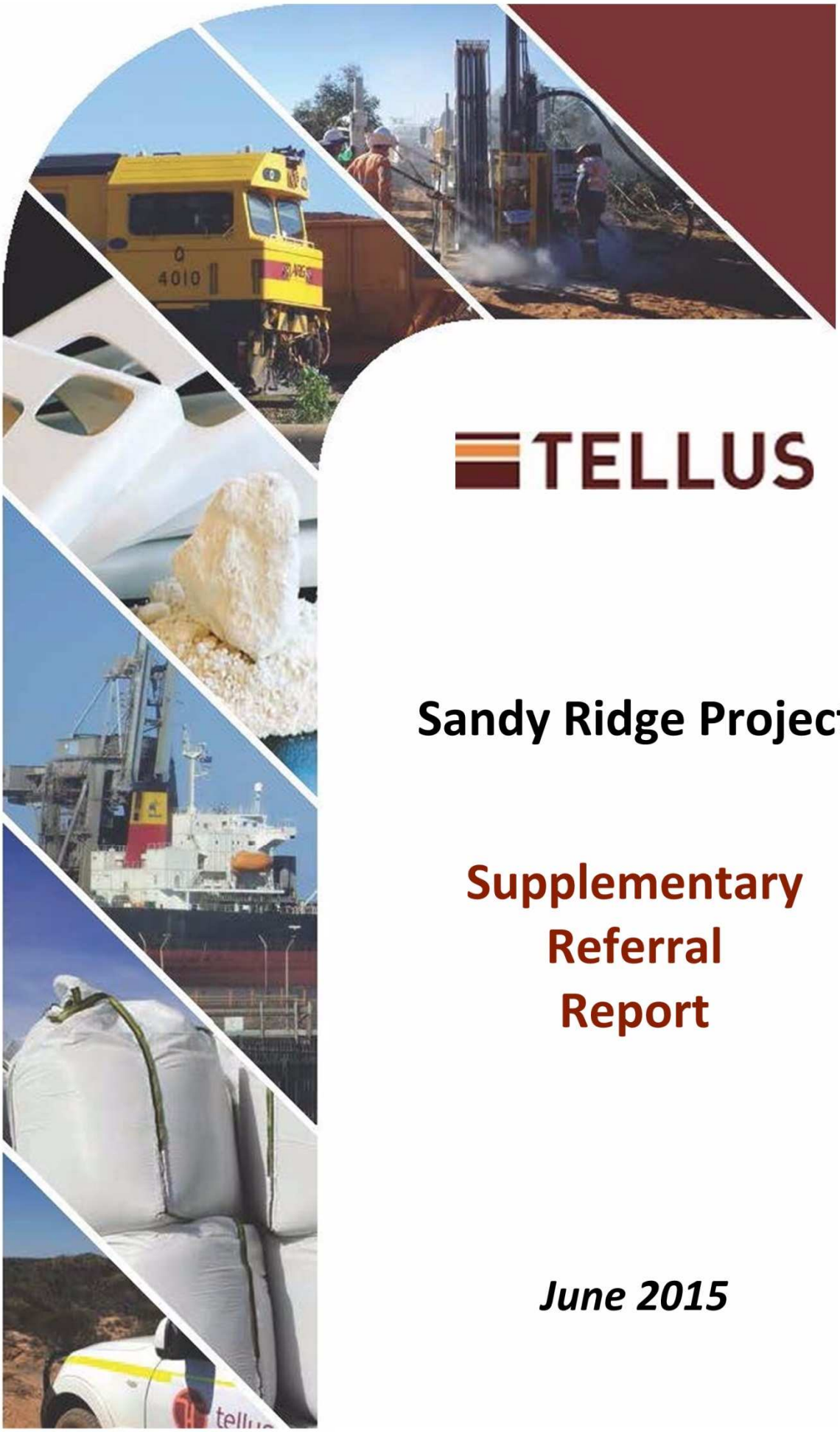

TELLUS

Sandy Ridge Project

Supplementary Referral Report

June 2015

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COMPETENT PERSON STATEMENT – SANDY RIDGE PROJECT

The information in this presentation that relates to Mineral Resources is based on information compiled by Terra Search Pty Ltd. Mr Jenkins is Principal Geologist of Terra Search and a Member of the Australian Institute of Geoscientists. Mr Jenkins has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for the Reporting of Mineral Resources and Ore Reserves. For additional information refer to the Sandy Ridge - JORC media release (20 June 14).

QUALITY ASSURANCE

Tellus has implemented a comprehensive range of quality control measures on all aspects of the company's operation. An internal quality review process has been applied. Each document is carefully reviewed and signed off by senior members of the consultancy team and Tellus.

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LIST OF ABBREVIATIONS

ADG Code	*Australian Code for the Transport of Dangerous Goods by Road and Rail*
Cwlth	Commonwealth
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ha	hectare
JORC	Joint Ore Reserves Committee
NEPM	National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998 (as amended)
Project	Sandy Ridge Project
ROM	Run of mine
tpa	Tonnes per annum

KEY DEFINITION

Kaolin clay	Kaolinite is a clay mineral also known as 'kaolin clay', with the chemical composition $Al_2Si_2O_5(OH)_4$. Kaolin clay is used in the paper, ceramics, fiberglass, paint and other industrial sectors.
Storage and Isolation Safety Case (SISC)	Tellus' Storage and Isolation Safety Case (SISC) considers the safety of: • the *transport* to a geological storage and isolation facility (GSIF) • the *construction and operation* of the facility • the safety of the facility in the very *long term* after it has been sealed and closed. Tellus' safety case uses best practice examples developed around the world for the safe storage and isolation of various types of wastes based on *strict acceptance criteria*, and for the construction in geological settings that are *internationally recognised* as suitable. Tellus' operation and long term safety case is underpinned by utilizing a combination of engineered and natural barriers, known as a *multi-barrier system*, which provides *long term containment and isolation* of the wastes. Tellus plans to store *like with like materials*, so as to create opportunities for the future long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of hazardous waste.

1 INTRODUCTION

1.1 PURPOSE

This supporting information report accompanies the Sandy Ridge Project section 38 referral form submitted to the Environmental Protection Authority (EPA) to determine whether the Proposal should be formally assessed under Part IV of the *Environmental Protection Act 1986*. The document provides a concise summary of the Proposal and potential impacts to the environment.

1.2 PROPONENT - TELLUS HOLDINGS LTD

Tellus Holdings Ltd is an infrastructure project development company with a proposed dual revenue business model. This involves mining the commodities salt and kaolin and backfilling the voids left from mining with equipment, archives or the long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of waste. Tellus' business model mirrors world's best practice solutions operating in the UK, Europe, USA and Canada. Tellus is developing the Chandler salt mine project in the Northern Territory and the Sandy Ridge kaolin mine project in Western Australia. Tellus' flagship Chandler Project was recently awarded Major Project Status by the Northern Territory Government.

Additional information regarding Tellus and the Sandy Ridge Project can be obtained from the website: www.tellusholdings.com.au

1.3 PROPOSAL OVERVIEW

Tellus is planning to develop the Sandy Ridge Project (the Proposal). Main components:

- Australia's first dual revenue kaolin clay and storage infrastructure project.
- Potentially longest life project in Western Australia, that can be operated for generations.
- Located 140 km West North West of Kalgoorlie.
- Kaolin clay mine business (kaolin clay used in ceramics, paint and fibre glass).
- Long term, reliable supplier of value-added, high grade kaolin clay.
- Complementary 'arid, near-surface, geological repository' business could assist in the environmentally superior long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of various Class IV and V wastes.
- Based on scoping study (front end loading - FEL 1) assumptions:
    - 40-90 construction jobs, 18 direct Tellus jobs (excludes O&M contractors), 54 indirect jobs could expand and diversify local job opportunities in Goldfields region
    - $62 million (M) build and $27M annual opex cost could boost and diversify local economy
    - $474 million of potential royalties, taxes and levies over 25 year term could support other parts of the economy.

Exploration drilling on tenement E16/440 has outlined a JORC Inferred Mineral Resource[1] of 41.3 million tonnes kaolinite, with 7.9 million tonnes classified as ceramic grade over 2.1km2 of the exploration lease (E16/440).

Tellus' proposed commodity business involves mining kaolin mostly in an open cut methodology, processing on site and then exporting the kaolin in bulker bags in shipping containers via Fremantle to Asia where it will be used in the ceramics, paint and fibre glass industries.

Tellus' proposed complementary storage business involves storing "like with like" waste generated from the mining, oil and gas, manufacturing and agriculture industries. Tellus believes that intractable waste should be seen as a valuable potential future resource and by storing "like with like", recycle and recovery opportunities can be introduced when the resource recovery technology is available, and the volumes and economics justifies a treatment, recycle or recovery event and in turn improving overall product stewardship. Over the life of project, materials that cannot be treated, recycled or recovered should be permanently isolated in a safe arid near surface geological repository.

This approach is different to the nearby Mount Walton East Intractable Waste Disposal Facility (IWDF) operation as the dual revenue commodity/storage business will create additional regional investment, training and jobs, business opportunities, infrastructure, royalties and taxes for the State and improves overall product stewardship and environmental outcomes.

Tellus' **Storage and Isolation Safety Case** (SISC) considers the safety of:

- the transport to a geological storage and isolation facility (GSIF) .
- the construction and operation of the facility .
- the safety of the facility in the very long term after it has been sealed and closed.

Tellus' safety case uses best practice examples developed around the world for the safe storage and isolation of various types of wastes based on strict acceptance criteria, and for the construction in geological settings that are internationally recognised as suitable.

Tellus' operation and long term safety case is underpinned by utilizing a combination of engineered and natural barriers, known as a multi-barrier system, which provides long term containment and isolation of the wastes. Tellus plans to store like with like materials, so as to create opportunities for the long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of hazardous waste.

Tellus plans to work closely with the regulators to achieve the optimal design and operation of the facility which fully complies with the regulatory framework. At this stage Tellus assumes it will mine kaolin under the *Mining Act 1978* and store waste under the *Environmental Protection Act 1986*. These are two separate businesses run on the same site.

[1] Refer to Tellus Media Release 19 June 2014 Sandy Ridge – JORC Resource Estimation (www.tellusholdings.com.au)

1.3.1 Location

The Proposal is located approximately 75 kilometres (km) north-east of Koolyanobbing, Western Australia (Figure 1). Access is via a 100 km road to the Mount Walton East IWDF (Crown Reserve No. 44102) that extends northward from the Boorabbin Siding on Great Eastern Highway; a 4.5 km portion of an eastward private existing road to Mt Dimer and a 5.3 km northwards section of site access road into the development envelope (Figure 2).

1.3.2 Key Proposal Characteristics

In accordance with *Environmental Assessment Guideline for Defining the Key Characteristics of a Proposal (EAG1)* (EPA, 2012), the key characteristics of the Proposal have been defined in Table A.

TABLE A: KEY PROPOSAL CHARACTERISTICS

SUMMARY OF THE PROPOSAL		
Proposal title	Sandy Ridge Project	
Proponent name	Tellus Holdings Ltd	
Short description	The Proposal is to develop a kaolin open cut and underground mine for kaolin clay sales and using the voids resulting from mining for the secure storage and isolation of hazardous and intractable waste using best practice storage and isolation safety case (SISC). The Proposal is located approximately 75 km north-east of Koolyanobbing, Western Australia (Figure 1).	
PHYSICAL ELEMENTS		
Element	**Location**	**Proposed Extent Authorised**
Open cut kaolin mine pits	Figure 2	Clearing no more than 37.2 hectares (ha) or 4.3% within a 875 ha development envelope
Mine Infrastructure (surface)	Figure 3	Clearing no more than 11.8 ha or 1.4% within a 875 ha development envelope
Accommodation Camp	Figure 2	Clearing no more than 2.5 ha or 0.3% within a 875 ha development envelope
Complementary waste storage and isolation pits (Class IV & V)	Figure 2	Same footprint as open cut kaolin mine above. Using the voids resulting from mining
Class II waste disposal facility	Figure 2	Clearing no more than 0.25 ha or 0.03% within a 875 ha development envelope
Underground kaolin mine / Complementary waste storage and isolation	Figure 2	Clearing no more than 4 ha or 0.5% for overburden pile within an 875 ha development envelope
Total disturbed area		Clearing no more than 100 ha or 11.4% within 875 ha

SUMMARY OF THE PROPOSAL		
		development envelope. For comparison Tellus' 100 ha disturbance area is approximately 16% of the disturbance area of a proposed Hematite project in the vicinity .
OPERATIONAL ELEMENTS		
Element	**Location**	**Proposed Extent Authorised**
Ore Processing	Figure 3	Year 1: 42,000 tpa Average over 25 years 80,000 tpa (Average growth 2%pa +/- 20% annual variation) Maximum by Year 25 **106,000 tpa**
Kaolin saleable product		Year 1: 15,000 tpa Average over 25 years 27,000 tpa (average growth 2%pa +/- 20% annual variation) Maximum by Year 25: **37,000 tpa** Plant will be built to a 40,000 tonne capacity. Scale up depending on demand and project economics.
Arid Near Surface Geological Repository – Class IV and V	Figure 2	Year 1: 50,000 tpa Average over 25 years <66,000 tpa (average growth 2%pa +/- 20% annual variation) Maximum by Year 25: **100,000 tpa** Facility will be built to a 100,000 tonne capacity. Scale up depending on demand and project economics.
Waste Disposal Facility - Class II for waste generated on the site.	Figure 2	Up to 500 tpa

1.3.3 The Resource

Kaolinite is a clay mineral also known as 'kaolin', with the chemical composition $Al_2Si_2O_5(OH)_4$. Kaolin is formed by the chemical weathering and decomposition of rocks in hot, moist conditions. Most of Tellus' Sandy Ridge kaolin clay bed weathering would have finished approximately 20 million years ago and forms part of a stable, flat 40 km by 80 km clay bed.

Exploration drilling has outlined a JORC Inferred Mineral Resource[2] of 41.3 million tonnes kaolinite, with 7.9 million tonnes classified as ceramic grade over 2.1km^2 of the exploration lease (E16/440). A mining lease application is pending. A 41.3 million tonne resource equals a 1,475 year mine life (over 4% of lease area). However for financial purposes the Proposal assumes a mine life of only 25 years.

In the development envelope the average overburden thickness is 9 meters (m), which includes 3 m of kaolinitic material. Beneath the overburden, the kaolin zone likely to be mined is on average 14 m thick (9 to 23m depth). Beneath the kaolin zone is a saprolite zone (kaolinitic, including some incompletely weathered granite). Below the saprolitic zone is thick granite.

[2] Refer to Tellus Media Release 19 June 2014 Sandy Ridge – JORC Resource Estimation (www.tellusholdings.com.au)

The on-going mine-planning activity will ensure a sufficient thickness of kaolinised material below the bottom of the pit (average 23 m deep, 120 m long, 60 m wide) and above the top of the granite.

1.3.4 Kaolin Products

Kaolin is the most important of the industrial clays in terms of both consumption volume and value. Properties of fine particle size, platy structure, inertness, non-toxicity, and high brightness and whiteness make it a most versatile mineral, with applications in a wide variety of industries.

Tellus' proposed commodity kaolin business involves processing the kaolin on site and then exporting the kaolin to Asia (Japan and China) where it can be used in the ceramics, paint and fibre glass industries.

Tellus is looking to be a long term, reliable supplier of value-added, high grade kaolin clay.

It is proposed to mine an average over 25 years of 80,000 tpa Run of Mine (ROM) and post processing to sell an average over 25 years of 27,000 tpa of kaolin. The kaolin processing plant will be built to a 40,000 tonne capacity. There is the potential to scale up depending on market demand and project economics.

1.3.5 Kaolin market and customers

Global uses of kaolin are; paper 35%, ceramics 29%, fiberglass 6%, paints 6% and other 24% and production in 2012 was 25.9 million tonnes with an average growth of 2.4% per annum, the market is expected to grow to 28.7 million tonnes by 2017 and the global industry is valued at $4.4 billion.

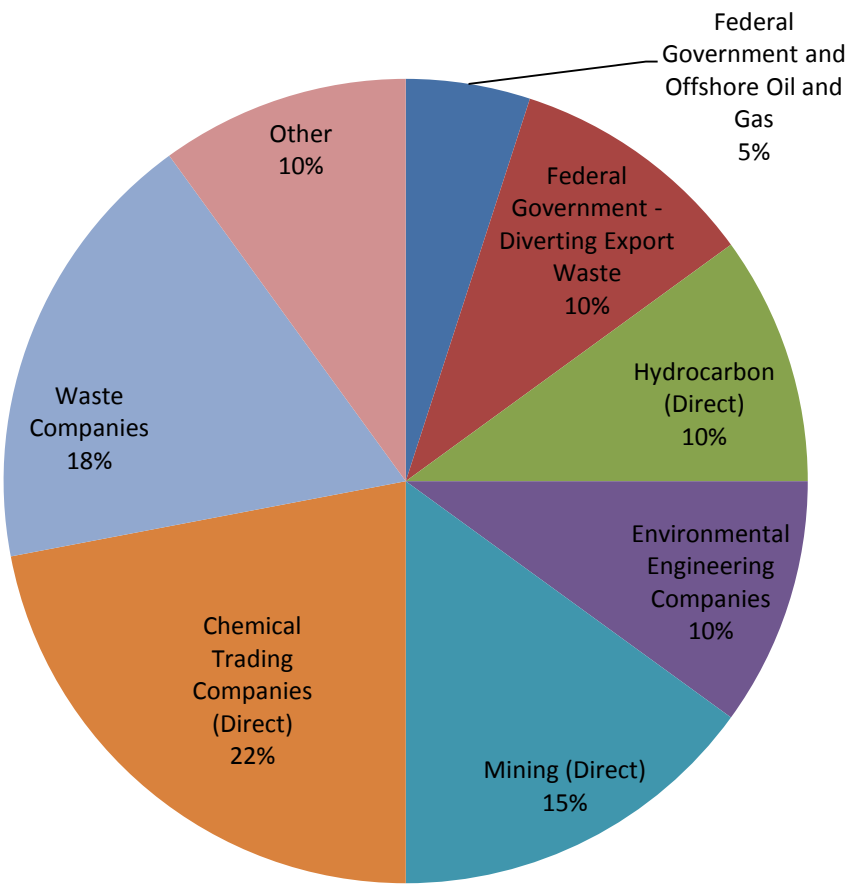
Tellus is planning on exporting approximately 80% of the volume to paper, ceramic, paint and other applications in Asia and approximately 20% domestically.

1.3.6 Storage and isolation market and customers

Australia produces approximately 6.5 million tonnes per annum of reported hazardous waste (KMH Environmental, 2013). Western Australia produces approximately 0.9 million tonnes per annum of reported hazardous waste. The unreported figure is much higher.

Tellus has undertaken market research of the waste industry sector in Australia. This research identified eight waste generating sectors; chemical trading companies, waste companies, mining, hydrocarbons (e.g. oil and gas industry), environmental engineering companies, federal government (in terms of obtaining waste that is usually exported overseas and assisting with disposal of wastes during disaster events (e.g. oil spill) and other wastes. These sectors will provide the wastes likely to be disposed of at the facility and are illustrated in Plate A.

PLATE A: POTENTIAL WASTE CUSTOMERS BY SECTOR



The information presented in this documentation provides notional target tonnages based on Expressions of Interest from prospective clients. More detailed information on waste volumes and types will be presented in the impact assessment documentation.

Plate A shows Tellus' potential waste customers. The highest volumes of waste will be sourced from chemical trading (13,750 tonnes per annum) which represents 22% of the market, waste companies 11,250 tpa (18%), and the mining sector 9,375 tpa (15%). A combined total of approximately 18,750 tpa, or 30%, will be sourced across environmental engineering, hydrocarbon and from the Federal Government. The remaining volume of waste (9,400 tpa) will be sourced from State or Local Governments, heavy industry, and construction companies.

Tellus is not planning accepting nuclear waste (enriched uranium and plutonium), biological waste or any materials that are not safely containerized certified. But, for transparency, Tellus are looking at waste streams like medical isotopes used in medical research and X rays used by dentists and doctors. Therefore, this site will be classified as a contral action site which will require additional oversight from both Commonwealth and State Government regulatory authorities, like the Department of Industry and Science, Environments, ARPANSA and Radiation Health WA.

The type of wastes from a regulatory definition perspective to be stored and isolated at Sandy Ridge include Class V intractable wastes (Prescribed Premises Category 66) and Class IV hazardous wastes (Prescribed Premises Category 65) from a variety of industries.

Guidance in terms of the level of activity acceptable at the site for disposal will be sourced from the following Codes of Practice in consultation with the Radiation Health Branch of Department of Health and the Radiological Council of WA, the bodies responsible for regulating the disposal of radioactive waste in Western Australia:

- Code of Practice for the near-surface disposal of radioactive waste in Australian (NHMRC, 1992)
- Disposal of Radioactive Waste – Specific Safety Requirements No. SSR-5 (IAEA, 2011)

Tellus has met with senior staff at the Radiation Health Branch and informed them about the proposal and they are supportive of the use of the Codes described above in guiding acceptance of radioactive wastes at the site.

1.3.7 Proposal Justification

The viability of the Sandy Ridge Project will rely on implementing both aspects of the dual revenue proposal: The kaolin commodity business; and waste isolation and storage business in an arid near surface geological repository.

Kaolin business

Kaolin is found across Australia, with large deposits in Western Australia, but significant production is now restricted to Victoria. Kaolin customers like Australian kaolin quality but are wary of Australian supply reliability. The Asia/Pacific region continues to have the largest kaolin market influence globally, underpinned by strong manufacturing demand and continued urban development amongst its emerging economies. These trends are expected to continue and consolidate Asia as the fastest growing kaolin demand side region over the next 5 years, hosting the top four growth users, China, India, Malaysia, and Thailand.

Western Australia has a number of world class kaolin deposits but none of these has been able to be developed on a commercial scale because of development and operating cost hurdles. In the case of Sandy Ridge, these economic disincentives are overcome because of the synergies of operating a dual revenue kaolin and waste repository on the same site and collecting two revenue streams.

As a result, for the first time, Western Australia will have a viable kaolin mine, and storage facility which will generate additional regional investment, training and jobs, business opportunities, infrastructure, royalties and taxes for the State and improved overall product stewardship. The kaolin deposit at Sandy Ridge has been determined to be high grade and Australia is well positioned geographically for the distribution of the processed kaolin products to the Asian marketplace.

The dual revenue business model is attractive to investors as it generates a higher margin and is countercyclical and hence produces a more predictable revenue stream. The customers who want to buy the kaolin and customers who want to use the storage space also like the dual revenue business as it gives them confidence that the operations will be reliable, cost effective, and sustainable and that Tellus will be around over the next 25 years.

Storage and isolation business

A number of Tellus' customers have also expressed interest in responsible product stewardship. Kaolin is used as a bulk input in industrial processes, some of which ends up in a waste stream that cannot be landfilled. Tellus can then offer a bulk commodity chemical input and also cost effectively take back the chemical waste product.

Currently Class V waste generated in Western Australia is disposed of at the state-owned and operated Mount Walton East IWDF. Originally approved by the Minister for the Environment in 1992, the operation and acceptance of wastes at the Mount Walton East IWDF has occurred in eight separate disposal events with the last occurring in 2008. It is recognised that the environmental setting, regional geology and hydrogeology of the area around the IWDF make the area world class in terms of a safety case for establishing an arid near surface geological repository for intractable waste.

It has been a recurrent issue for State Government to find a suitable government agency to take responsibility for operation of the IWDF. The IWDF was originally established under the control of the Department of Health but then transferred to the then Department of Environmental Protection when responsibility for waste regulation transferred to that agency. This move made it necessary for the EPA to take up the role of regulator to resolve the conflict of interest of a regulatory agency operating a disposal site. Subsequently a special purpose agency (known as Waste Management WA) was established in legislation to operate the IWDF and the Forrestdale Liquid Waste site. More recently, responsibility for the IWDF has been transferred three more times to the Department of Housing and Works, the Department of Treasury and Finance and the Department of Finance. The regular transfer of responsibility has resulted in a loss of corporate knowledge regarding the site within Government, although some knowledge has been retained due to the fact that the site is largely run by a Facilities Management Contractor and the same contract personnel have been involved in operating the site since 1992.

The IWDF operates as a site of last resort for receiving waste and the onus is on waste holder to demonstrate that they have exhausted all other potential options for handling the waste materials before they can be directed to the IWDF. This coupled with the very high cost structures associated with each disposal campaign and the infrequent basis on which it operates means that the IWDF is a very unattractive disposal option for most waste holders. This is particularly so for those with smaller quantities of waste where the waste holder wishes to achieve disposal in a reasonable timeframe.

The result of the restricted nature of the IWDF is that there is little knowledge of its existence amongst the holders and generators of waste. In addition, hazardous and intractable waste is often stored for long periods in unsafe or non-secure locations. It is also likely that some wastes may be disposed of in an inappropriate or illegal manner. This situation has been further exacerbated by the fact the only Class IV landfill (located at the Redhill Landfill Site) has not been operational on a regular basis for a number of years.

The Sandy Ridge facility will accept similar wastes to those accepted by the IWDF (i.e. significantly contaminated soils and sludges and low level radioactive wastes such as medical isotopes). This Proposal will provide waste producers with a commercially attractive option for storage or isolation of their intractable wastes and will be capable of accepting waste on a continuous basis rather than

campaign basis. This will provide a higher quality service while also relieving the State Government and taxpayers from paying costs to operate the Mount Walton IWDF. The commissioning of the Sandy Ridge Facility will also reduce the environmental risks associated with the long term storage of intractable wastes while waiting for a disposal operation to occur at the IWDF.

The Proposal will provide a direct economic benefit to the Goldfields region in terms of employment and the generation of additional economic activity at a time where the mining industry is at low ebb. Additionally there will be benefit in working with the indigenous community to provide opportunities for training and employment. This is only possible because of the dual nature of the Proposal which makes it more robust commercially.

When operating, the facility will also provide a reliable long term utility service to other industries that due to their business also produce waste materials within Australia. The facility could also attract new kaolin and waste recycle and recovery industries to Western Australia, plus support industrial development in Western Australia bringing attendant economic benefits. Export of kaolin will also bring royalties to the State and a waste levy will bring additional revenue. Another element of the project is a proposed hybrid 1.2 MW LNG/ solar energy plant that will be used to power the onsite infrastructure.

In summary the benefits of the Proposal to Western Australia are the; direct creation of jobs during the construction and operation phases and indirect contribution to job creation and economic stimulation of the local Goldfields community, generation of revenue to the State through royalties and taxes and removal of environmental hazards by providing a cost effective option for the safe storage and safe isolation of hazardous and intractable waste which is often stored for long periods in unsafe or non-secure locations.

2 PROPOSAL DESCRIPTION

2.1 MINING

2.1.1 Mining Operations - Kaolin

The kaolin deposit is very large (JORC Inferred Mineral Resource of 41.3 million tonnes) and is of sufficient size and grade to support mining for more than 25 years at an average production rate of 27,000 saleable tpa or at a much higher rate if demand and project economics justifies this. In fact 41.3 Mt would support a mine life for 1,475 years.

The principal mining method will be open cut to extract overburden (topsoil, silcrete and laterite) and kaolin ore. The surface area of each kaolin pit will be cleared and opened by a mixture of excavation of the topsoil and subsurface soil with carefully controlled blasting of the hard silcrete layer that overlays the kaolin. The kaolin will then be recovered by conventional earthmoving equipment in a moving strip operation. Based on exploratory drilling work the kaolin ore is expected to be dry at approximately 10% moisture, and is expected to be free-digging with an excavator. The mobile plant fleet is likely to be limited to an excavator (25 to 35 tonne), dump trucks and a front end loader which will operate within the pit, loading excavated overburden and ore into dump trucks. The dump trucks will deposit the kaolin in stockpiles adjacent to the process plant. Overburden will be stockpiled adjacent to the pit for use later in backfilling operations (Figure 3).

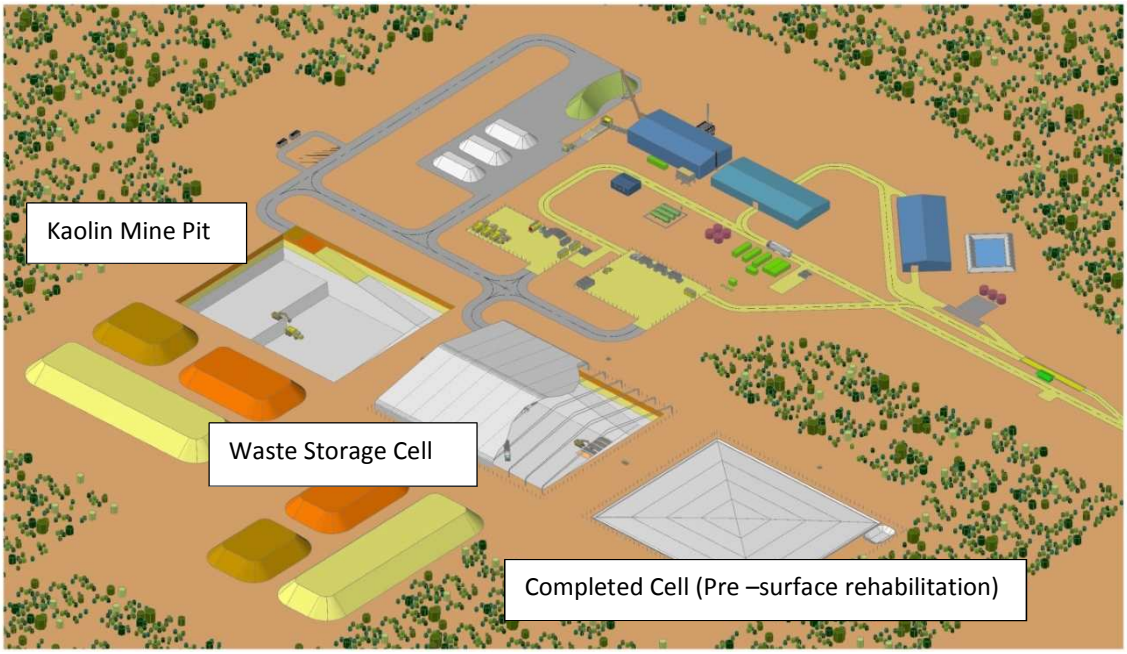
2.1.2 Mining Operations - Storage

Normal practice under the Mining Act in similar strip-mining operations is to backfill with plant tailings, overburden, and topsoil as the mining progresses forward. However Tellus under the Environmental Act propose to backfill voids created due to mining. At this point Tellus terminology changes and the pit gets referenced as a cell as additional engineering gets applied. Using a controlled sequential placement of wastes, and storing like with like, overburden and kaolin plant tailings (i.e. quartz sand) and unprocessed kaolin are placed in the cell and on the top to produce an impermeable capping layer.

Once the wastes are placed within the void, it will be described an ‘arid near surface geological repository’ (refer to section 2.2 for more details) using best practice storage and isolation safety case (SISC).

Each cell will be approximately 120m in length, 60m wide, and have a maximum depth of around 30m and will occupy approximately 7,200m^2. The waste storage and isolation cell will be temporarily covered by a light–weight fabric covered steel structure to prevent rainfall ingress during emplacement operations (Plate B).

PLATE B: GRAPHIC REPRESENTATION OF CELLS



The scale of the kaolin mining and waste storage requirements are aligned to a degree to get the optimal economics. It is anticipated that with the volume of kaolin removed and the volume of waste stored, there may be a slight deficit in volume for backfilling of cells at the completion of mining. Hence it is anticipated that no permanent above-ground waste dumps or stockpiles will be required.

2.1.3 Kaolin Processing

The basis of design assumes that the kaolin processing plant would be constructed to allow a production of approximately 40,000 saleable tpa. However initially only 15,000 tpa will be produced with production scaling up in response to market demand and economics. Two processing techniques are currently being evaluated (dry and wet processing). The final process technique to be adopted will be determined in the detailed feasibility stage. Conceptual process flow diagrams are provided in Appendix 1 and described below.

Ore will be recovered from the run of mine (ROM) pad and placed in the ROM feed bin by front end loader. Ore will be expelled onto a conveyor and dropped into a sizer. In the dry process, the ore will then be transported to a rotary kiln and dried, with dust extracted by ventilation fans and directed to a dust collection system with the cleaned air stream ultimately discharged through a stack to the atmosphere. Once dry, ore from the rotary kiln will move to a hammer mill to break down lumps. From there it will progress to the air classifier (a powered cyclone) where the tailings stream (i.e. quartz sand) will be separated from the kaolin and stockpiled. Kaolin will be conveyed pneumatically to the bagging area, where dust will be collected in a bag filter prior to discharge of the cleaned air through a stack to the atmosphere. Kaolin will drop onto a conveyor where it will be loaded via bucket elevator into the bagging silo, and ultimately deposited into bulk bags ready for export.

In the wet process, ore from the sizer is mixed with water in a drum scrubber before being screened to remove coarse oversize which is conveyed to an oversize stockpile. Following the drum scrubber ore moves to the primary screen which rejects >300µm quartz which is conveyed to the coarse oversize stockpile. The fine slurry is then pumped to the primary cyclone, secondary cyclone and to the filter press, which dewaters the refined kaolin slurry to produce a damp filter cake. Filter cake is then fed to the pug mill, which breaks the damp kaolin into pieces small enough to dry easily. The kaolin is then transported to a gas fired band dryer to remove moisture before being conveyed to the bagging silo and deposited into bulk bags for export.

2.2 WASTE MANAGEMENT AND THE SAFETY CASE

2.2.1 Inventory of Materials to be Stored and Isolated

Waste generated interstate (all states and territories) and within coastal waters (within 3 nautical miles of the territorial sea baseline) and within Commonwealth waters will be accepted at the facility.

The type of industrial materials to be stored or permanently isolated are intractable and hazardous materials from blue chip companies from the mining, oil & gas, heavy industry, agricultural and government (emergency service) sectors.

Intractable wastes are those problematic by virtue of their toxicity or chemical or physical characteristics which make them difficult to dispose of or treat safely and are not suitable for Class I to IV landfills (DEC, 1996 as amended 2009). Hazardous wastes are those components of the waste stream which by its characteristics pose a threat or risk to public health, safety or the environment (includes substances which are toxic, infectious, mutagenic, carcinogenic, teratogenic, explosive, flammable, corrosive, oxidising and radioactive) (DEC, 1996 as amended 2009). Examples of wastes to be accepted at Sandy Ridge include:

- Mining - Industrial sludges. For example arsenic and cyanide from the gold industry (these will be blended with absorbent materials on-site before storage);
- Oil & gas – For example hydrocarbons in contaminated soil or from processing from upstream, midstream and downstream. Note some waste from the oil and gas industry contains naturally occurring radioactive materials (NORMS)
- Heavy industry - For example spent catalyst wastes (Aluminum slag)
- Agricultural – For example pesticides
- Government (state emergency service) – For example waste generated due to man-made or natural disasters that need to be removed safely by Government out of the community. For example - asbestos clean ups
- Medical isotopes - For example used in medical research and X rays used by dentists/doctors.

Due to the medical isotopes, this site will be classified as a controlled action site which will require additional oversight from both Commonwealth and State Government regulatory authorities, like the Department of Industry and Science, Environments, ARPANSA and Radiation Health WA.

The types of waste that will **NOT** be accepted for long-term storage and isolation are:

- Infectious materials[3] — Infectious waste means waste capable of producing an infectious disease because it contains pathogens of sufficient virulence and quantity so that exposure to the waste by a susceptible human host could result in an infectious disease. These wastes include isolation wastes, cultures and stocks of etiologic agents, blood and blood products, pathological wastes, other contaminated wastes from surgery and autopsy, contaminated laboratory wastes, sharps, dialysis unit wastes and discarded biological materials known or suspected to be infectious.
- Explosive materials — dangerous goods of Class 1 (of ADG Code).
- Nuclear material — Depleted uranium, enriched uranium (including low and high), uranium 233 and plutonium.
- Uncertified waste — Waste arriving at site where the contents is unknown and where it does not pass Tellus' strict certification criteria.
- Putrescible waste — Material suitable for disposal at a Class I, Class II or Class III landfill.

2.2.2 Isolation and Storage Approach

The design and management philosophy for the Sandy Ridge arid near surface geological repository is based on the use of multiple engineered and geological barriers, underpinned by internationally recognised operational procedures to provide the highest level of security and containment for wastes during the transport, handling, and storage and following final placement in the isolation cells at the facility. These processes and controls contribute to the overarching goal of permanently isolating the waste in the facility from the biosphere. The key features contributing to the safety case are:

Waste content — at all times in the waste handling process (transport, storage and isolation) Tellus will ensure 'like with like' wastes are handled and stored together, so as to create opportunities for the future long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of hazardous waste.

Waste form — where required, waste will be pre-treated by solidification or immobilisation to reduce solubility of the contaminants.

Waste packaging — multiple packaging layers will be utilised during transport storage and isolation. Typically a minimum of two containment layers and often three e.g. plastic lined steel drums enclosed within a shipping container during transport would be used.

Backfill — careful selection of material and backfilling of the mine void (including around the placed waste) to ensure geotechnical stability and minimise the risk of slumping failures in the capping system and provide an additional barrier between the waste and the biosphere.

Sealing — the cell will be sealed with compacted kaolin clay keyed into the surrounding soils and silcrete layer under strict engineering supervision to produce an engineered barrier.

[3] As defined by US EPA (no date) - http://www.epa.gov/waste/nonhaz/industrial/medical/mwpdfs/missouri.pdf

Host rock/Geological Setting — The Sandy Ridge site has been selected because it is a seismically stable site, with an arid climate where evaporation far exceeds rainfall with no surface watercourses or surface water bodies in the near vicinity, no detectable groundwater, and is underlain by impermeable hard rock beneath a thick layer of highly impermeable clay (further details on site suitability is provided in Section 3). This means that there are no identifiable pathways for migration of waste into the surrounding biosphere.

Best Practice Management — Tellus maintains a commitment to internationally recognized best practice management throughout the life of the facility and during any institutional control period.

2.2.3 The Safety Case Approach

Tellus' *Storage and Isolation Safety Case* (SISC) considers the safety of:

- the *transport* to a geological storage and isolation facility (GSIF)
- the *construction and operation* of the facility
- the safety of the facility in the very *long term* after it has been sealed and closed

Tellus' safety case uses best practice examples developed around the world for the safe storage and isolation of various types of wastes based on *strict acceptance criteria*, and for the construction in geological settings that are *internationally recognised* as suitable.

Tellus' operation and long term safety case is underpinned by utilizing a combination of engineered and natural barriers, known as a *multi-barrier system*, which provides *long term containment and isolation* of the wastes. Tellus plans to store *like with like materials*, so as to create opportunities for the future long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of hazardous waste.

2.2.4 Transport Operations

Tellus' preferred method of transport is by rail which will be expressed clearly to the waste owner. Tellus' standards will be met prior to acceptance of waste at the facility. These standards include:

- Packaging of waste for transport to the site must be in accordance with the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (ADG Code; Commonwealth of Australia, 2014, edition 7.3) for all dangerous goods, with the exception of radioactive material.
- Medical isotopes must be transported in accordance with the *Code for the Safe Transport of Radioactive Material* (ARPANSA, 2014).
- Transport arrangements will conform to the *Environmental Protection (Controlled Waste) Regulations 2004* and equivalent legislation in other States and Territories and the *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998* (as amended).
- All deliveries will be tracked from point of origin to site.

2.2.5 Strict Waste Acceptance Criteria

The framework for strict waste acceptance criteria at the facility will include:

- Compliance with all Regulatory requirements and Tellus' strict waste management acceptance criteria and procedures.
- Waste will only be accepted with prior written agreement (Waste Acceptance Certificate) will be issued to the waste owner of the facility operator to ensure that only suitable materials arrive at the site.
- All waste deliveries to be accompanied by Consignment Note or National Environmental Protection Measure (NEPM) documentation which will be reviewed on site arrival.
- All waste loads will be inspected on arrival at site to confirm waste is as described in the documentation and packaging is intact. Where loads do not match documentation or are not suitable for acceptance at the site the load will be returned immediately to the owner at their cost or stored on-site pending return to owner; or treatment to render suitable for isolation/storage.
- Where waste is held in an interim store, or the waste has a possible treatment, recycle or recovery opportunity then this storage will meet all legislative requirements (e.g. Dangerous Goods License) and the ADG Code and a Storage Certificate will be issued.
- If there is no economically viable recycle or recovery opportunity, waste will still be stored like with like as a future generation with new technology may still find a way to recover and treat valuable materials and the waste will be permanently isolated and a Permanent Isolation Certificate will be issued.

Given the unique nature of the environment and remote location of the Sandy Ridge Project, the waste acceptance criteria has been designed based on the premise that all controlled waste, regardless of concentration will be accepted at the site. The waste acceptance criteria limits those wastes described as not accepted in Section 2.2.1 (e.g. infectious materials, explosive materials, flammable materials, corrosive materials and gases) as these wastes may generate void spaces within the disposal cell and therefore compromise the integrity of the geological repository.

To clarify the waste acceptance criteria is:

- All controlled waste, defined by the NEPM and the *Environmental Protection (Controlled Waste) Regulations 2004* (WA), regardless of concentration limit will be accepted at the facility.
- Those wastes that are not suitable for disposal in the geological repository will either be treated and conditioned to solidify them suitable for disposal, or will not be accepted at all. These include the following categories from the *Environmental Protection (Controlled Waste) Regulations 2004* (WA):
    - E – Reactive Chemicals
    - K – Putrescible and Organic Wastes

  - R – Clinical and Pharmaceutical (specifically R100 Clinical and related wastes)
- Solid and Liquid Waste will be accepted at the facility, however liquid waste will be solidified prior to disposal in the geological repository.
- Wastes with the following characteristics will not be accepted at the facility; explosive, flammable or corrosive.
- Only low-level radioactive waste suitable for near-surface disposal as outlined in the Code of Practice for the near-surface disposal of radioactive waste in Australia (NHMRC, 1992) will be accepted.

The key components of our Safety Case are the engineered and environmental barriers. Materials / wastes are ultimately sealed from the surrounding environment with three barriers in place, as described below:

Engineered Barrier 1: Storage Containers

- Man-made engineered barrier systems with strict storage and/or disposal acceptance criteria, sealed containers with a minimum of 2 skins during transport and management systems.

Engineered Barrier 2: Sealed trench

- Man-made engineered barrier systems backfilled trench within clay bed

Environmental Barrier 3: Clay

- Natural clay geological barrier system that entombs waste for millions of years.

PLATE C: TELLUS STORAGE PRODUCTS

Best practice systems	Industry Waste Sources	Waste Acceptance Criteria
✓ **Certified Management System**	✓ Oil & gas (includes NORM's)	✓ Liquid waste in barrels, lined and bunded
✓ **Strict acceptance criteria**	✓ Mining	✓ Dry waste multiple lined and bagged
✓ **Packaging and transport criteria**	✓ Heavy Industry / Power Generation	✗ Nuclear waste (Medical, Defence, Energy)
✓ **Safety case engineering**	✓ Manufacturing	✓ Uranium mining waste
✓ **Safety case geology**	✓ Agricultural	✗ Infectious (medical) waste
✓ **Safety case**	✓ Government / SES	✗ Uncertified waste

Ongoing surface monitoring will be conducted to identify any signs of surface subsidence. The adjacent IWDF has such a system in place and has not detected subsidence within the monitoring period.

Groundwater monitoring bores will be installed as part of ongoing environmental monitoring system. This system is also in place at the IWDF and no groundwater has been recorded since installation (Aurora, 2013).

PLATE D: MAIN STEPS IN STORAGE PROCESS

Steps involved	Description (8 step process)
1. Client site	• The generator / owner of the waste must obtain the facility's approval before transporting the waste to the facility by sending a description and analysis of the composition and packaging of the waste to the regulation authorities. • After a first check at the disposal site to ensure the waste meets the agreed acceptance criteria, the documents may be referred to relevant State/ Territory authorities for transport approval.
2. Transport to site	• Wastes will be transported by the producer or waste management company to the Sandy Ridge facility, by rail and/or road. The carriages or vehicles & containers are initially inspected at the entrance gate and weighbridge. Here the documentation and packaging is assessed for conformance to site requirements and the load is weighed on the weighbridge a check for radioactivity levels is also implemented.
3. Receiving, weighing and unloading	• Vehicles are then directed to a bunded and semi-enclosed intermodal facility for unloading. • The waste is only unloaded if it is identified as indicated in the waste documents and fulfils specific waste acceptance criteria. Otherwise, the disposal of the waste is rejected (Rejected loads may be directed to a dedicated hazardous goods rated warehouse while the most appropriate action is assessed or it is returned to the producer at their cost). After acceptance, control and determination of the conformity, the waste is cleared for storage. It is then unloaded from the delivery vehicle by, for example, forklifts, and is placed on dedicated internal transport vehicles for placement either directly in underground storage chambers or an appropriate storage facility.
4. Control	• At the receival facility the waste documents are assessed in detail and the number and type of package is confirmed to comply with the documentation; • Each container is assessed for damage or leaks and if necessary damaged containers are placed in oversize containers and directed for repackaging in specialised controlled facilities incorporating leak containment and scrubbing on ventilation systems • Samples of the waste are taken randomly from each waste load and analysed on site at NATA a credited laboratory (degassing, visual inspection, chemical composition).
5. Downloading	• Site transport vehicles are designed to be used in surface warehouses to minimise the need for loading and unloading pallets.
6. Storage and documentation	• Waste being directed to its pit location is then stacked in its designated and recorded storage site.
7. Recovery	• Retrievable material will be placed in specified locations to facilitate recovery when appropriate.
8. Disposal and documentation	• For disposal, the trench or pits are backfilled with clay

2.2.6 Waste Emplacement (5 Layer System)

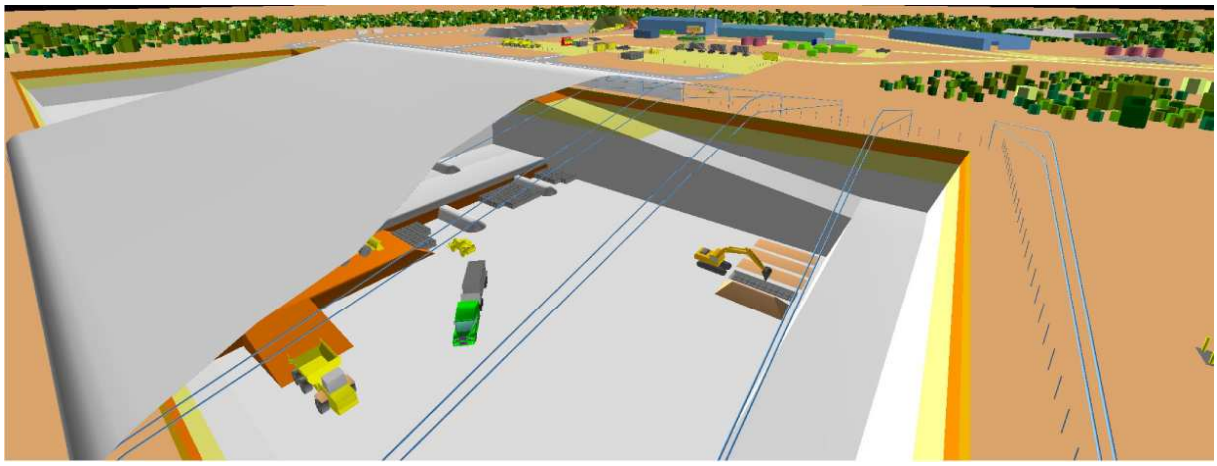
As outlined above, two to three multiple barriers of protection (layers) will be implemented during transport of intractable wastes:

1. Packaging of the material in standard transport units:
    a. Double lined hazardous waste rated 1 tonne bulka-bag (layer 1 and 2).
    b. Heavy duty PVC bag (layer 1) placed into 205 litre steel drum (layer 2).
    c. Small steel containers – 1, 3 or 5 tonne (layer 1).
    d. Bulka-bags and drums will be placed on pallets, on a solid board (to prevent nails passing through pallet during transport), strapped with heavy duty fibre and cling wrapped. Where required, bunding will be placed under containers.
2. Smaller containers (bulka-bags and drums on pallets and smaller steel containers) to be placed in 20' or 40' steel shipping containers (layer 3).

The standard transport units will be transported via rail and/or road to the mine's surface waste transfer station. The contents will be weighed and audited to ensure no leakage or rupture of packaged materials and the material that arrives on site matches the accompanying waste documentation.

Once the initial assessment has been completed and the materials verified as meeting the facility waste certification criteria, the shipping container will be unpacked. Wastes will be either be directed to a temporary storage enclosure or to the appropriate storage/isolation area within the Class IV or Class V waste storage and isolation cell (Plate E).

PLATE E: GRAPHIC REPRESENTATION OF WASTE STORAGE AND ISOLATION CELL



The location and method of isolation within the cell will vary with the tonnage and type of waste, but wastes of similar characteristics will always be stored with one another, i.e. on a "like for like basis". The empty shipping containers and pallets will be cleaned and sent back into the supply chain.

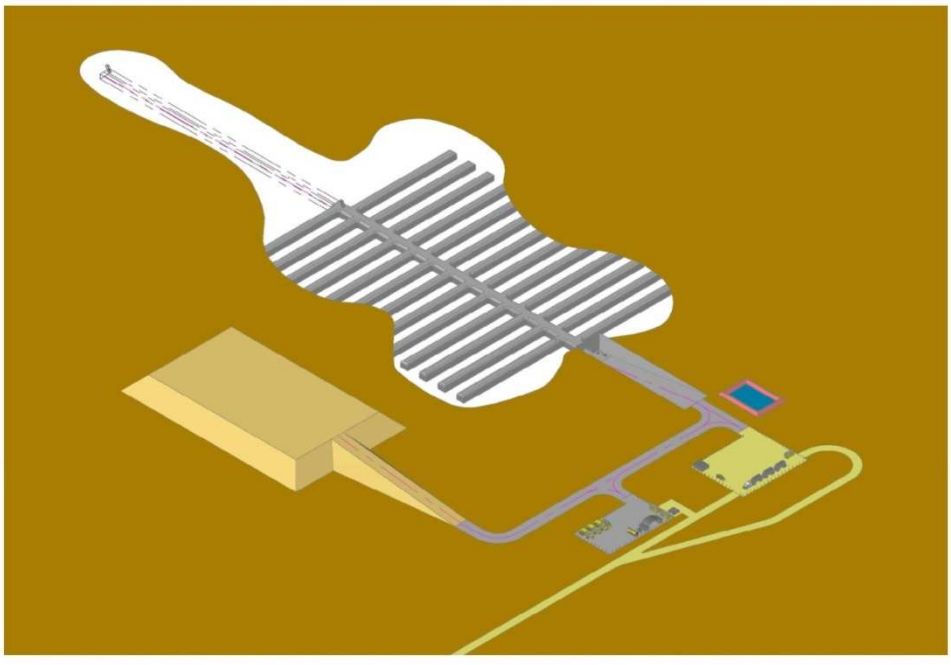
After the placement of waste in the cell has been completed, the following protection measures will be implemented:

- An all-weather cover will be maintained over the cell until it is backfilled and capped to allow for all weather operations without the possibility of creating leachates or contaminated surface water.
- Any airspace surrounding the placed waste will be backfilled with kaolin processing plant waste product (low value kaolin and quartz sand) to fill all void space and provide stability.
- The isolation area/trench will then be backfilled with compacted clay, silcrete, laterite and surface sand (layer 4).
- The surface of the cell will be covered with compacted clay creating a domed engineered cap to shed any surface water (layer 5).
- Waste will be completely isolated by the combination of the engineered and natural geological barriers formed either for permanent storage or future recovery.

Waste will be temporarily isolated in the safety of the natural barriers formed by the extensive geological repository until feasible resource recovery technology is available, or waste will be permanently isolated.

Materials like medical isotopes used by medical researchers or X rays used by doctors and dentists will be stored in a separate area to the other hazardous and intractable wastes as shown on Figure 2. Current planning is being undertaken on a best practice design for storage of this material which may include underground storage as depicted in Plate F. The design involves a 415m main drive, with a herringbone design with a number of drifts off to the side. Each drift is 80m long, 5m high with 10m support pillars and can take approximately 2,600 tonnes of materials.

PLATE F: GRAPHIC REPRESENTATION OF UNDERGROUND STORAGE



2.2.7 Closure and Rehabilitation

After a period of monitoring to confirm the stability and integrity of the clay cap capping, topsoil will be placed over the cap and the area re-vegetated with species of local provenance. Surface monitoring of rehabilitated cells will be conducted to identify any signs of surface subsidence. For comparison the Mount Walton East IWDF has had a 22 year subsidence monitoring program. The first pit packed and covered 22 years ago has reported a small subsidence (<50cm) which was subsequently rectified. Subsequent pits employed stricter methodologies for placement of waste and backfilling and no subsidence has been reported in subsequent disposal programs.

Tellus will monitor and manage the site for an extended period following closure before returning ownership to State, a period termed institutional control, with the necessary financial resources to ensure that the community of WA will not need to fund post-closure management of the site. Tellus will discuss and agree the post-closure monitoring and management period and the extent of financial provisions with the State Government before commencing operation of the facility.

2.2.8 Institutional Control Period

The institutional control period at Sandy Ridge will need to be negotiated between the parties and will be based on what is stored:

- For Class I-IV landfill institutional control periods of between 0-30 years is common depending on if the facility is already closed (old licence on legacy site), operational (licence issued within the last 30 years) or is a new facility (licence issued within the last 5 years).
- For Class V facilities that handle low level radioactive material there is a material difference between a surface landfill with a temporary liner, arid near surface geological repository and deep geological repositories where the geological repositories' have multiple barriers built into the safety case and a geological barrier/ linear that permanently isolates the waste from the biosphere.
- The key issue is the half-life of the low level radioactive material stored. For example the half-life of the following that Tellus is planning to store or permanently isolate will vary a lot but is a lot shorter than nuclear waste: smoke detectors, medical isotopes, naturally occurring radioactive material (NORM's) found in oil and gas sector and potassium rich agricultural fertiliser.
- Tellus is not planning on storing nuclear waste (Depleted uranium, enriched uranium (including low and high), uranium 233 and plutonium, which have a much longer half-life. It is common for facilities that store intermediate and high level nuclear waste to have an institutional tail for 100 years or more.

The appropriate institutional control period for the Sandy Ridge Project will be agreed to between Tellus and the regulator, Radiological Council of Western Australia. The institutional control period will take into account the nature of the radionuclides, their total activity and activity concentration of the waste proposed to be disposal of at the facility.

Typically waste disposal sites are subject to a non-statutory post-closure management period to ensure that these sites are left in in a stable non-polluting state. For a conventional landfill accepting putrescible wastes the post-closure management period is typically 20-25 years because the wastes being accepted at such sites are actively decomposing, producing leachates and landfill gas. These emissions must be managed for an extended period following the final acceptance of waste at the site. These biological processes produce liquids and gases that must be treated and result in a significant reduction in waste volume that may affect capping integrity.

In the case of the Sandy Ridge facility, waste placed in the long term near-surface repository will be strictly vetted to ensure they are not biodegradable or chemically active. In addition, the management practices ensure that the disposal cell is backfilled with compacted kaolin and sand to prevent subsidence of compaction on closure. Tellus propose that a post-closure management plan over an agreed period of time is provided to ensure the integrity of the disposal cell caps and demonstrate that all waste is securely contained before responsibility for the site is transferred to the State Government.

Extended institutional control periods are likely to apply when radioactive wastes are disposed of in a geological repository. The institutional control period is imposed because radioactive materials continue to emit radiation as they decay within the disposal cell and in some cases produce radioactive gases such as radon. The level of activity reduces over time as the wastes decay and the institutional control period is imposed as a statutory requirement to ensure management control is maintained over access to the site whilst decay is occurring. Radiation monitoring is undertaken during the institutional control period until such time as activity levels have reduced to background levels. Conclusion of monitoring signifies that the likelihood of human health impacts associated with radioactivity at the surface of the site is very low.

Advice from radiation expects will be sought and agreement reached with the Radiological Council of Western Australia with regard to the institutional control period for the Sandy Ridge Project during the preparation of environment impact assessment document.

The Code of Practice for the near-surface disposal of radioactive waste in Australia (NHMRC, 1992) which is the applicable Code in Western Australia at present indicates that Institutional Control periods are a minimum of 100 years according to the usage of the facility. Other near-surface disposal sites around the world have institutional control periods ranging between 100 and 300 years (NEA, 1999). A summary of Institutional Control Periods applied to similar facilities overseas is provided in Appendix 4.

2.3 UTILITIES

The Proposal will require the following inputs:

- **Power** – The assumed electrical power requirement is 1.2 megawatts supplied by diesel and solar powered generators (see power station location on Figure 3).
- **Mine Water** –
    - **Dry process -** Approximately 55 mega liters per annum (ML pa) or 0.15 ML / day (ML pd) to be abstracted from groundwater sources in the region (location to be determined pending

further investigation) if a dry process is used to refine the kaolin. Water will be used for dust control in the mining operations (water cart), for compaction of clay during backfilling, and for ablutions

- If a **wet process** is implemented at the plant, this will require an additional 0.3 ML pd or 117 ML pa
- For comparison under the wet process Tellus' combined 0.45 ML pd or 172 ML pa is approximately 13% of the volume of a proposed hematite project in the area. This is also approximately 25% of the volume of evaporated water from an iron ore mine's evaporation ponds in the area.

- **Potable Water** – Potable water will be supplied through a reverse osmosis system (Novatron® unit or similar) at both the accommodation camp and at the mine.

2.4 INFRASTRUCTURE

2.4.1 Fixed Infrastructure

Support infrastructure to the mine and waste facility operation is shown on Figures 2 and 3 and will include:

- Accommodation Camp to be located approximately 1.6 km south east of the infrastructure area, with a capacity to house up to 40 people (Figure 2).
- Contractor laydown yard including repair and maintenance facilities for earthmoving and plant equipment.
- Waste Transfer Area consisting of hard stand areas that will be used to receive and handle packages containing materials/goods for storage and a dedicated intermodal facility designed for unloading all types of vehicles and wastes in a secure environment. It is expected that this facility will be bunded to contain spillages with its own dedicated drainage system.
- Sewage Plants, a BioMAX® system or equivalent, will be installed at both the accommodation camp and at the mine.
- Administration building (offices, first aid, training centre, communications, lunch room, ablutions).
- Water tanks including potable water and firefighting water.
- Fuel storage area.
- Power station.
- Kaolin processing plant and associated conveyors and dust extraction system.
- NATA accredited laboratory facilities for storing and analysing waste samples (This will require as a minimum the following equipment: sample conditioning, preparation and storage, ICP, GC-MS, 4 decimal place balances, fume hoods and waste water treatment systems).
- Finished product (kaolin) storage.

- Dangerous Goods Storage Building, for temporary storage of wastes and including a dedicated and secure facility for repackaging material delivered in damaged packaging.
- Turkey's nest for water storage.
- Vehicle wash-down facility and wash down tanks.
- Secure site fencing and gatehouse incorporating a computerised weighbridge.
- Portable skid mounted cell cover/awning for protection from inclement weather.
- Explosives magazine.
- Putrescible landfill (Class II) for disposal of camp and office waste. The facility will comprise a series of single trenches (opened as required) that are 60m long, 3m wide and 3m deep.
- Decontamination units consisting of a demountable building fitted out with decontamination equipment.

2.4.2 Mobile Equipment

Mobile equipment for the kaolin processing operations (excluding the mining fleet) will consist of:

- Forklifts used for handling of bulk-bagged kaolin from the plant into the storage shed, and loading of trucks with bagged product.
- A tele-handler for maintenance work (and back-up truck-loading should a forklift be out-of-service).
- A separate tele-handler dedicated to waste unloading and placement.
- Light four wheel drive utility vehicles for personnel access around the site.
- Two small buses for transport of shift operators to and from the camp (approximately 1.6 km away).

2.5 SUPPLY CHAIN

Road access to the site is required for delivery of all consumables (fuel, product packaging), incoming waste for storage, and export of kaolin products. The site access road will need to be suitable for all weather access for a haulage truck to be used all year round. It is proposed that the site will be accessed by Mount Walton East Road, a 100 km long gravel road from the Great Eastern highway north to the Mount Walton East IWDF. An access agreement with the Department of Finance (Building, Management and Works) is required for use of this road. From the Mount Walton East Road transport will be west along 4 km of Mt Dimer Road, a private road within Miscellaneous Licence L77/135, owned by Vector Resources; and then along the proposed Sandy Ridge access road north to the infrastructure area. Tellus will commence road access and route negotiations with the relevant parties over the next few months.

If required, Tellus will construct sealed slip-lanes at the Mt Walton East Road – Great Eastern Highway intersection, to allow for the safe entry of the haulage trucks onto the highway. This is

assumed to require the addition of slip lanes for traffic both entering and leaving Mt Walton East Road, and will include signage.

The distance by road from Sandy Ridge to Fremantle Port is approximately 750 km. Road transport will be required either from Sandy Ridge to Kalgoorlie for rail transport or from Sandy Ridge to Fremantle Port if road transport is used.

3 ENVIRONMENTAL SUITABILITY FOR ARID NEAR SURFACE GEOLOGICAL REPOSITORY

The characteristics that make Sandy Ridge particularly suitable for an Arid near Surface Geological Repository are discussed briefly below:

- **Geologically stable** — the site sits within the Archean Yilgarn Block and is geologically typical of areas overlying deeply weathered granite domes. It has very low seismicity and no volcanic or tectonic activity;
- **Natural geological barrier —** The clay bed is laterally extensive (80 km long and 40 km wide), been stable for approximately 20 million years and is up to 36m thick at Sandy Ridge. To get to the clay in the development envelope the average overburden thickness is 9 m, which an impermeable 5 m thick caprock comprised of laterite and silcrete. Beneath the overburden, the kaolin zone likely to be mined is on average 14 m thick (9 to 23 m depth). Beneath the kaolin zone is a saprolite zone (kaolinitic, including some incompletely weathered granite). Below the saprolitic zone is thick granite. The clay in situ has very low permeability at around 1 x 10-9m/s. When combined with the thickness and extent of the clay it will not transmit waste off-site, even if a solute (water) was present;
- **Semi-arid desert Mediterranean climate** — averages just over 250 mm of rainfall per annum and evaporation is greater than 2,000 mm per annum;
- **No water table** — the site lies in an area that does not have a regional water table. This is because any rain falling in the region is either evaporated, evapo-transpirated or runs off at the surface. It is also due to the thickness and impermeability of the geologic profile, which includes 5 m of impermeable silcrete and up to 36 m of low permeability clay. The impermeable cap rock in the open cut will be disturbed but will be replaced with a consolidated engineered clay capping. Except for the small decline entry into the proposed underground area, the impermeable cap rock will not be disturbed over the galleries;
- **Watershed** - The fact that the area lies near a surface water divide also assists, as rainfall will migrate offsite at the surface or if present for short periods, at the sand/silcrete interface. No significant water deposits have been found at the silcrete/clay interface or at the clay/basement interface within the vicinity of the site. Drilling results in the area indicate that the basement undulates with peaks and troughs and as a result, even if water could migrate to that interface, it would be trapped in these troughs. This is highly unlikely however, because besides all of the other parameters affecting water migration, the clay is relatively dry and will tend to absorb any water that passes into the profile. It is for all these reasons that no water table has been detected in the region and it is also the reason that *no credible scenario can be developed that involves migration of a contaminated plume from the isolation cells. This is further confirmed by the fact that monitoring wells in the area have been tested for more than 20 years and have always been dry;*
- **No flooding** — the site is not subject to flooding, nor is it predicted to be in the future, no risk of cyclones;

- **Very low rates of erosion** — the site is not subject to the erosive forces of high winds or rain and has been stable for thousands of years;
- **Lack of commercial mineral deposits** – There is no evidence to suggest that there is potential for economic mineral or hydrocarbon deposits beneath the kaolin deposit;
- **Topography** – the site is flat to gently undulating and suitable for the construction of infrastructure and heavy vehicle movement;
- **Absence of Population** – It is an area of extremely low population, the nearest population centre is a non-permanent camp approximately 52 km away;
- **Agricultural land use** – There is no potential for medium to high value agriculture;
- **Environmental values** – The site has no special environmental features;
- **Heritage** –no special cultural or historical significance has been identified through a completed heritage study and consultation with stakeholders familiar with the area.

It can be concluded on the basis of the characteristics of the site, that there is little credible risk to human health or the environment from suitably conditioned and packaged hazardous or intractable wastes that might be stored and isolated at the Sandy Ridge Site.

To further underpin this assertion the Mount Walton IWDF, Australia's only Class V waste disposal facility is located to the east of the development envelope as the locality has previously been recognised for its suitability for intractable wastes and has a 22 year safe operating history.

4 STAKEHOLDER CONSULTATION

Once there is a level of confidence of the technical and commercial business case of the Project, Tellus' approach to stakeholder consultation is to complete a stakeholder engagement plan were the main stakeholders (Tier 1) are identified. Then Tellus engages first at a 'grass roots' level whereby the community most impacted by the Project, or whose area the Project is in, or the Government Department's whose approvals are required to start field work etc, is informed about the Project. Then engagement is broadened to incorporate other key Local, State and Federal Government groups and other interested stakeholders identified during the initial engagement (Tier 2).

Tellus explains the Project in terms of both definition, timelines, impacts and benefits and then listens to feedback on concerns, issues or opportunities raised and then responds accordingly. Tellus' policy of early engagement, open and transparent discussions, allows for Tellus to adapt the business and engagement plan in a timely manner. Feedback is incorporated into each stage of the project life, from conception to constructions, operations and closure.

The first phase ('Tier 1') of stakeholder consultation for Sandy Ridge has been completed. Neutral to broad support has been received for the Proposal. Most parties have requested to be kept informed as the Project progresses through its capital investment plan which includes a number of GO / NO-GO gates. Identified Tier 1 stakeholders included; the community, local, state and federal government. A summary of the feedback received from the community is presented in Table B.

Tier 2 of consultation is currently progressing and involves consultation with the non-government organisations, local politicians and other interested parties.

Tellus maintains a stakeholder register (summary - Table B) and continue to liaise with the community throughout the life of the Sandy Ridge Project. Tellus will also place key community and regulatory related information on the website (http://www.tellusholdings.com/) and by sharing News Updates to interested stakeholders.

In parallel to stakeholder consultation, Tellus has a policy of creating as many local business opportunities as possible and training and hiring locally. Tellus has already contracted many Western Australian, local and aboriginal owned business. Tellus has also supported a local rangers training program in association with the Goldfields Sea and Land Council, WA Government and local stakeholders.

TABLE B: STAKEHOLDER CONSULTATION REGISTER

STAKEHOLDER	CONSULTATION DATE	CONSULTATION METHOD	RESPONSES AND KEY ISSUES RAISED
State Government			
Gary MacLean, Principal Policy Adviser to the Honourable Bill Marmion MLA (Minister for Finance; Mines and Petroleum) and Adrian Wiley, Principal Policy Advisor Office of the Minister for Mines and Petroleum	24 February 2015	Meeting - Initial presentation of the proposal	• Expressed interest in the proposal and wished to stay informed.
Belinda Walker, Principal Policy Advisor to the Honourable Albert Jacob MLA (Minister for Environment; Heritage).	25 February 2015	Meeting - Initial presentation of the proposal	• Expressed interest in the proposal and wished to stay informed.
Paul Vogel (Chairman of the EPA) and Anthony Sutton (Director of Assessment and Compliance, Officer of the EPA)	26 February 2015	Meeting – Initial presentation of the proposal	• Noted the sensitivity of the proposal and suggested it would probably warrant formal assessment • Expressed concern regarding the impact of there being no disposal operations at Mt Walton for a number of years and that this may be contributing to waste being stored / disposed incorrectly • Pre-referral meeting is essential • Suggested consultation with several key government agency stakeholders prior to submission of referral • Expressed interest in the proposal and wished to stay informed.
WA Department of Mines and Petroleum — Phil Gorey (Executive Director Environment), Steve Tantala (Director Operations), Ian Mitchell (Team Leader Minerals Kalgoorlie) and Charlotte Hall (Geoscientist)	26 February 2015	Meeting – Initial presentation of the proposal	• Expressed interest in the proposal and wished to stay informed.
WA Department of Mines and Petroleum – Ian Mitchell (Environmental Branch - Team Leader Minerals Kalgoorlie) and Dean Crouch (Resources Safety Branch - Mines Inspector)	22 April 2015	Second meeting to discuss mining environmental approvals and DMP's role in regulating radioactive materials	• DMP (Environment Branch) is open for consultation during the preparation of the Mine Closure Plan • DMP (Resources Safety) will be looking to ensure that systems will be in place to protect the health of people working at the site during construction and operations. • A Radiation Safety Officer for the site is recommended to ensure long-term consistency and to ensure the same person is across all safety issues on the site.
Office of the EPA —	23 March 2015	Meeting – Discussion of	• Waste acceptance criteria – referral to include details of waste

STAKEHOLDER	CONSULTATION DATE	CONSULTATION METHOD	RESPONSES AND KEY ISSUES RAISED
Sally Bowman (Manager, Mining and Industrial Branch – North) and Dr Robert Hughes (Principal, Environmental Officer).		draft referral	not accepted at the facility. • Stakeholder consultation is important • Give government a degree of certainty of risk for institutional control/safety • Transport of material like medical isotopes • Preliminary key environmental factors are terrestrial environmental quality, inland waters environmental quality, human health, rehabilitation and closure • Expressed interest in the proposal and wished to stay informed.
WA Department of Finance (proponent of IWDF) — Stewart Barrett (Project Leader – IWDF) and Randall Haigh (Senior Project Manager).	12 December 2014	Meeting - Tellus presented project general information and update on planned study and field-work activities occurring in 2015	• Expressed interest in the proposal and wished to stay informed.
	27 February 2015	Tellus presented updated proposal information.	• Expressed interest in the proposal and wished to stay informed.
WA Department of Finance (proponent of IWDF) — Mino Intini (Director Regional Programs).	26 February 2015	Phone call outlining the proposal.	• Expressed interest in the proposal and wished to stay informed.
WA Department of Lands (DoL) – Antoine Macmath (Manager Land Access), Darren Corr (Manager Major Projects), Jonathan Cramer (Manager Contaminated Sites).	8 April 2015	Meeting – Initial presentation of the proposal	• Advised to discuss the proposal with the Department of State Development (DSD), as they drive major project status, DoL do land assembly after DSD • Suitable long term project tenure can be structured over unallocated crown land (UCL)) • The mining lease will legally permit the establishment of a mine • Address Native Title. • DoL can issue 'general purpose lease' under Section 79 of the Land Administration Act 1997 to facilitate the waste side of the business.
WA Department of Environment Regulation – Kerry Laszig (Director, Licensing and	8 April 2015	Meeting – Initial presentation of the proposal	• A decision under Part V of the Environmental Protection Act 1986 cannot be made until Part IV process is complete.

STAKEHOLDER	CONSULTATION DATE	CONSULTATION METHOD	RESPONSES AND KEY ISSUES RAISED
Approvals), Stephen Checker (Manager, Licencing (Waste Industries)).			• Need to present more detailed engineering information when submitting applications under Part V. • Essential to adopt Best Practice. • Need to demonstrate the safety case for the geological repository.
Radiation Health WA – Hazel Upton (Managing Health Physicist), Duncan Surin (Senior Health Physicist) and Leif Dahlskog (Senior Health Physicist).	2 April 2015	Meeting – Initial presentation of the proposal.	• Would require approvals to operate under the Acts and Regs administered by Radiation Health WA, who would in turn report to ARPANSA • Each type of waste will have to be placed in appropriate type of storage – case by case basis • Long life elements may need to be placed deeper to meet surface activity limits and extended institutional control requirements • Main concern for other types is to ensure that primary encapsulation is not compromised by storage with other chemicals (e.g. corrosive) • Need to demonstrate appropriate safety • Tellus needs to further consult with Radiation Health during the preparation of approval documents • New classifications will at some point be adopted for use in Australia • Radiation Health has no particular concern in relation to operation of a privately owned facility provided the necessary safeguards are in place • Radiation Health is in need of secure surface storage facilities and more regular (than IWDF offers) isolation activities. Current Radiation Health store is full and waste owners are storing wastes at their own premises.
Department of State Development — Peter Goodall (Senior Project Manager Strategic Projects), Steve Morris (Project Manager Strategic Projects).	22 April 2015	Meeting – Initial presentation of the proposal	• Expressed interest in the proposal and wished to stay informed
Federal Government			
Department of the Environment – Michael Ward (Director, North West Section,	10 April 2015	Teleconference – Initial presentation of the proposal	• Provided update on Government' expense cost recovery model under the EPBC Act

STAKEHOLDER	CONSULTATION DATE	CONSULTATION METHOD	RESPONSES AND KEY ISSUES RAISED
Environmental Assessment and Compliance Division) and Denis Snowdon (Assistant Director North West Section West Assessment Branch).			• Provided information on the current status of the bilateral agreement with WA • The identification of Threatened species to be made clear in the referral • Terms and identification of waste types to be made clear in the referral.
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) – Geoffrey Williams (Radioactive Waste Safety), Jack Dillich (Chief Inspector Regulatory Services), Keith Dessent (Senior Regulatory Officer), Dave Urban (Senior Regulatory Officer) and Julia Carpenter (Assistant Director, International Policy and Coordination).	16 April 2015	Meeting – Initial presentation of the proposal	• Confirmed ARPANSA do not provide the formal regulatory approval • Considers the site wholly appropriate and suitable for the isolation of materials like medical isotopes given its co-location to Mt Walton East IWDF.
Local Government			
Shire of Coolgardie – Paul Webb (CEO), Sandra Donkin (Manager Community Services) and Terry Sargent (Manager Development Services).	4 March 2015	Meeting – Initial presentation of the proposal	• Community consultation • Local community employment opportunities. • Economic development for the shire and long lasting community benefits. • Transport of hazardous waste through the community.
City of Kalgoorlie Boulder – Don Burnett (CEO) and Alex Wiese (Director Development Services).	4 March 2015	Meeting – Initial presentation of the proposal	• Local community employment opportunities. • Transport of hazardous waste through the community, in particular emergency response planning. • Opportunities for intermodal transport hub currently under consideration.
Community			
Sambo Family	3 March 2015	Meeting – Initial presentation of the proposal	• Happy to work with Rory O'Connor as TO Liaison for engagement
Logan Family	3 March 2015	Meeting – Initial presentation of the proposal	• Happy to work with Rory O'Connor as TO Liaison for engagement
Champion Family	4 March 2015	Meeting – Initial presentation of the proposal	• Happy to work with Rory O'Connor as TO Liaison for engagement

STAKEHOLDER	CONSULTATION DATE	CONSULTATION METHOD	RESPONSES AND KEY ISSUES RAISED
Goldfields Land and Sea Council (GLSC) – Darren Forster (Land Management Officer) and Bradley Jennings (Anthropologist).	3 March 2015	Meeting – Initial presentation of the proposal	• Greatest concern was Native Title and getting families to work with them
Mineral Resources (Carina Iron Ore Mine operators).	February 2015	Various informal phone calls during February 2015	• Calls to mine manager regarding safety and traffic movements for February and March field-work activities • Expressed interest in the proposal and wished to stay informed.
Members of Parliament			
Wendy Duncan (Member for Kalgoorlie, National Party)	23 April 2015	Meeting – Initial presentation of the proposal	• Expressed interest in the proposal and wished to stay informed. • Tellus should consider Esperance port as an alternative export port to Fremantle • Community benefits program
Dr Graham Jacobs (Member for Eyre, Liberal Party)	23 April 2015	Meeting – Initial presentation of the proposal	• Expressed interest in the proposal and wished to stay informed. • Tellus should consider Esperance port as an alternative export port to Fremantle • Community benefits program

5 ENVIRONMENTAL FACTORS

5.1 ASSESSMENT OF ENVIRONMENTAL FACTORS

Aurora Environmental reviewed the EPA's *Environmental Assessment Guideline (No. 16) for Referral of a proposal under s38 of the Environmental Protection Act 1986 – Appendix A* (Appendix 2) to assist in identifying key environmental factors for the Proposal. The EPA's objectives for each factor are listed in Table C. The rationale of determining which factors are key environmental factors (i.e. that may have significant impact on the environment) is listed in Table D. Note: environmental factors relating to the sea have not been examined given the Proposal will be located inland.

TABLE C: EPA'S OBJECTIVES

FACTOR	OBJECTIVES
Flora and Vegetation	To maintain representation, diversity, viability and ecological function at the species, population and community level.
Landforms	To maintain the variety, integrity, ecological functions and environmental values of landforms and soils.
Subterranean Fauna	To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.
Terrestrial Environmental Quality	To maintain the quality of land and soils so that the environment values, both ecological and social, are protected.
Terrestrial Fauna	To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.
Hydrological Processes	To maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.
Inland Waters Environmental Quality	To maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.
Air Quality	To maintain air quality for the protection of the environment and human health and amenity.
Amenity	To ensure that impacts to amenity are reduced as low as reasonably practicable.
Heritage	To ensure that historical and cultural associations are not adversely affected.
Human Health	To ensure that human health is not adversely affected.
Offsets	To counterbalance any significant residual environmental impacts or uncertainty through the application of offsets.
Rehabilitation and Decommissioning	To ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.

TABLE D: ASSESSMENT OF ENVIRONMENTAL FACTORS

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
Flora and Vegetation	Clearing of native vegetation	Loss of individual plants	No bush forever sites given the site is not within the metropolitan area or other conservation reserves. Vegetation type to be cleared expected to be similar to other types within the Goldfields Region.	Small footprint of clearing (100 ha). Limiting the extent of clearing through detailed feasibility study. Seed collection, propagation and transplantation into rehab areas. Ongoing rehabilitation of mined pits and engineered closed cells during operations so as return topsoil and revegetate landform.	Loss of individual plants until rehabilitation is completed. Following rehabilitation no residual impacts are expected.	Meets the EPA's objective	The site is within the Jackson Vegetation System (Beard, 1972) which comprises *Acacia /Allocasuarina* thickets, mixed Proteaceae-Myrtaceae scrub heaths and *Eucalyptus* Woodlands. The current (2013) extent of Jackson Vegetation System (Beard, 1972) in the Coolgardie IBRA bioregion is 1,490,171 ha (Government of Western Australia, 2013). Of this (<0.01%) may be cleared for the Proposal.
Landforms	Open cut mining (majority design)	Modification of landform	No significant natural land features.	Returning of topsoil and contouring of the mined pits and engineered closed cells as close to	No aesthetic difference in landforms above ground surface, except for fencing for	Meets the EPA's objective	The landform is not significant nor of environmental value. The removed ore will not affect hydrogeology as a water table is unlikely to exist in this locality.

[4] Environmental aspect is defined by EPA (2015) as an element of an activity, product or service of a proposal that can interact with the environment.
[5] Impact is defined by EPA (2015) as any change to the environment, whether adverse or beneficial, wholly or partially resulting from the aspects of a proposal.

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
				the natural surface as possible with an engineered cap to shed water.	safety purposes.		Mining will be conducted in accordance with the approved mine plan.
Subterranean Fauna	No karst geology within the development envelope so very unlikely subterranean fauna is present or will be affected by the Proposal. Therefore the EPA's objective will be met.						
Terrestrial Environmental Quality	Kaolin mined pits and engineered closed cells in the clay strata.	Waste storage and isolation of hazardous and intractable wastes in an arid near surface geological repository could potentially contaminate the site.	Geology and soils comprising topsoil, silcrete, laterite and kaolinite down to approximately 30m depth within waste storage and isolation pits.	Multiple barrier layers will be in place during transport, storage and backfill operations as described in safety case - Section 2.2. Engineered pits will be covered by a domed compacted kaolin cap so any surface water or rainfall is shed from the structure. Topsoil will be replaced and revegetated with species of local provenance. Surface monitoring of	Storage / isolation cells (37.2 ha) to be permanently altered (i.e. sterilisation of this land) during the institutional period. After the institutional control period the land is returned to its current status, but with appropriate intergeneratio nal markings to indicate the previous use of the site.	Meets the EPA's objective	For the reasons outlined in Section 3 the site is suitable for a combined kaolin mine and an arid near surface geological repository.

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
				rehabilitated pits will be conducted to identify any signs of surface subsidence. Installation and monitoring of groundwater monitoring bores. Waste will be temporarily isolated in the safety of the natural barriers formed by the extensive geological bed until feasible resource recovery technology is available, or waste will be permanently isolated.			
Terrestrial Fauna	Land clearing activities. Erection of fences. Infrastructure Development.	Clearing for mining will reduce available fauna habitat, however the impact	Limited number of conservation significant species may transit the site (Malleefowl *Leipoa ocellata*	Litter/waste disposed of appropriately. Fences to exclude fauna from operations.	Species, population, and assemblage level of Malleefowl and Chuditch	Meets the EPA's objective	Conservation significant fauna unlikely to be significantly impacted by the Proposal.

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
	Kaolin open cut mining with complementary waste storage and isolation in the clay strata.	expected to be minimal as habitat types in the disturbance area are well represented outside the footprint. Habitat loss/ fragmentation.	and Chuditch *Dasyurus geoffroii*) (Appendix 3). Once cleared no fauna habitat will exist in disturbed areas, therefore the site is unlikely to be of value to conservation significant fauna.	Rehabilitation completed on waste storage and isolation pits.	unlikely to be affected by the Proposal.		
Hydrological Processes	No significant water deposits have been found at the silcrete/clay interface or at the clay/basement interface within the vicinity of the site therefore hydrological processes will not be affected by the Proposal and the EPA's objective will be met.						
Inland Waters Environmental Quality	Kaolin open cut mining with complementary waste storage and isolation in the clay strata. Abstraction of water for use in kaolin processing plant.	Failure of capping covering engineered storage cells could have the potential to contaminate local aquifer or inland waters. Adverse effects on the surrounding environment of water source	No aquifer or inland waters in the development envelope. Surrounding environment of water source.	Hydrogeological assessment of volumes that can sustainably be abstracted from water source. Monitoring of abstraction volumes.	No residual impacts are expected to inland waters within the development envelope. Residual impacts on the surrounding environment of water source are unknown at this stage (note: water	Meets the EPA's objective	Several options are being considered for water sources. A hydrogeological assessment will be undertaken of the chosen water source in accordance with Department of Water guidance and consultation with the Department. It is expected that any abstraction and discharge of water will be compliant under the licence conditions administered by the Department of Water.

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
		(note: water source yet to be determined).			source yet to be determined).		
Air Quality (Dust) and Atmospheric Gases	Generation of dust from blasting and road traffic. Gaseous emissions from earthworks activities.	Dust from mining may adversely affect vegetation in close proximity. Small contribution to the greenhouse effect (power generation, mining machinery).	The atmosphere. As the site is remote (approx. 75km from the nearest town, 52km from the nearest mining camp) no residents are within the vicinity.	Dust suppression by water cart along trafficable roads and in pit(s). Progressive rehabilitation to minimise exposed areas. Hybrid solar / LNG power station. Solar to offset fossil fuel power.	Small reduction in localised air quality (dust) and small contribution to the greenhouse effect	Meets the EPA's objective	Dust will be managed as per best practice Dust Management Plan – component of the site Environmental Management Plan. A reduction in air quality is unlikely to impact human health or amenity given the site is remote and has no residences in the vicinity. Isolation of stored hydrocarbons (storage customers) will have a positive greenhouse gas abatement impact. Tellus has applied to Office of the Clean Energy Regulator for registration of the Project under the *Carbon Credits (Carbon Farming Initiative) Act 2011* (CFI Act)
Amenity (visual)	Visual aspects considered to reduce visual impact on landscape. Mine infrastructure, blasting Transport of kaolinite out of the mine.	Workers may temporarily be subject to a change to amenity.	Workers associated with the mine. As the site is remote (approx. 75km from the nearest town, 52km from the nearest mining camp) no	Areas to be mined are of low relief (flat, gently undulating country) minimising impact on the visual landscape as viewed by adjacent lands.	None.	Meets the EPA's objective	People not associated with the mine are unlikely to be affected by the Proposal.

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
	Transport of waste materials into the mine.		residents are within the vicinity.	Operating procedures for blasting and transport of materials will be prepared and implemented.			
Heritage and Native Title	A search of the Aboriginal Heritage Inquiry System (DAA, 2015) indicates no registered heritage sites or other heritage places are located within exploration tenement E16/440. No native title claims exist. Therefore heritage values will not be affected by the Proposal and the EPA's objective will be met. If additional sites are identified, they will be reported in accordance with the provisions of the *Aboriginal Heritage Act 1972* and disturbance will only occur after s18 permit has been granted.						
Human Health	Kaolin mining and complementary storage and isolation of wastes.	Potential health impact.	Workers at the mine site.	Strict waste Acceptance Criteria Protocol Environmental Management Plan Emergency Management Plan Materials Monitoring Plan Radiation Management Plan These will address operational aspects of waste and radiation	Implementing best practice in accordance with international and national codes and standards is unlikely to result in any residual impacts.	Meets the EPA's objective	Given the strict controls that will be employed it is unlikely human health will be adversely affected. Tellus' Storage and Isolation Safety Case (SISC) considers the safety of: • the *transport* to a geological storage and isolation facility (GSIF) • the *construction and operation* of the facility • the safety of the facility in the very *long term* after it has been sealed and closed. Tellus' safety case uses best practice examples developed around the world for the safe storage and

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
				protection safety. Strict environmental controls consistent with international standards and national codes for the management of waste will be implemented. Institutional control period.			isolation of various types of wastes based on *strict acceptance criteria*, and for the construction in geological settings that are *internationally recognised* as suitable. Tellus' operation and long term safety case is underpinned by utilizing a combination of engineered and natural barriers, known as a *multi-barrier system*, which provides *long term containment and isolation* of the wastes. Tellus plans to store *like with like materials*, so as to create opportunities for the future long term, temporary storage, treatment and recovery of valuable materials or permanent isolation of hazardous waste.
Offsets	No offset is being offered. The Proposal has positive environmental, economic and social benefits to Western Australia (Refer to Section 1.3.6).						
Rehabilitation and Decommissioning	Ensuring post mining landform is safe and stable. Failure of the multi barrier system which does not provide long term containment and isolation of the wastes.	Exposure of people and the environment to wastes, which may lead to health or environmental issues.	Surrounding geology, soils and workers.	Multi barrier Safety Case and Mine Closure Plan developed and implemented. **During operations:** Engineered caps will be keyed into the kaolin on each	No further use of the engineered isolation cells for any other activities (i.e. sterilisation of this land) during the institutional period.	Meets the EPA's objective	Best practice dictates that a site should rely on not one, but several or "multiple" engineered and natural barriers as part of the safety case. Approved multi barrier safety case and mine closure plan will ensure the EPA's objective is met. Refer to Tellus' Storage and Isolation Safety Case (SISC) definition above in sections:

FACTOR	ENVIRONMENTAL ASPECT[4]	INHERENT IMPACTS[5]	RECEIVING ENVIRONMENT	MITIGATION MEASURES	RESIDUAL IMPACTS	MEETS EPA'S OBJECTIVE?	ASSUMPTIONS
				engineered isolation cell. **Post-mine management:** Implementation of approved mine closure plan. **Long-term management:** Monitoring in accordance with approved mine closure plan. Institutional control period.	After the institutional control period the land is returned to its current status, but with appropriate intergeneratio nal markings to indicate the previous use of the site.		2.2 WASTE MANAGEMENT AND THE SAFETY CASE and 3 ENVIRONMENTAL SUITABILITY FOR ARID NEAR SURFACE GEOLOGICAL REPOSITORY

5.2 KEY ENVIRONMENTAL FACTORS

The key environmental factors for the Proposal are considered to be:

- Terrestrial Environmental Quality.
- Inland Waters Environmental Quality.
- Human Health.

The key integrating factor for the Proposal is

- Rehabilitation and Decommissioning.

These factors are summarised in Part B of the section 38 referral form.

6 CONCLUSION

Tellus Holdings Ltd (Tellus) is an infrastructure project development company with a proposed dual revenue business model of mining kaolin and operating an arid near surface geological repository at Sandy Ridge. The Sandy Ridge Project is located approximately 75 kilometres (km) north-east of Koolyanobbing Western Australia. The site is remote, and is located over 50 km from the nearest population centre (temporary mining camp).

Tellus is planning to develop a 25 year minimum kaolin open cut and underground mine based on average production rates of 80,000 tpa ore. Kaolin will be processed on site and an average of 27,000 tpa of kaolin clay will be sold mostly into Asia. The proposed commodity business involves exporting the kaolin to Asia where it will be used in the ceramics, paint and fibre glass industries.

Tellus intends adding value by using the voids resulting from mining for the secure storage and isolation of an average of 66,000 tpa intractable and hazardous waste in the low permeability clay strata.

The storage and isolation business, with its proposed safety case of multiple engineered and geological barriers can uniquely provide maximum safety to people and the environment. Engineered and geological multi barriers, combined with world class operational controls make for a 'world best practice' safety case as waste is completely isolated from the biosphere. Best practice dictates that a site should rely on not one, but several or "multiple" barriers as part of the safety case. Tellus' proposed complementary storage business involves storing 'like with like' waste generated from the mining, oil and gas, manufacturing and agriculture industries. Tellus believes that intractable and hazardous waste should be seen as a valuable resource and by storing 'like with like', treatment, recycle and recovery opportunities should be introduced when the resource recovery technology is available, and the volumes and economics justifies a recycle or recovery event improving overall product stewardship.

Hazardous and intractable waste is often stored for long periods in unsafe or non-secure locations. It is also likely that some wastes may be disposed of in an inappropriate or illegal manner. This Proposal has the potential to provide a solution which will enable the cost effective removal of environmental hazards from across Australia and create.

The benefits of the Proposal to Western Australia are:

1. Direct creation of jobs during construction and operation phases and indirect contribution to job creation and economic stimulation of the local Goldfields community.

   Based on scoping study (front end loading - FEL 1) assumptions:
   - 40-90 construction jobs, 18 direct Tellus jobs (excludes O&M contractors), 54 indirect jobs could expand and diversify local job opportunities in Goldfields region
   - $62 million (M) build and $27M annual opex cost could boost and diversify local economy.

2. Generation of revenue to the State through royalties and taxes.

   - $474 million over 25 year term could support other parts of the economy.

3. Removal of environmental hazards by providing a cost effective option for the storage and isolation of hazardous and intractable waste which is often stored for long periods in unsafe or non-secure locations.

When operating, the facility will also provide a reliable long term utility support service to other mining, oil and gas and manufacturing industry sectors that look for best practice solutions and service providers before locating or expanding their operations. The facility could also attract new kaolin and recycle and recovery spin off industries to WA.

The Proposal will provide a direct economic benefit to the Goldfields region at a time where the mining industry is at a low ebb. Environmental storage business is a growth business and countercyclical to mining. Additionally there will be benefit in working with the indigenous community to provide opportunities for training and long term employment and business opportunities.

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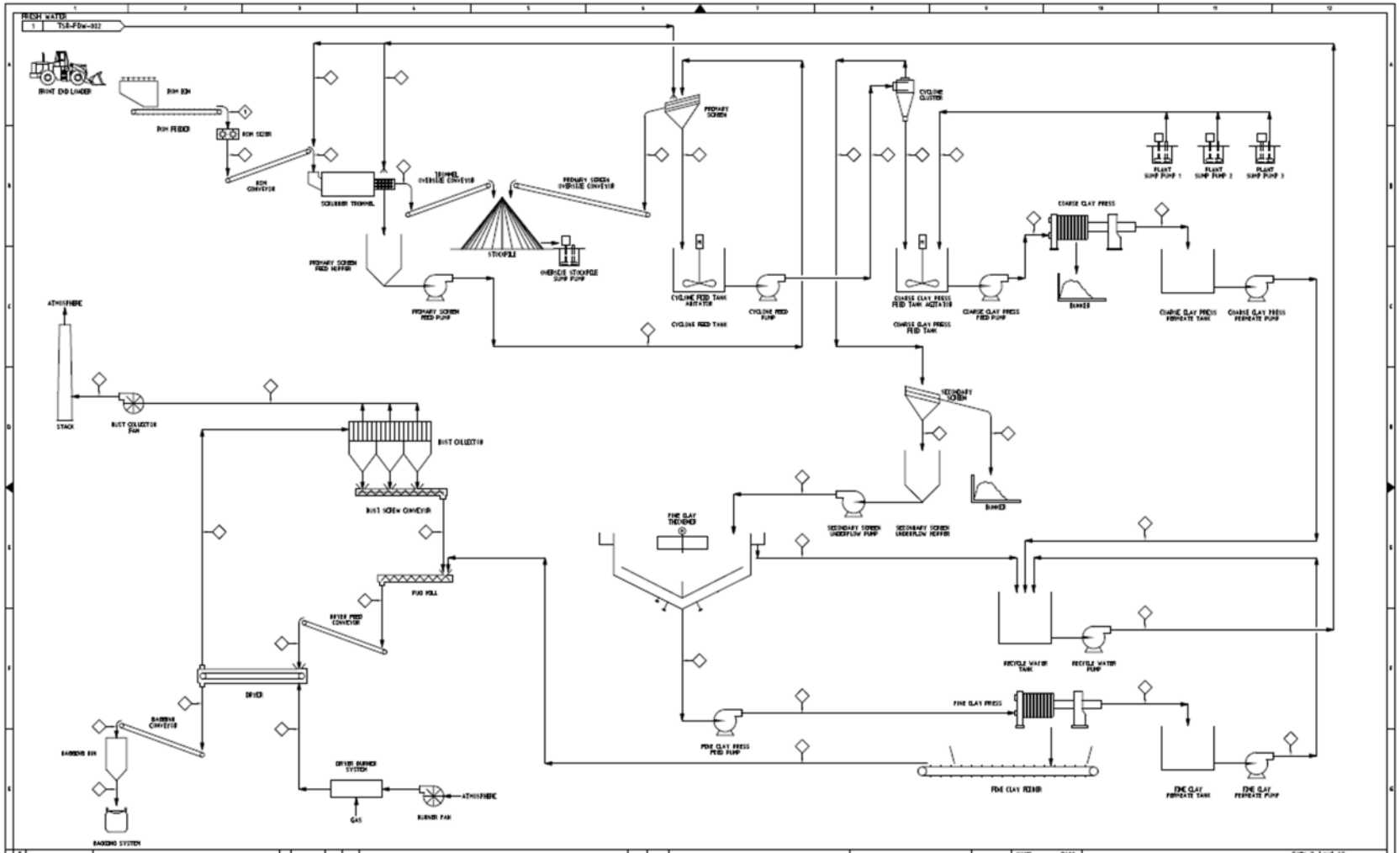
FIGURES

APPENDIX 1

Conceptual Kaolin Process Flow Diagrams



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CLIENT TELLUS HOLDINGS LTD
PROJECT SANDY RIDGE PROJECT
1ST LINE KAOLIN PLANT
2ND LINE PROCESS FLOW DIAGRAM

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APPENDIX 2

Referral of a Proposal under s38 of the EP Act EAG No.16 (EPA, 2015)

APPENDIX 3

EPBC Act Protected Matters Search Report

APPENDIX 4

Institutional Control Periods