

TELLUS™



Tellus Holdings Ltd and Project Blue Bush Update to Broken Hill Council

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17 September 2020

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Table of Contents

About us

Why are we developing geological repositories?

What is a geological repository?

Site Selection

What early stage work have we done to date?

What is hazardous waste?

What are the types and forms of accepted wastes?

What waste types will we not be accepting?

What are the next steps?

What are the proposed project timeframes?

What are the proposed project benefits and jobs?

ABOUT US

Tellus Holdings Ltd (“Tellus”) is an innovative Australian infrastructure development company in the business of creating economic, social and environmental value from waste, clay and salt resources.

VISION

To be Australia’s leader in geological repository waste solutions.

MISSION

To contribute towards a safer and cleaner Australia by developing a portfolio of geological repositories that provide long term storage, treatment, recycle, recovery and permanent isolation services for difficult to manage waste types plus the supply of related commodity by-products.

TELLUS PROJECTS

Tellus is developing the following unique facilities:

- The **Sandy Ridge Facility** in WA: 100,000 tpa, 25-year life, arid near-surface geological repository in a 70-million-year-old kaolin clay formation; and
- Proposed **Chandler Facility** in the NT, 400,000 tpa, 25- year life, arid deep geological repository in a 500-million-year-old salt bed.
- The proposed **Blue Bush Project** in NSW: 200,000 tpa, 25-year life, arid near-surface geological repository in an ancient, dry clay formation.

Tellus is evaluating other clay and salt opportunities in QLD, NSW, VIC and SA.



Tellus Board



Joe Powell
NED



Chris Berkefeld
Non Executive Director

Philip Garling
B.Build, FIEAust, FAIB, FAICD
Group Non Executive Chairman

Duncan van der Merwe
BSc, MSc, GAICD
Group Managing Director

Nathaniel Smith
General Counsel &
Company Secretary
(Tellus Holdings Group)

Kathy Hirschfeld AM
BE(Chem) UQ, HonFIEAust FTSE
FICHEM CEng FAICD
Non Executive Director

Dr Nikki Williams
BA Hons, Ph.D
Non Executive Director

Why are we developing geological repositories?



THE PROBLEM



NSW State level

Economy and population are growing, therefore waste volume and mix is growing



Forecast and emerging waste production

Millions of tonnes per annum and growing



Legacy stockpiles – eg PFAS, asbestos

Millions of tonnes per annum and growing (national 1Bt)



Infrastructure shortage

Lack of competitive cost infrastructure to deal with the size of the haz. waste problem



Low recovery rates

Valuable hazardous materials are recycled and recovered at very low rates



Proximity factor

Few local solutions for haz. waste generated in NSW, especially bulk and difficult to manage waste types



Who pays

User should pay, but sometimes the State is left with the liability

THE SOLUTION



Sustainable infrastructure

Tellus can develop temporary and permanent solutions for difficult to manage waste types



Best practice

Tellus applies international, national and local best available techniques



Recovery possibilities

Tellus supports the circular economy- can work with local partners, R&D & Universities



Job creation

Multi-generational jobs in regional Australia



Economic growth

Tellus develops enabling infrastructure and our projects generate royalties, taxes and levies



Local NSW infrastructure

Tellus has potential sites in NSW

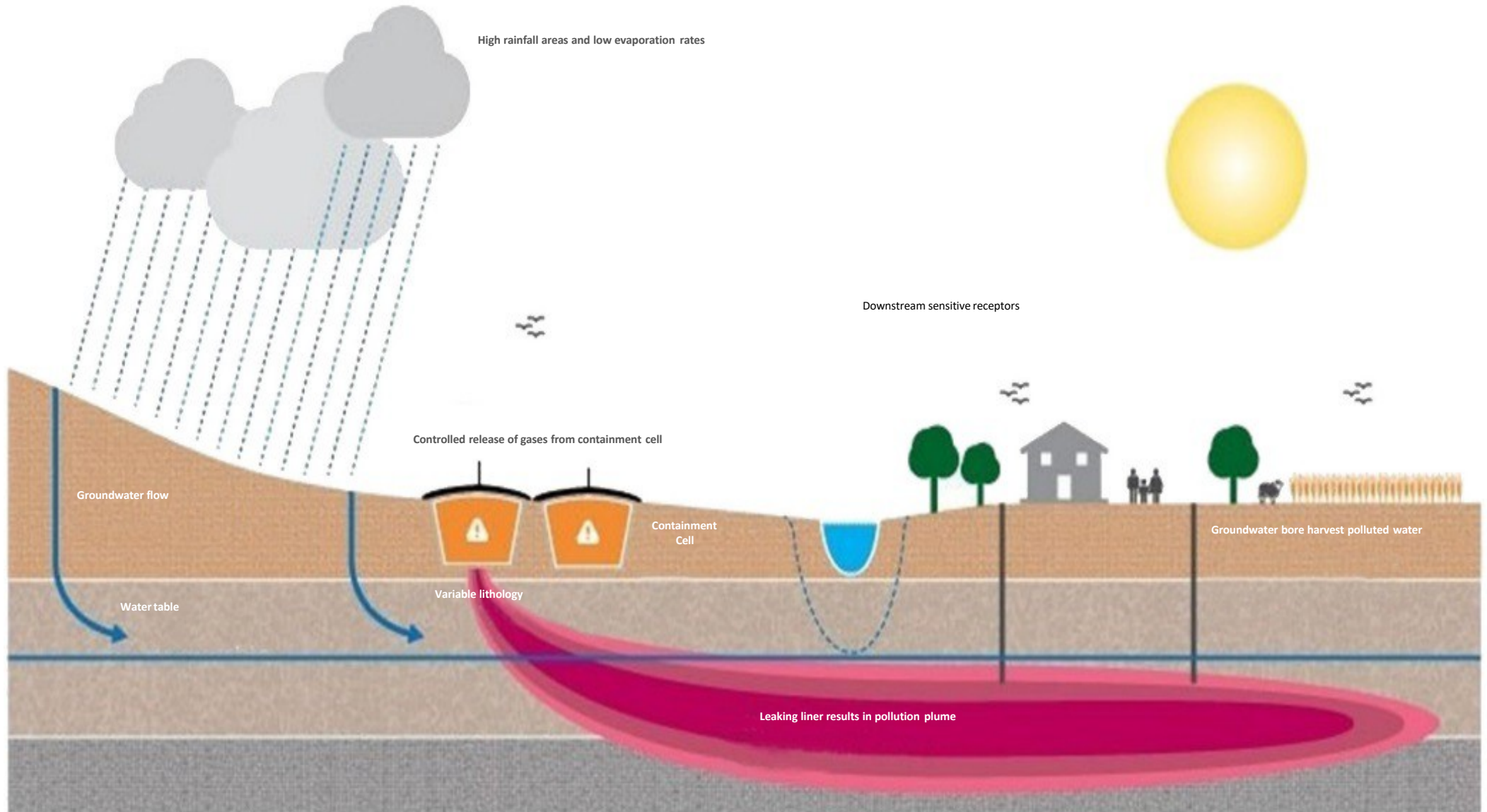


Private sector investment

Tellus can fund the project and possibly contribute to local Broken Hill cleanup

What is a geological repository?

Typical conceptual model of municipal landfills





WHAT IS THE DIFFERENCE BETWEEN A LANDFILL AND A GEOLOGICAL REPOSITORY?

Landfills rely on engineered containment barriers. They eventually fail. They cannot permanently isolate waste.

A geological repository relies on both man made and the **natural geological barriers**.

Natural barriers can isolate waste from the biosphere for **hundreds of thousands to millions of years**.

Since a geological repository can pass the **“Passive Safety Test”** there is no requirement to actively maintain the facility after post closure.

Hence there is no material risk passed on to future generations. This cannot be said for landfills.

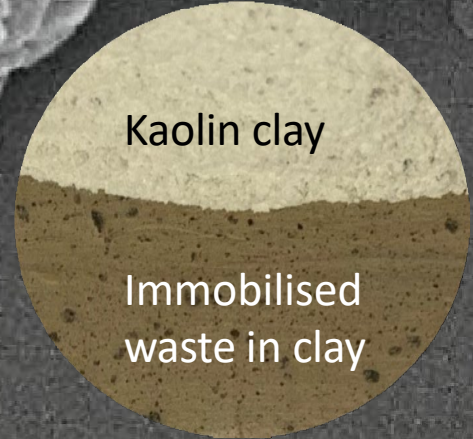
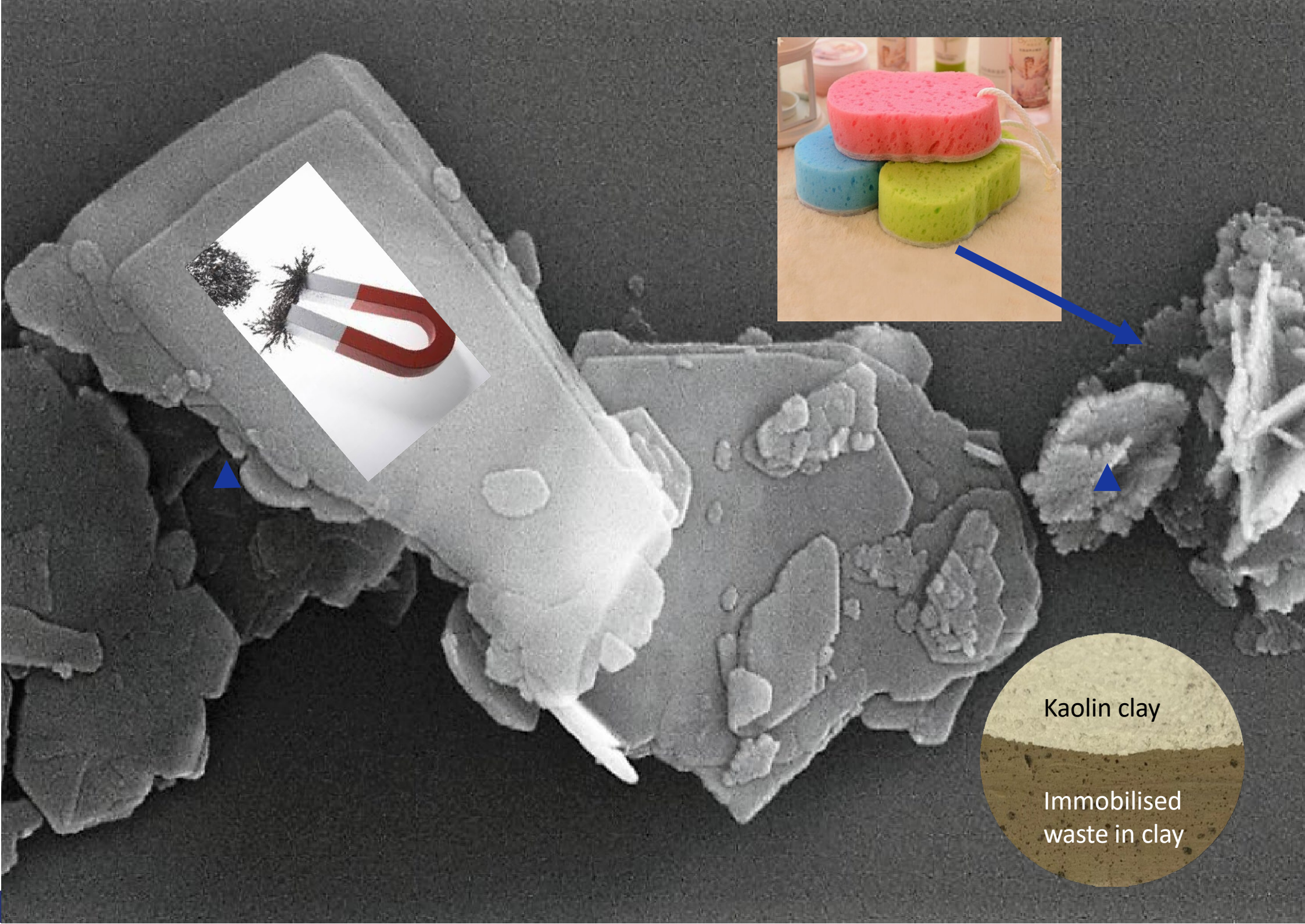


Sandy Ridge
Near Surface
Geological
Repository



Sandy Ridge – Kaolin Clay Bed





Site selection



Our sites are the safest in Australia & follow best practice techniques

2,700 million year old Big Bell Suite

1,700 million year old Broken Hill Block



Sandy Ridge Facility

Proposed Blue Bush Project

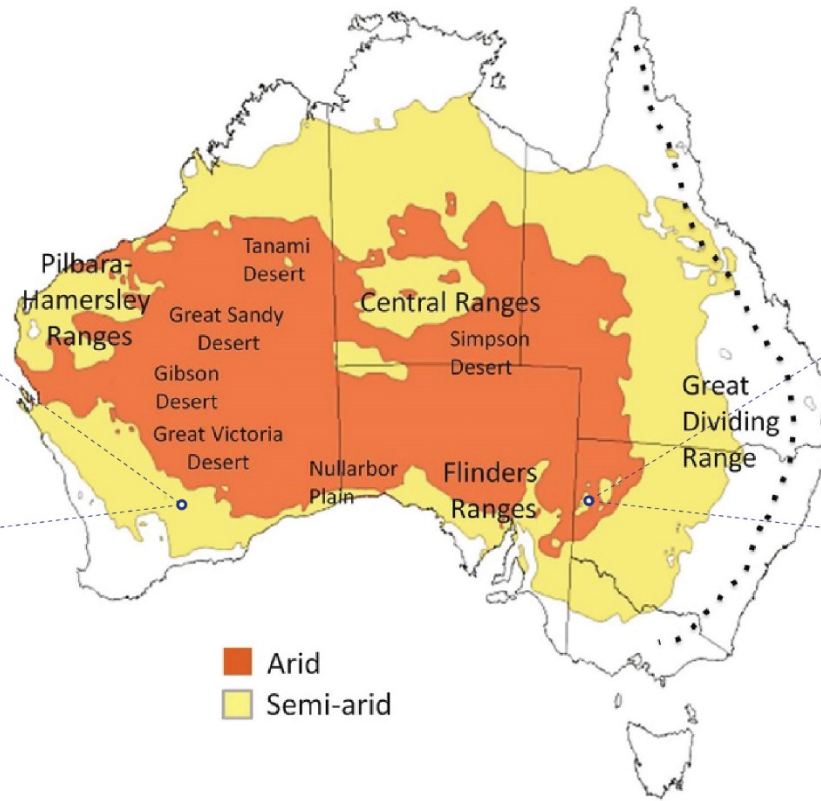
Site selection



Our sites are the safest in Australia & follow best practice techniques

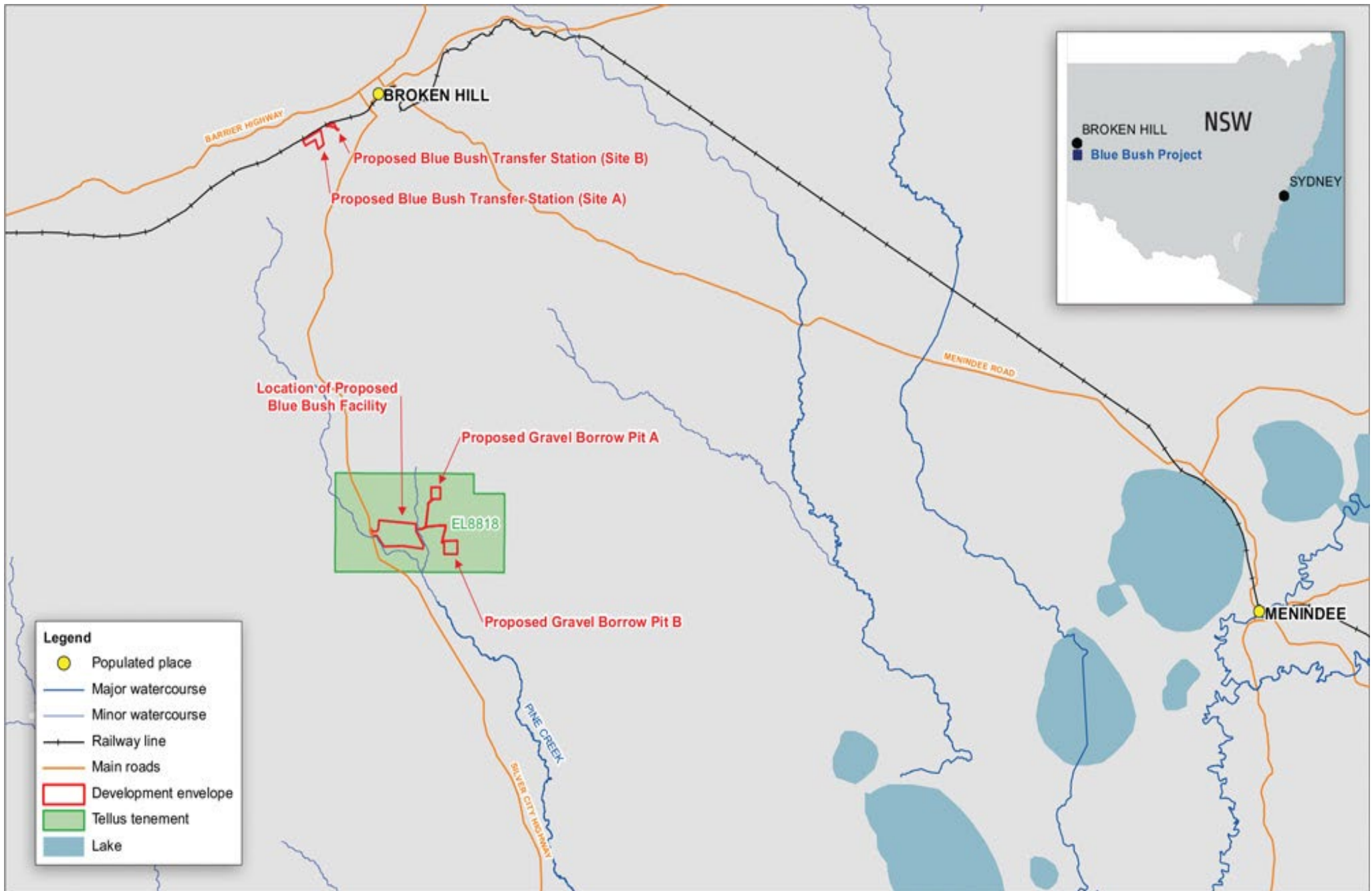


Sandy Ridge Facility

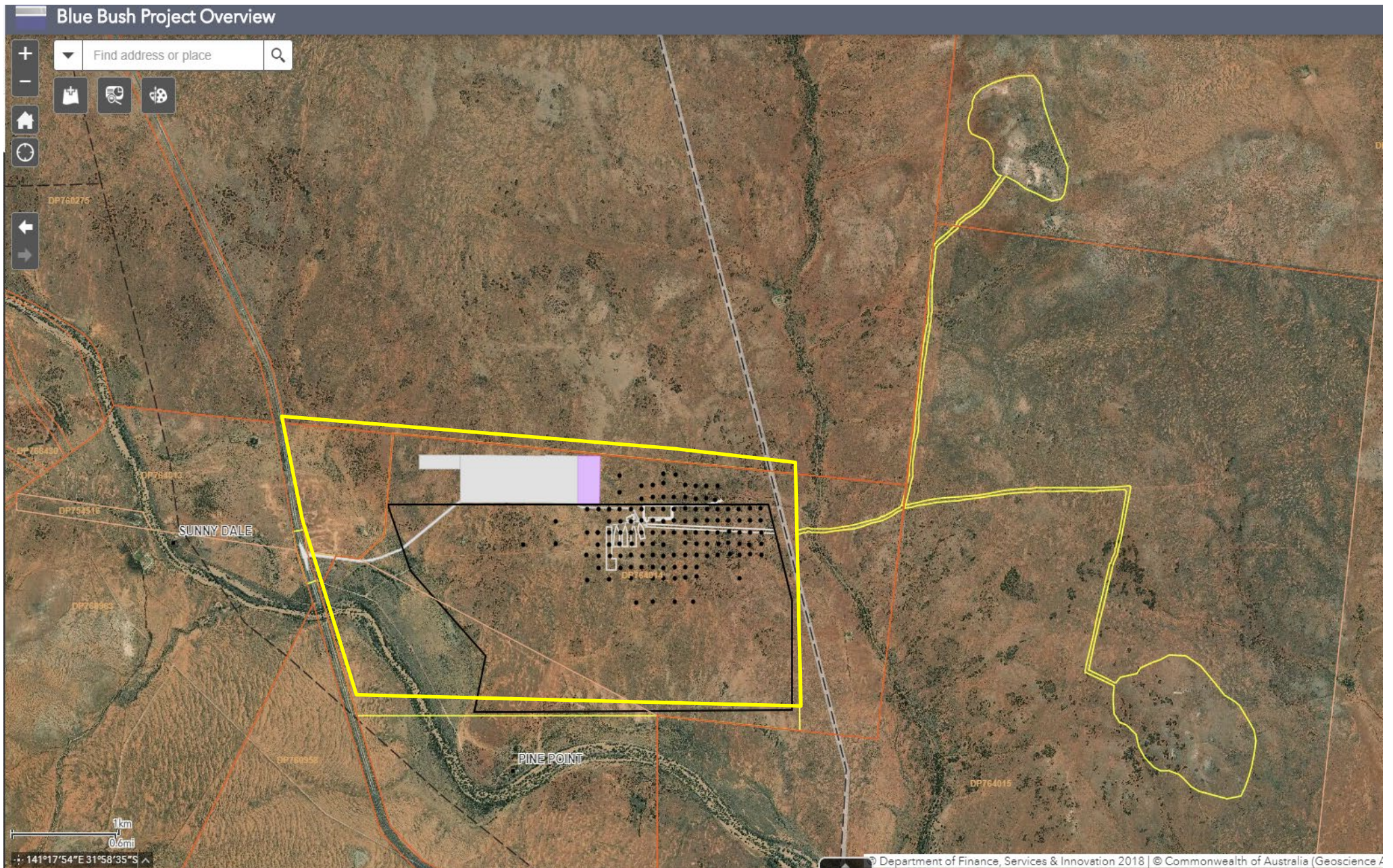


Proposed Blue Bush Project

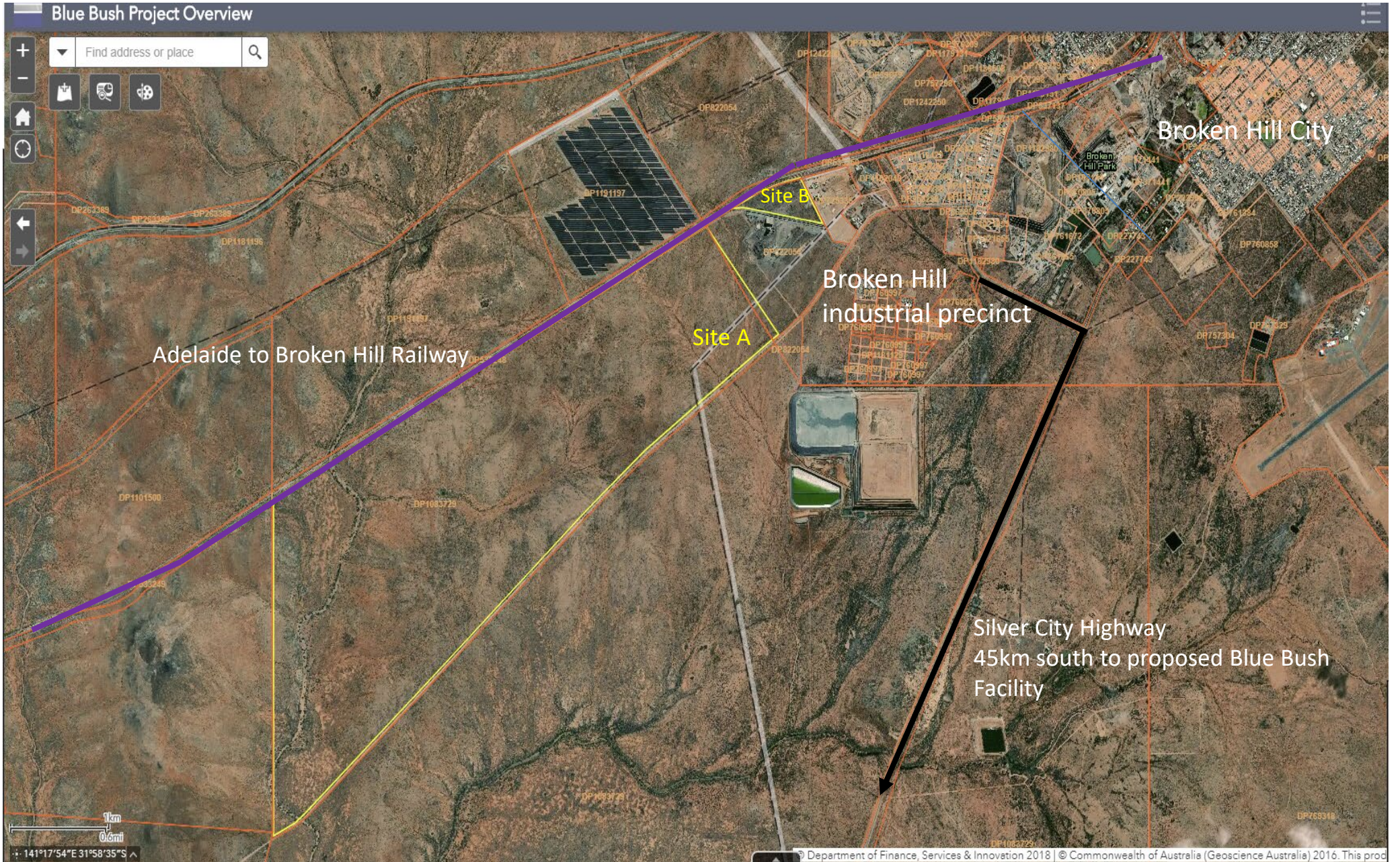
Site selection – Regional Location



Site selection – Proposed Blue Bush Facility



Site Selection – Proposed Blue Bush Transfer Station



What early stage work have we done to date?



Blue Bush – Drill Program 1 (57 holes)

What early stage work have we done to date?



Blue Bush – Drill Program 2 (69 holes)

What early stage work have we done to date?



Blue Bush – Drill Program 3 (11 holes)

What early stage work have we done to date?

- Completed several field investigations to help us better understand potential environmental and human health hazards, risks and benefits.
- Finalising a Scoping Study that will recommend the project proceed to a Pre-Feasibility Study (PFS).
- In support of our proposed Project, we have prepared an Environmental Scoping Report (ESR).
- The ESR was submitted to the NSW Government on 15 September.



What early stage work have we done to date?



We have commenced early stage community stakeholder engagement in January 2020 within the constraints of a COVID travel restrictions.

We look forward to ramping up a sustained, transparent, proactive next phase of stakeholder engagement and to provide updates as the company progresses through the project studies and approvals gates.

There are several GO/NO GO gates the company needs to go through before it reaches a final investment decision.

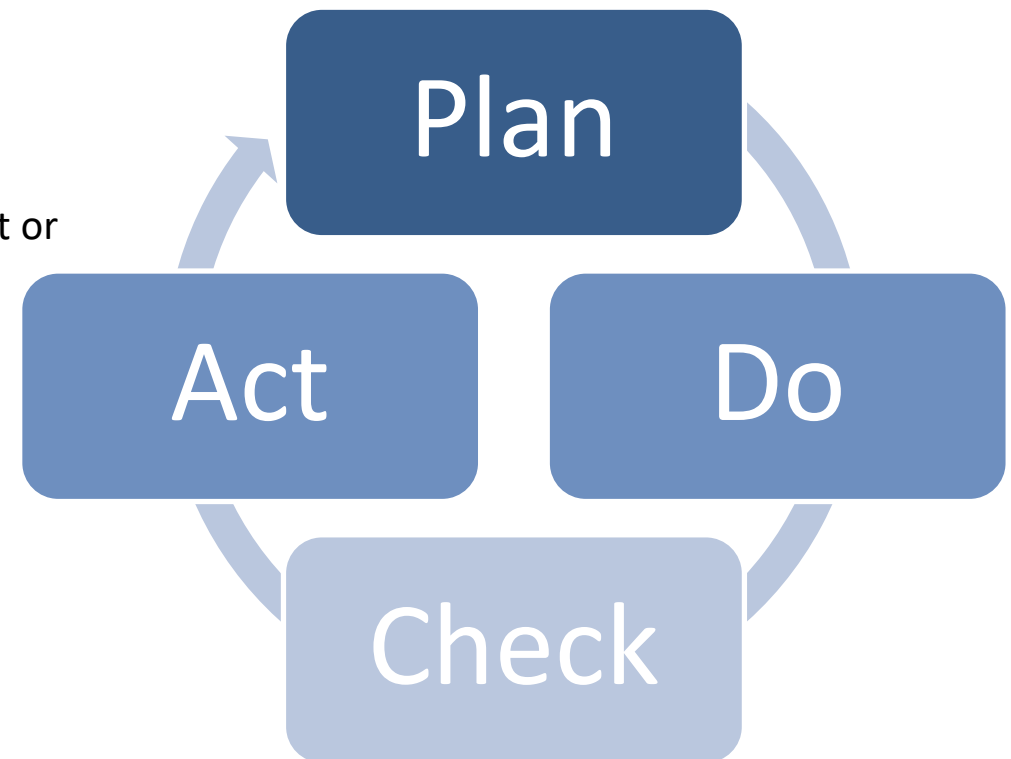


Community consultation strategy – participation and message

Key phases are based on project milestones and lifecycle management linked to our Quality Management System and ISO 9001.

1. Engagement during preparation of the Scoping Report – **WE ARE HERE**
2. Engagement during preparation of the EIS
3. Engagement during exhibition of the EIS
4. Engagement following exhibition of the EIS
5. Engagement during preparation of an Amendment Report or Modification Report (if needed)
6. Engagement during construction of the Facility
7. Engagement during operation of the Facility
8. Engagement during closure of the Facility

Knowledge and cycle of continuous improvement

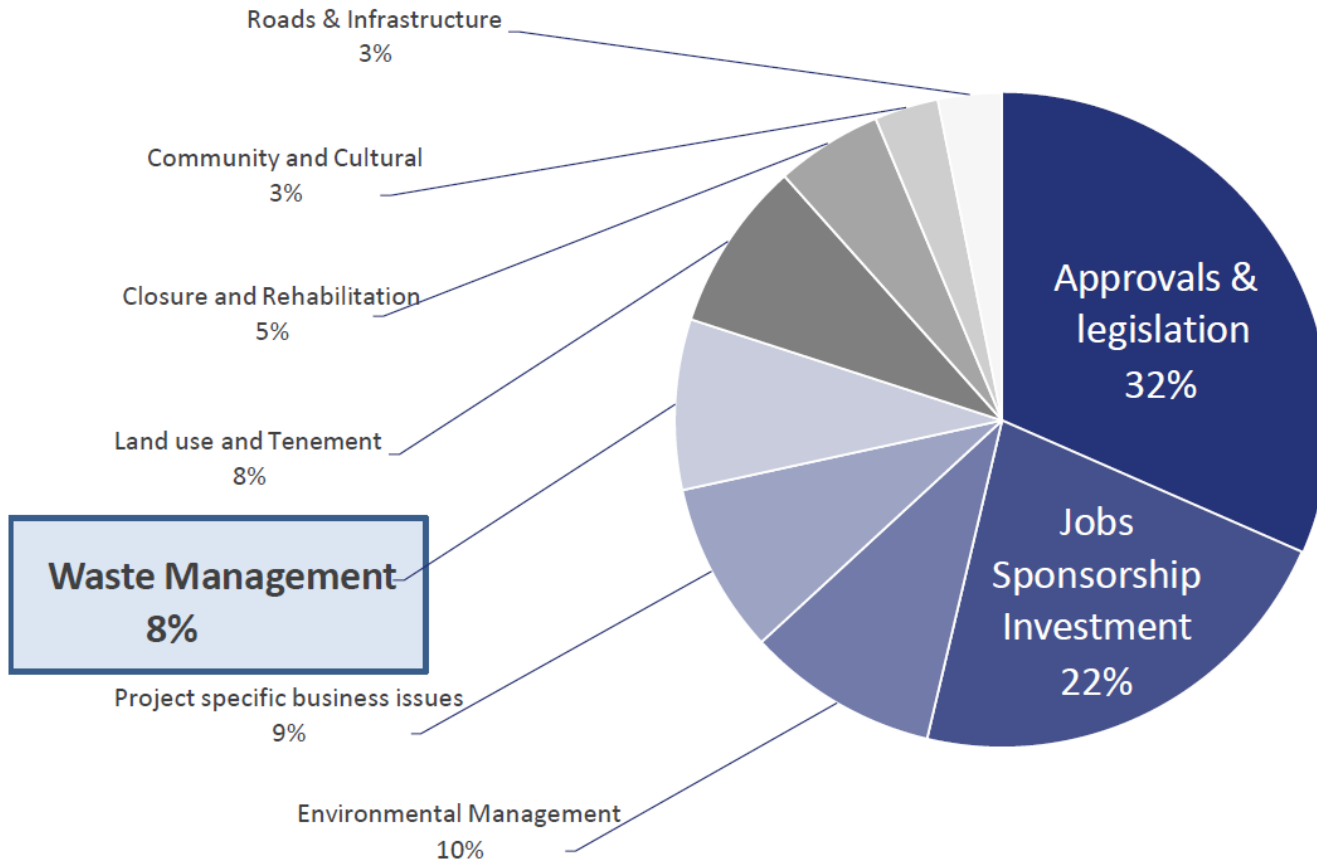


Transparency when messaging

Summary of engagement by stakeholder – Sandy Ridge (2014 -2019)



**Jobs, Sponsorship Investment,
Business Opportunities**
31%^c

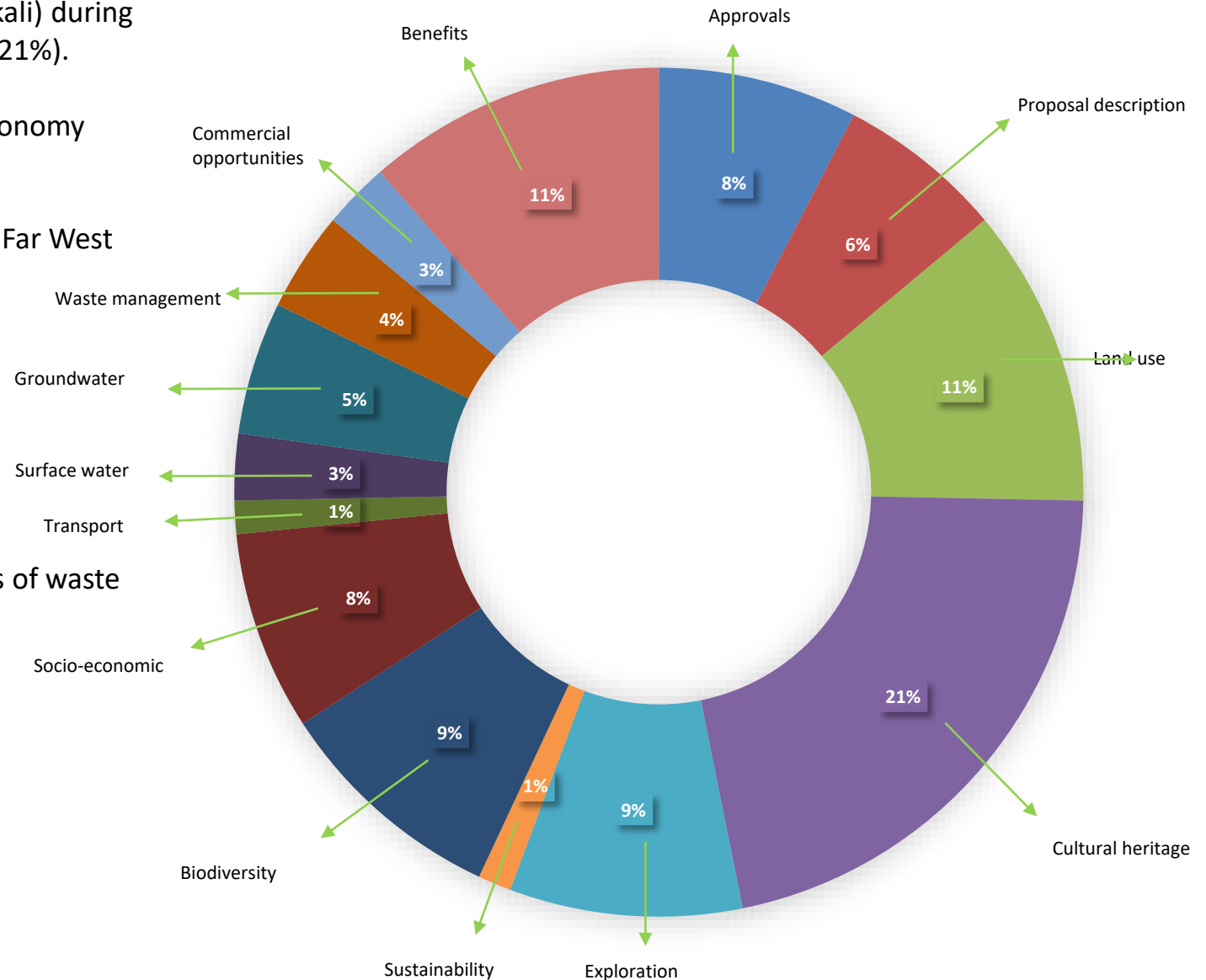


Summary of engagement by topic – January to July 2020

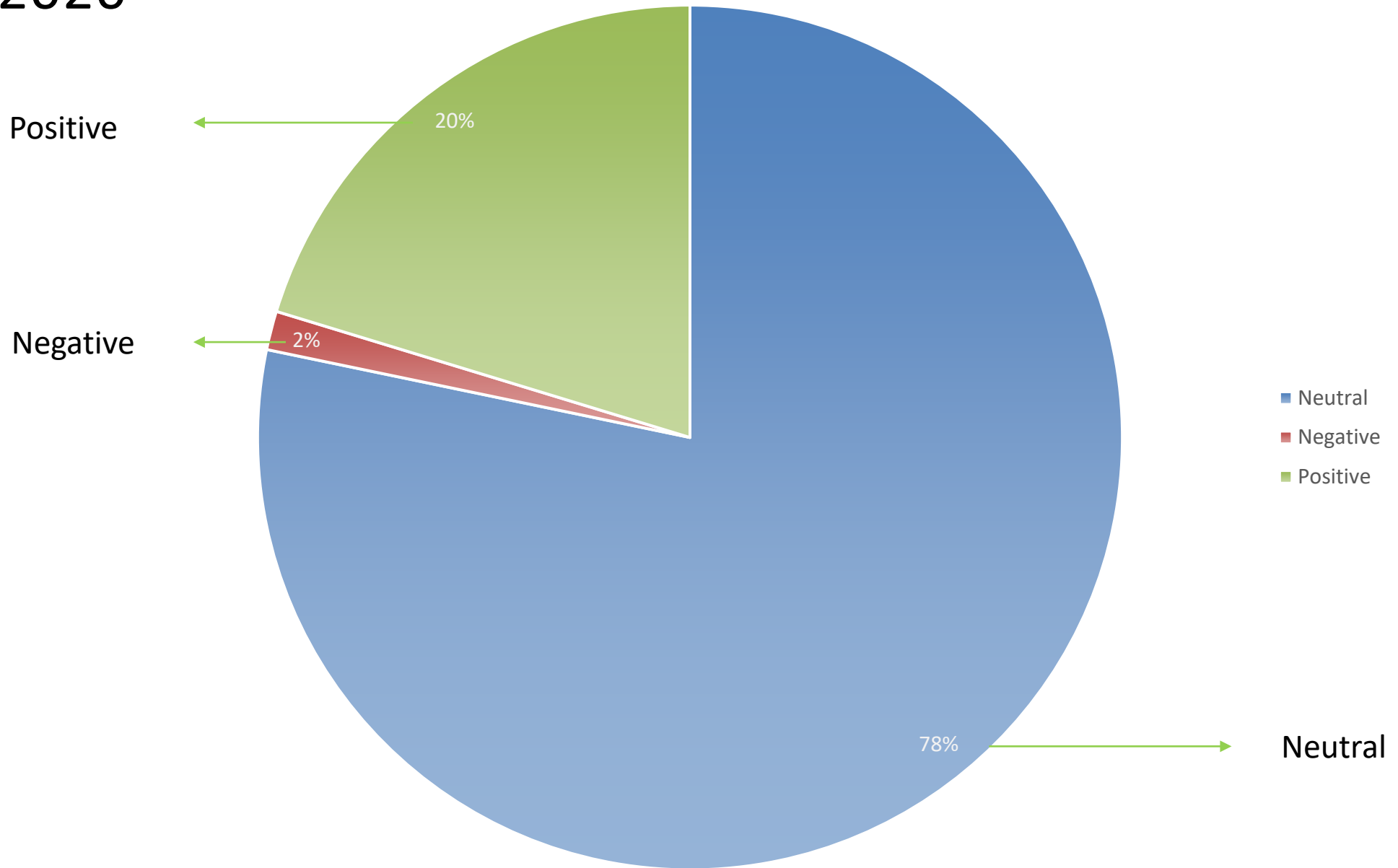


- Tellus has focused on engaging with & employing traditional owners (Barkandji & Wilyakali) during exploration and groundwater drilling (21%).
- Benefits to diversify the Broken Hill economy (11%)
- Provide long term employment to the Far West Region of NSW (8%).
- Other key areas of interest include:
 - Future land use (11%).
 - Exploration of clay (9%).
 - Biodiversity (9%).
 - Water resources (8%).
- To date, waste management and types of waste to be accepted recorded 4% interest.

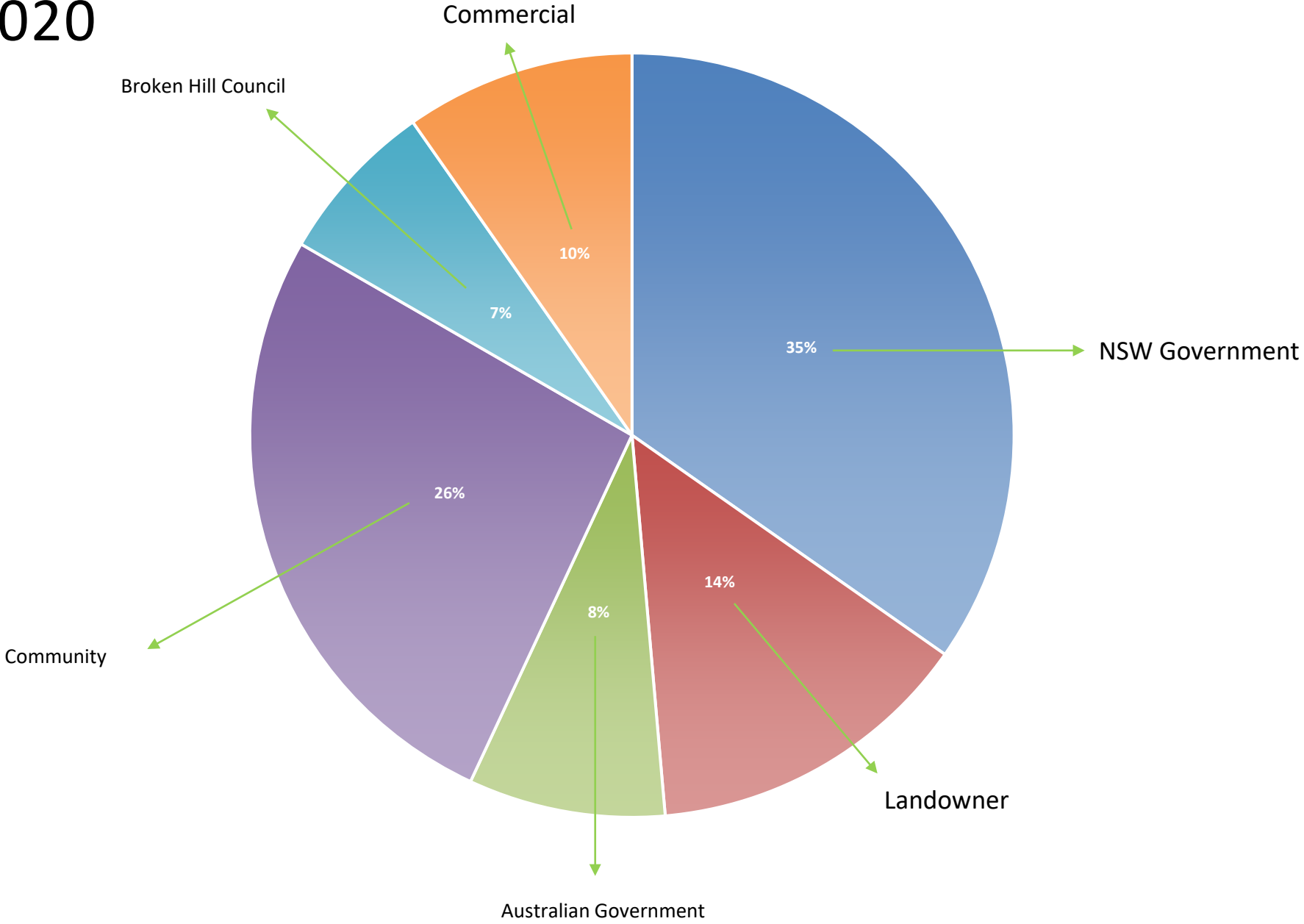
Engagement results by topic - January - July 2020



Summary of engagement by sentiment – January to June 2020



Summary of engagement by stakeholder – January to August 2020



What is hazardous waste?

A blue TELLUS container is being lifted by a crane at an industrial facility. The container is positioned on a yellow metal frame. In the background, there is a large green industrial structure with yellow railings and a staircase. The sky is clear and blue.

A hazardous waste, as defined in the Australian Government's National Waste Policy: Less waste, more resources (2009), is a substance or object that exhibits hazardous characteristics, is no longer fit for its intended use and requires disposal.

A much simpler definition is hazardous waste is a waste with properties that make it potentially harmful to human health or the environment.

What are the types and forms of accepted wastes?

Waste material would be subject to Tellus' strict Waste Acceptance Criteria (WAC) that must be approved by the NSW EPA and, is necessary for the environmental and human health safety of the Blue Bush Facility. Wastes accepted could include:

- Acid and alkaline compounds used in manufacturing.
- Arsenic compounds from gold mining.
- Contaminated soils with asbestos from housing and PFAS from firefighting.
- Electronic waste like computers and phones.
- Fly-ash from energy utilities.
- Lead compounds from mining.
- Liquid chemical waste could be accepted, but only if it is immobilised (i.e. made solid).
- Mercury compounds from dental industry,
- Naturally Occurring Radioactive Material from the mining of minerals used in the electric car and solar storage batteries
- Solar panels
- Zinc compounds used in cosmetics and pharmaceuticals.



Waste acceptance criteria and what we will not accept



Type of waste	Accepted on-site for surface storage	Accepted below-surface in waste cells
Hazardous waste subject to meeting the characteristics criteria below:	✓	✓
- Liquid and sludges	✓	✗ ¹
- Explosive wastes	✗ ¹	✗ ¹
- Flammable liquids or solids	✓	✗ ¹
- Self-combusting wastes or wastes that can generate a gas-air mixture which is toxic or explosive	✓	✗ ¹
- Highly corrosive or oxidizing	✓	✗ ¹
- Gases (greater than 5% in volume)	✓	✗ ¹
Clinical waste (e.g. infectious hospital waste and body parts)	✗	✗
Municipal solid waste (putrescible household and commercial waste)	✗	✗
Uncertified waste (which cannot be identified or has not undergone characterisation testing)	✗	✗
Exempt Waste (EW) ² (e.g. wastes containing radionuclides at concentrations that does not require regulatory oversight such as NORM wastes from the solar and electric car battery industries)	✓	✓
Very Low Level Waste (VLLW) ² (e.g. wastes from medical, industrial, research and NORM industries with activity concentration levels at or just above exempt limits that require consideration of radiation protection and safety)	✗	✗
Low Level Waste (LLW) ² (e.g. oil and gas industry scale)	✗	✗
Intermediate Level Waste (ILW) ² and High Level Waste (HLW) ² (e.g. reprocessed spent nuclear fuel and components with high levels of radioactivity)	✗	✗
Nuclear waste ³ (e.g. from power generation and defence use)	✗	✗

Notes:

1 Normally excluded unless modified in accordance with Tellus' WAC before disposal or during disposal so that the operational and post closure safety of the waste cell and facility is not compromised.

2 Classification of Radioactive Waste as per ARPANSA RPS 20 and Definition as per Section 21 and 22 of the EPBC Act.

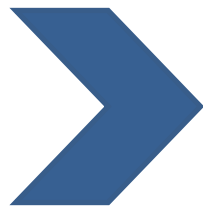
3 Definition as per Section 21 and 22 of the EPBC Act.

✓ = Accepted; ✗ = not accepted; ✗¹ = normally excluded, but possibly suitable.

Industries that Benefit

- Mining.
- Government.
- Manufacturing
- Waste management.
- Heavy industry.
- Contaminated land.
- Agriculture.
- Manufacturing.
- Oil & gas.
- Utilities.

Fulfilling national, state and local environmental and waste policies & strategies



The development of the proposed Blue Bush Project would meet the objectives of several national, state and local environmental and waste policies and strategies including:

- 2018 National Waste Policy and National Action Plan.
- NSW 20-Year Waste Strategy.
- NSW Circular Economy Policy.
- Broken Hill LEP.





What are the next steps?

Major Projects

- Projects ▾
- Assessment ▾
- Community ▾
- Services ▾
- Help ▾

- The NSW Government will review our ESR for adequacy.
- If adequate, SEARs are provided to Tellus.
- With SEARs, Tellus will begin a sustained and stepped up community engagement in the Broken Hill region, and with Local, State and Federal Government.
- The Board is to approve the project proceeding to a PFS (expected in October 2020).

State Significant Development

Blue Bush Project

Construction and operation of a near-surface geological repository to accept, store and permanently isolate hazardous chemical waste

materials. The proposal also includes construction and operation of an



What are the gates we need to get through?

•Main Approvals

- Environmental Scoping Report. **WE ARE HERE**
- Project SEARs.
- Draft Environmental Impact Statement.
- The EIS is likely to be submitted by Tellus in early 2021.
- Final Environmental Impact Statement.
- Ministerial Approval.
- Operational License.

•Feasibility studies

- Scoping study (FEL 1). – **WE ARE HERE**
- Pre-feasibility Study (PFS-FEL 2).
- Bankable feasibility Study (BFS-FEL 3).
- Final investment decision (FID).
- Final Engineering and Design (FEL 4).

•Ongoing stakeholder engagement. – **WE WILL BE HERE FOR THE LIFE OF THE PROJECT**

What are the proposed project timeframes?

Tellus is aiming for a three-year approval timeframe for the Blue Bush Project.

If approved, construction will take between 18-24 months

We are planning for 25 years of operations.

What are the proposed project benefits and jobs?

If approved, the Blue Bush Project could result in significant and long-term positive environmental, social and economic benefits to the Broken Hill region, NSW and Australia.



What are the proposed project benefits and jobs?

Providing an innovative, safe and secure permanent isolation and long-term storage facility for hazardous chemical waste in regional NSW.



What are the proposed project benefits and jobs?

Providing an opportunity to clean up legacy lead issues in Broken Hill.



What are the proposed project benefits and jobs?

Providing opportunities for sustainable, long-term employment and training at a local and regional scale in NSW.

Jobs

About 80-120 full time equivalent (FTE) and 200 – 300 indirect jobs generated during the peak of construction.



What are the proposed project benefits and jobs?

About 50-90 FTE jobs and 100-225 indirect jobs generated during operation.



What are the proposed project benefits and jobs?



Diversifying local and regional economies in the Far West Region of NSW.

What are the proposed project benefits and jobs?

Boosting the economy

Capital expenditure is estimated to be > \$100-150 million.

Operating expenditure is estimated to be tens of millions of dollars per annum over 25 years.

Royalties, taxes and levies.



What are the proposed project benefits and jobs?

Fulfilling the Australian and NSW government's own environmental and waste policy obligations.



What are the proposed project benefits and jobs?

A photograph of two scientists in a laboratory. They are wearing white lab coats and teal gloves. One scientist is holding a round-bottom flask containing a yellow liquid, while the other is holding a pipette. In the foreground, there are two beakers on a white surface; one contains a dark brown liquid and the other contains a bright green liquid. The background shows a fume hood with a glass front and overhead fluorescent lights.

Supporting the circular economy by providing an opportunity for the future potential recovery of valuable materials (that are currently deemed waste).

The project could attract new waste recycling and recovery industries to NSW.

What are the proposed project benefits and jobs?



Community Investment



To see progress at Sandy Ridge, we invite you to see the attached short videos:

Stage 1 Enabling works and 2A Village and east yard temporary storage facility construction

Sandy Ridge Stage 1 & 2A Jobs and Build Update. For more information click here >>>> <https://www.youtube.com/watch?v=PIMh7vl-gx4>

Stage 2B Construction of air dome

Tellus successfully commissions one of the world's largest industrial air dome structure. For more information click here >>>> <https://www.youtube.com/watch?v=gOF3a4XtXu0>



Operational readiness test successful

Tellus Completes Successful Pre-operational Trial Run. For more information click here >>>> https://www.youtube.com/watch?v=An1mpTm_-SM

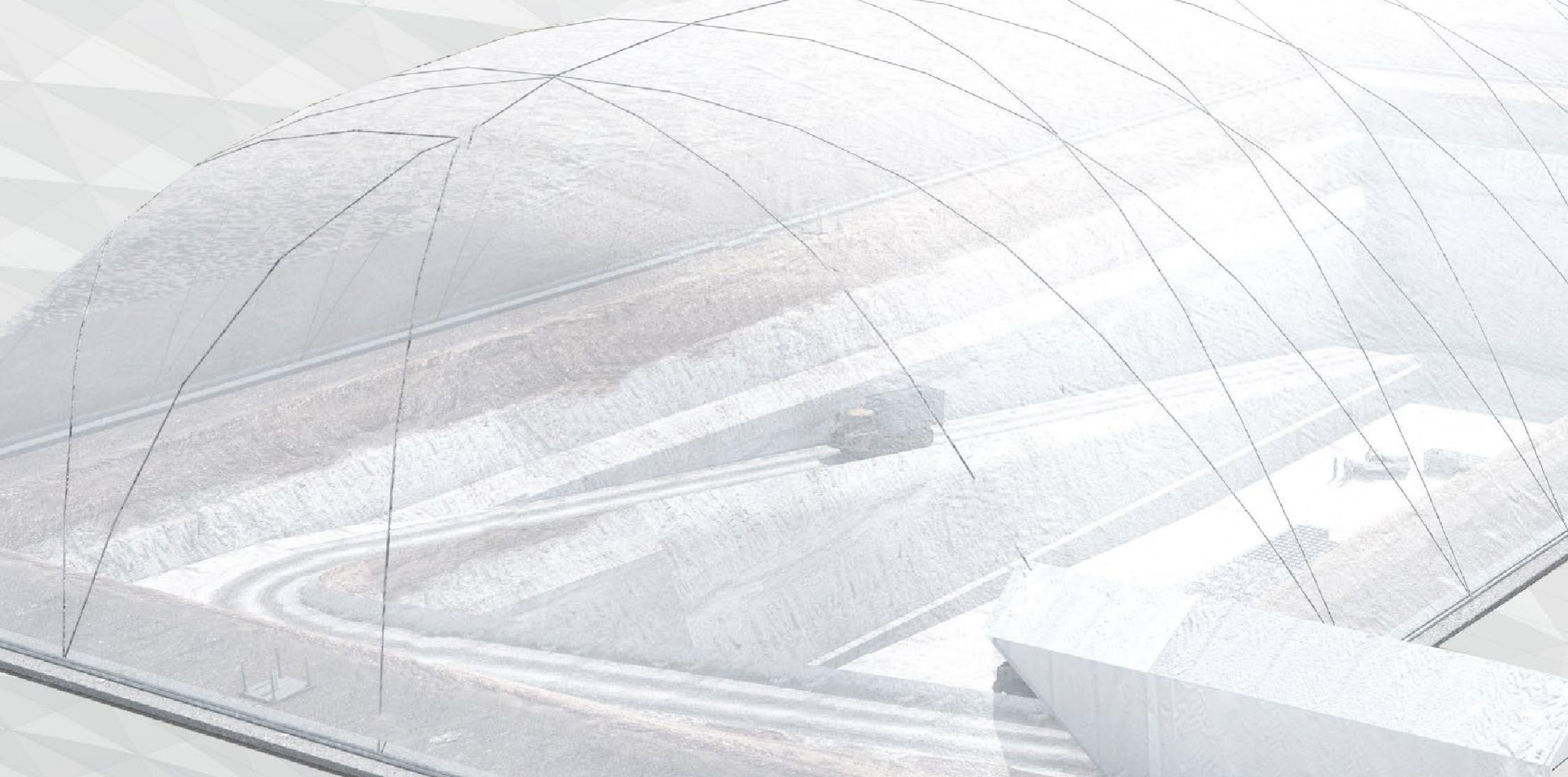
Tellus commences mining

Tellus Commences Mining. For more information click here >>>> <https://youtu.be/3guxvL6zUuA>



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