate, vegetative cover, topography, tectonics and other short and long term phenomena.

      It must be demonstrated that the repository will contain wastes in geological time scales over thousands of years and in a manner that any releases that might take place in the future will pose no significant health or environmental risk and include:

        - A demonstration that the proposed facility meets current and future international best practice in its design, operation, maintenance.
        - How negative environmental effects or liabilities resulting from the activities of present generations do not fall upon future generations.

- Justification of a near surface geological repository over a deep geological repository.
    - Deep geological repositories may provide best practice infrastructure to safely dispose of hazardous waste.
    - A deep geological repository may reduce environmental and financial risks to NSW and the community.
    - Provide an evaluation of the natural passive geological barriers for the proposed near-surface geological repository against those in place at existing deep geological repositories, to demonstrate the project will achieve equivalent or better performance over geological time.

- Justification that permanent isolation will be achieved between different waste types within the repository.
    - What wastes will be separated and why? How will this be determined?
    - Provide details of how the wastes will be separated/isolated and the chemical compatibility of the separation/isolation medium.

- Justify the passive geological barrier/s used to isolate wastes from each other and the biosphere will be effective (on a geological time scale).
    - Man made barriers will ultimately fail over time however due to landfills being accessible it is possible to service, maintain and replace these over time if/when required. This is not possible or feasible for a geological repository due to the types, amount and nature of the waste buried, and method of burial which by definition is intended to be permanent.
- Provide an evaluation of the proposed methods to seal, isolate, store waste at the project against existing best practice methods at existing established international geological repositories.

- Justification for the project in terms of human health and ecological impacts.
    - A human health and ecological risk assessment must be undertaken for all activities associated with the project. The assessment must consider exposure from short term, long term and on-going project activities including the handling, transport, processing, storage and disposal of waste to be received at the transfer station and Blue Bush facility.
    - The human health and ecological risk assessment must also detail the environmental, safety and social risks and costs associated with long-haul transport of waste between and within jurisdictions.

- Detail the environmental, safety and financial risks to government and the community.
    - Calculation of whole of project financial assurance, ensuring unacceptable environmental and other impacts are identified and acknowledged, and financial risk to NSW is avoided.
        - The project should describe the appropriate regulatory regime to address financial assurance obligations and management.
    - Financial assurance provisions for the project are provided upfront over the life of the project to ensure all environmental liabilities can be addressed. Environmental liabilities are based on the ‘polluter pays principle‘ which states that a polluter should be liable for the cost of damage caused to the environment by its activities, not the NSW community.
    - The management/maintenance/ownership of both the Blue Bush facility and transfer station post their operating life spans must be explained including who will be responsible for the mid to long term management (i.e. in perpetuity) of the site.

- Details of requirements and proponent expectations of the NSW Government with respect to ownership, financial risk and responsibility.

NSW legislation and other requirements

- Current NSW legislative requirements do not permit hazardous waste to be stored long term at licensed facilities and/or disposed of to land unless the hazardous contaminants have been destroyed, removed or immobilised. Consequently, all hazardous waste must be treated to destroy, remove or immobilise the hazardous or potentially hazardous components or characteristics of the waste prior to deposit in the repository. Approval to immobilise waste is required by the EPA under the EPA’s waste immobilisation framework.
- The EPA notes it is generally not acceptable to undertake wholesale transfer of an environmental issue or risk from one environmental media to another. Any proposal to solidify liquid waste solely for the purpose of storage or disposal at the facility must justify that management of the liquid waste is not possible or feasible using liquid waste management techniques.
- The project should demonstrate its compliance within the parameters of the current NSW and Commonwealth legislative requirements, policies and guidelines for transport and disposal of hazardous waste.

- A list of the licences or approvals required by all government agencies must be provided and discussion presented about any criteria or requirements to be met for the licence or approval.
- The project must implement best practice waste management, including handling, processing, storage, disposal and control strategies in accordance with relevant legislation and NSW requirements.
- The management and final fate of waste must be consistent with the NSW Waste hierarchy.

NSW context - Circular economy and 20-year waste strategy

- NSW has committed to moving to a circular economy though its Circular Economy Policy Statement. The policy is designed to provide long-term economic, social and environmental benefits for NSW, embedding circular economy considerations in NSW Government decision making and planning the transition to a circular economy. The circular economy definition and principles include valuing resources by keeping products and materials in use for as long as possible. Maximising the use and value of resources brings major economic, social and environmental benefits, and contribution to innovation, growth and job creation, while reducing the impact on the environment. The circular economy framework will include principles such as designing out waste and pollution and will incorporate the waste hierarchy which underpins the objectives of the Waste Avoidance and Resource Recovery Act 2001.

- The EPA is leading the development of a 20-year Waste Strategy for NSW. The Strategy will provide a vision for reducing waste, driving sustainable recycling markets and identifying and improving the state and regional waste infrastructure network. This Strategy will be underpinned by circular economy principles and will set goals and incentives, so the right policy interventions and infrastructure investments are made to meet community and industry needs.

- The waste hierarchy is a set of priorities for the efficient use of resources and provides a base to foster the transition to a circular economy. The waste hierarchy defines disposal of waste as the least preferable option. With respect to many types of hazardous waste, higher order outcomes to disposal of the waste either currently exist or are feasible. These include in order of preference, reuse, recycle, energy recovery, treatment to recover or remove hazardous chemicals or components, treatment to permanently destroy persistent contaminants, and treatment to immobilise/fix chemical contaminants and prevent their future release into the environment.

- The project must describe how it compliments a circular economy and meets the vision of NSW's waste strategy.

- The NSW waste levy is being considered as a part of the 20-Year Waste Strategy for NSW. The facility is proposed to receive and store liquid and solid waste from interstate and has the potential to increase the attractiveness of the transport of waste from interstate, including if waste levy costs can be avoided by disposal at the facility. Where this is the case there is the potential to cause a distortion or change in the market and a loss of levy revenue for the originating jurisdiction. Jurisdictions with a waste levy currently include Queensland, Victoria and South Australia, all of which are proposed to be potential sources of waste for the Tellus Broken Hill facility.

- Levies are designed to provide funding to improve waste management, and thus the facility has the potential to undermine jurisdictions' efforts to improve waste management.

- The project must justify that the facility will not result in levy avoidance and in doing so undermine jurisdictions' efforts to improve waste management outcomes.

Potential impacts on air quality

The goals of the project in relation to air quality should be to ensure sensitive receptors are protected from adverse impacts from dust, odour and particulate emissions.

The project must create an emissions inventory that identifies all potential air pollutants at their source and discharge point. Measures to prevent or control the emission of dust, odour and particulates must be detailed based on the outcome of an assessment of air pollutants undertaken in accordance with the *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2016). All potentially impacted residential or sensitive premises likely to be impacted by the development must be identified and included in the assessment.

The EA should identify any other existing impacts on air quality at the transfer stations/processing facilities and the repository and if necessary, provide an assessment and commentary on the predicted cumulative impacts that may arise in accordance with the Approved Methods.

Emissions from any plant must meet the design criteria detailed in the *Protection of the Environment Operations (Clean Air) Regulation 2010*. Details need to be provided on the proposed air pollution control techniques from any air emission points, including proposed measures to manage and monitor efficiency and performance.

Potential impacts of noise, vibration and blasting

The goals of the project should include design, construction, operation and maintenance of the facility in accordance with relevant EPA policy, guidelines and criteria, and in order to minimise potential impacts from noise.

The EPA expects that potential noise sources are assessed in accordance with the *Noise Policy for Industry* (EPA, 2017) and where required mitigation measures are proposed (eg appropriate equipment chosen to minimise noise levels). All residential or noise sensitive premises likely to be impacted by the development must be identified and included in the assessment.

The proposed development may result in an increase in traffic movements associated with the transport of waste. The number of traffic movements associated with the proposal should be quantified and the potential noise impacts associated with these traffic movements need to be assessed in accordance with the *NSW Road Noise Policy* (DECCW, 2011).

An assessment of vibration from all activities (including construction and operation) to be undertaken on the premises and this should be assessed using the guidelines contained in the document *Assessing Vibration: a technical guideline (DEC, 2006).*

Where any blasting is proposed an assessment of potential blast impacts should be undertaken and this should be assessed against the guidelines contained in the document *Australian and New Zealand Environment Council – Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZECC, 1990)*.

Potential impacts from blasting associated with future mining activities should be explored. Any identified mineral deposits in the vicinity of the repository should be ascertained and an assessment of the impact this facility may have on the future extraction of those mineral deposits should be identified.

Potential impacts on water quantity and quality

A detailed and contemporary hydrogeological impact assessment must be undertaken that documents local and regional groundwater features for all sites and includes a comprehensive description of the potential impacts and mitigation measures that will be implemented at the repository to protect groundwaters

The hydrogeological assessment must:

- Comprehensively determine the site, local and regional geological and hydrogeological settings, the geochemical properties of each setting, short and long term geological stability and geomechanical and engineering properties to determine whether the repository can be intercepted by groundwater or if leachate from stored or deposited waste (whether anticipated or not) could move through the strata profile and local geology to generate perched layers or impact groundwaters.
- Identify surrounding groundwater users that may be affected by any adverse impact on groundwater quantity or quality.
- Quantify the impacts that any proposed water extraction may have on the groundwater source and include details of project water requirements and sources, water flows and a water balance analysis. Uncertainties and variability in water resource availability and water balance components must be identified and assessed.
- Detail any potential groundwater quality impacts from this proposal and identify appropriate measures that will be undertaken to mitigate any potential adverse impact.
- Identify ways in which contaminated water may leave the facility and be transported through the surrounding geological system to potential receptors.

The goals of the project should include the following.

- No pollution of waters (including surface and groundwater), except to the extent authorised by EPA (i.e in accordance with an Environment Protection Licence);
- Contaminated water (including effluent, leachate, process waters, wash down waters, polluted stormwater or sewage) is captured on the site and collected, treated and beneficially reused, where this is safe and practicable to do so;
- Anticipate wet weather impacts and develop contingencies into the design of all contaminated water infrastructure and clean water diversions; and
- It is acceptable in terms of the achievement or protection of the NSW River Flow Objectives and Water Quality Objectives.

The EA should document the measures that will achieve the above goals.

Details of the site drainage and any natural or artificial waters within or adjacent to the development (including all facilities associated with the project) must be identified and the surface water management systems measures proposed to mitigate potential impacts of the development on these waters. The proposed surface water management system must detail how these waters could adversely impact the repository in the short and long term and the mitigation measures proposed.

Potential impacts on land

The EA must describe the proposed location in terms of soil types and properties and soil contamination. Any likely impacts resulting from the construction or operation of the proposal must be identified, including the likelihood of.

- Disturbing any existing contaminated soil.
- Contamination of soil by operation of the activity.
- Subsidence or instability.
- Soil erosion.
- Disturbing acid sulfate soils or potential generation of acid sulfate.

The EA must describe the management of the closure of all facilities associated with project at the end of their operational life and including the rehabilitation measures that will be implemented and what the ongoing land use will be.

The goals of the project should include the following.

- No pollution of land, except to the extent authorised by EPA (ie in accordance with an Environment Protection Licence);
- Any contaminated sites encountered or created are appropriately managed and rehabilitated.
- The potential impact of land erosion from the development is mitigated.
- The land impacts by the project is appropriately monitored and managed in accordance with relevant EPA guidelines.

The EA should document the measures that will achieve the above goals.

Waste and chemicals

The EA must provide details of solid and liquid waste management associated with the project and identify potential impacts, including:

- Identify and characterise each waste stream or type of waste, nominate the maximum volume/quantity and rate to be received, identify its source and/or generation and classify all wastes in accordance with the NSW *Waste Classification Guidelines.* The hazardous waste characterisation must include the hazardous, physical and chemical properties of the waste.
- A justification that the wastes proposed to be received cannot be subjected to a higher order(s) and more preferable treatment methods, in accordance with the waste hierarchy, and NSW circular economy and *Waste Avoidance and Resource Recovery Act 2001* objectives and principles. The assessment should demonstrate there are not higher order/preferred treatment methods that can be applied to the waste or its contaminants, other than immobilisation of the waste and/or burial-disposal, for each type of waste proposed to be received at the facility.
- A comprehensive description of the method of collection, transportation, assessment and handling of waste received at project facilities, including the procedures to be implemented should waste be deemed unsuitable for disposal once received at the project facilities.
- Identify the risks of transporting waste, storing and processing waste at ancillary facilities and detail what contingencies and/or spill/emergency management will be implemented to minimise or resolve the risk.
- Any stockpiling of wastes, or long-term storage of wastes or recovered materials to fit a cell filling programme or long-term storage placement programme.
- The waste processing related to the project, including a detailed description about the immobilisation method including a demonstration of the effectiveness of the immobilisation (sampling & analysis). Detail any potential reuse, recycling, reprocessing (including composting) or treatment both on and off-site.
- Details of what recycling and recovery services and activities will be implemented including what wastes will be targeted and the scale that these activities be performed.
- A description of what long term storage means as compared to permanent isolation (disposal) and to which types of wastes this applies.
- Chemical and physical processes to be used to treat or transform waste, including liquid waste to solid waste, and how it will be ensured that where feasible, treatment of waste to recover, remove or destroy contaminants in the waste will occur in preference to permanent isolation.
- The air or water emissions arising from the handling, immobilisation, storage, processing and reprocessing or deposit of waste and leachate management consistent with NSW guidelines.
- The risk of fire or explosion from the activities and any necessary mitigation measures.
- Waste cover composition, suitability, where it will be sourced and the timing of covering.
- The proposed controls for managing the potential environmental impacts of the activity and a comparison of these controls against best practice.

Wastes classified hazardous under the EPA's Waste Classification Guidelines (EPA, 2014) must also have a detailed description of the nature of the waste, its hazardous qualities, the proposed immobilisation of the waste and any approvals needed. The information provided must include an

assessment of the long-term impacts (1,000 year plus) of the waste in the repository and identify potential environmental legacy issues addressed.

Waste classified as hazardous waste must also have management and mitigation measures with regard to the *Protection of the Environment Operations Act 1997*, *Radiation Control Act 1990* and the *Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2005*.

Recovery of waste

The EA must include an assessment addressing how the project will make available future waste recovery opportunities. The assessment must include detailed information with respect to waste retrievability and recovery including:

- waste retrievability and recovery requirements and specifications;
- cell design requirements and specifications and how these support future waste recoveries;
- requirements and specifications for waste: zoning, placement, layering, location, containment, separation, and burial;
- placement and separation of each batch and type of waste;
- how voids will be eliminated between the sealed waste containers;
- details of construction quality assurance planning, maintenance and filling of waste cells;
- details how access and storage space will be maintained to ensure all like wastes are stored together;
- details of loading and unloading, inspection and monitoring requirements and plans; and
- details of drainage, leachate capture and stormwater management systems to be implemented.

The goals of the project should include the following.

- It is in accordance with the principles of the waste hierarchy and cleaner production;
- Where potential impacts associated with the handling, processing and storage of all waste materials generated at the premises are identified, these be satisfactorily mitigated;
- The beneficial reuse of all wastes generated at the premises are maximised where it is safe and practical to do so; and
- No waste disposal occurs on site except in accordance with an Environment Protection Licence.
- Wastes disposed of are suitable for permanent disposal in the geological repository and represents international best practice for the final disposal of that waste steam and that there is no alternative best practice proven technology to treat the waste stream.

The goal of the project should be to ensure that environmental risks from hazardous waste are minimised.

The EA needs to identify the proposed type, quantity and location of all chemicals to be stored at project facilities. Spill management measures, including items such as bunding, and emergency procedures should be clearly outlined.

Monitoring, Assurance and Reporting Programs

- The EA must include a detailed assessment of any noise, air quality, groundwater and surface water quality or waste monitoring required during the construction phase and on-going operation of both the transfer station and sub-surface repository facilities to prevent or minimise any adverse environmental impacts from the development.
- Appropriate baseline data requirements are to be identified as part of the EA, to form the basis for baseline and ongoing monitoring of environmental parameters.
- It must be demonstrated that the proposed methods for baseline and subsequent monitoring are scientifically robust and statistically sound.

- The EA must also identify and describe monitoring programs, compliance assurance programs and reporting requirements and arrangements that will demonstrate the effectiveness of proposed management measures in meeting applicable requirements at both sites.
- The EA must, in addition to outlining proposed programs, clearly identify for each site what is to be monitored and audited and why. This should include identification of monitoring locations, parameters to be monitored, sample analysis methods, the level of reporting proposed. The EIS should also include information on frequency and type of audits proposed to assure compliance with applicable requirements.
- The EA should demonstrate that monitoring and audit programs have been designed appropriately, according to best practice, to provide objective evidence regarding activities associated with the development and have regard to whether these activities are adversely impacting on the environment in the short, medium and/or long term.

Cumulative impacts

The EA should provide an assessment of the cumulative impacts of the project during construction and operation of the proposal. Assessment of cumulative impacts must consider each environmental impact (air, land, noise, water and waste) and past, current and future activities in the area surrounding the project and impacts associated with components of this project.

ATTACHMENT 'B'

Title	Web address
Relevant Legislation	
Environmental *Planning and Assessment Act 1979*	https://www.legislation.nsw.gov.au/#/view/act/1979/203
Protection of the Environment Operations Act 1997	https://www.legislation.nsw.gov.au/#/view/act/1997/156/full
Contaminated Land Management Act 1997	https://www.legislation.nsw.gov.au/#/view/act/1997/140
Environmentally Hazardous Chemicals Act 1985	https://www.legislation.nsw.gov.au/#/view/act/1985/14
Waste Management Act 2000	https://www.legislation.nsw.gov.au/#/view/act/2000/92
Licensing	
Guide to Licensing	http://www.epa.nsw.gov.au/licensing/licenceguide.htm
Air Issues	
POEO (Clean Air) Regulation 2010	https://www.legislation.nsw.gov.au/#/view/regulation/2010/428/historical2016-11-01/full
Approved methods for modelling and assessment of air pollutants in NSW (2016)	http://www.environment.nsw.gov.au/resources/air/ammodelling05361.pdf
Assessment and management of odour from stationary sources in NSW (DEC, 2006)	Technical framework: https://www.environment.nsw.gov.au/resources/air/20060440framework.pdf Technical notes: https://www.environment.nsw.gov.au/resources/air/20060441notes.pdf
Noise and Vibration	
Interim Construction Noise Guidelines (EPA, 2017)	https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/interim-construction-noise-guideline
Noise Policy for Industry (EPA, 2017)	https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017)
NSW Road Noise Policy (EPA, 2011)	https://www.epa.nsw.gov.au/publications/noise/2011236-nsw-road-noise-policy

Assessing Vibration: a technical guideline (DEC 2006)	https://www.epa.nsw.gov.au/noise/vibrationguide.htm
Australian and New Zealand Environment Council: Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZECC 1990)	https://www.epa.nsw.gov.au/resources/noise/ANZECBlasting.pdf

Soils	
Managing Urban Stormwater: Soils and Construction (Landcom, 2004)	https://www.environment.nsw.gov.au/stormwater/publications.htm
Waste	
Waste Classification Guidelines (EPA, 2014)	https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines
Protection of the Environment Operations (Waste) Regulation 2014	https://www.legislation.nsw.gov.au/regulations/2014-666.pdf
Environmental Guidelines: Solid Waste Landfills, Second edition (EPA, 2016)	https://www.epa.nsw.gov.au/~/media/EPA/Corporate%20Site/resources/waste/solid-waste-landfill-guidelines-160259.ashx
EPA's Energy from Waste Policy Statement	https://www.epa.nsw.gov.au/wastestrategy/energy-from-waste.htm
NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	https://www.epa.nsw.gov.au/wastestrategy/warr.htm
NSW Resource Recovery Orders and Exemptions	https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/resource-recovery-framework/current-orders-and-exemption
Water	
Water quality monitoring – NSW Approved Methods	https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/licensing-under-poeo-act-1997/licensing-to-regulate-water-pollution/approved-methods-for-sampling-and-analysing-water-pollutants
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
National Water Quality Management Strategy: Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000)	http://www.waterquality.gov.au/anz-guidelines/Documents/ANZECC-ARMCANZ-2000-guidelines-vol2.pdf
National Water Quality Management Strategy: Australian Guidelines for Water	http://www.waterquality.gov.au/anz-guidelines/Documents/ANZECC-ARMCANZ-monitoring-reporting.pdf

Quality Monitoring and Reporting (ANZECC/ARMCANZ, 2000)	
Using the ANZECC Guidelines and Water Quality Objectives in NSW (EPA, 2006)	https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/water/anzeccandwqos06290.pdf
Environmental Guidelines: Storage and Handling of Liquids (EPA, 2007)	https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/compliance-audit-program/chemical-storage-handling-and-spill-management/storing-and-handling-liquids-trainers-manual
The NSW State Groundwater Policy Framework Document (DLWC, 1997)	http://www.water.nsw.gov.au/__data/assets/pdf_file/0008/547550/avail_ground_nsw_state_groundwater_policy_framework_document.pdf
The NSW State Groundwater Quality Protection Policy (DLWC, 1998)	http://www.water.nsw.gov.au/__data/assets/pdf_file/0006/548286/nsw_state_groundwater_quality_policy.pdf
National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ/ANZECC, 1995)	https://www.water.wa.gov.au/__data/assets/pdf_file/0020/4925/8728.pdf