

THE THUNDERBIRD MINERAL SANDS PROJECT

FACT SHEET – PORT OF BROOME APPROVAL – FEBRUARY 2022

Thunderbird Mineral Sands Project

The Thunderbird Mineral Sands Project (Thunderbird) is located on the Dampier Peninsula, mid-way between Derby and Broome. Thunderbird is located within the Joombarn Buru native title determination area on the Mount Jowlaenga and Yeeda pastoral leases and spans both the Shires of Derby-West Kimberley and Broome local government areas.

Thunderbird is being developed by Kimberley Mineral Sands Pty Ltd (KMS), a joint venture company equally owned by Sheffield Resources Pty Ltd and YGH Australia Investments Pty Ltd (Yansteel) (the JV).

Yansteel is a wholly owned subsidiary of Tangshan Yanshan Iron and Steel Co. Ltd (Tangshan) which is a privately owned steel manufacturer headquartered in Hebei, China. Tangshan produces approximately 10 million tonnes per annum of steel products and has annual revenue of approximately AUD\$6 billion. Tangshan has a long term iron ore trading relationship with Western Australia.

Yansteel's investment in Thunderbird has been subject to Australian Foreign Investment Review Board approval which was granted in December 2020. This means the investment has been determined to be in Australia's national interest, including that it does not relate to critical minerals (in relation to Australia's defence and other strategic interests) nor National security land.

As part of Yansteel taking a 50% interest in Thunderbird, as a strategic equity partner, it will commit to acquiring the bulk of the ilmenite product for pigment production in China. This will supply Yansteel's Titanium Dioxide plant which is currently under construction and is expected to be commissioned in the second half of 2022.

This has changed Thunderbird's proposed production model so that all products will now be exported in bulk rather than the previous ratio of 70% bulk and 30% packaged.

In August 2018, the WA Minister for Environment issued what is referred to as the Ministerial Statement Number 1080 for Thunderbird (Ministerial Statement 1080). This environmental approval followed the Public Environmental Review for the development of Thunderbird which was issued for public comment between January and February 2017 and assessed by the WA Environmental Protection Authority with its final report being issued in October 2017. Ministerial Statement 1080 allows Thunderbird to be developed and includes the approval of bulk mineral sand products to be shipped from the Port of Derby and packaged products to be shipped from the Port of Broome.

Since Yansteel's investment, KMS has been comprehensively reviewing its export options due to the change in the production model and other important project feasibility study considerations relating to logistics. In undertaking this work, KMS has re-considered the fit-for-purpose status of transport infrastructure and consider safety, environmental, risk and cost related considerations. As a result, KMS is now seeking a variation to Ministerial Statement 1080 for Thunderbird to export bulk mineral sands product via the Port of Broome, whilst still maintaining the flexibility to use of the Port of Derby as previously approved.

The application for the amendment to Ministerial Statement 1080 was lodged with the WA EPA on 3 December 2021 and is currently being assessed. This process is referred to as a Section 45C *Environmental Protection Act 1986* (WA) (EP Act) request to amend a proposal.

KMS is continuing to engage with key stakeholders in relation to both the Port of Derby and the Port of Broome options and will consider key stakeholder views prior to making any final decisions on the export port. KMS welcomes any stakeholder feedback in relation to the use of the Port of Broome and is prioritising working to ensure that any impacts are proactively identified and effectively managed.

For More Information

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Key JV Studies to Support the Thunderbird Final Investment Decision

KMS is focused on moving Thunderbird toward a Final Investment Decision (FID) to enable the Stage 1 construction phase to commence in 2022, with operations to start in 2024. The development of Stage 2 of Thunderbird will be subject to second FID which is expected to occur in the 5th year of operation, around 2029.

Further studies are being undertaken to support FID and confirm debt finance arrangements with the Northern Australia Infrastructure Facility (NAIF) and to inform the KMS shareholders on the underlying feasibility of the Thunderbird Mineral Sands Project. These key studies include:

- An updated Bankable Feasibility Study (BFS) which informs financiers' in their decisions to fund the development of Thunderbird and includes consideration of the outcomes of the recently completed trial mining, updated engineering and cost estimates, offtake agreements and takes into account the status of key permits and approvals;
- A Definitive Feasibility Study (DFS), which builds on the BFS and ultimately informs KMS in making the FID; and
- A Logistics Review Study which is a critical input to both the BFS and DFS and considers the options for export port arrangements over the expected life of Thunderbird, inclusive of seeking an amendment to Ministerial Statement 1080 in relation to the use of the Port of Broome.

As a result of the *Northern Australia Infrastructure Facility Act 2016* (Cth) being amended in 2021 to expand the definition of what the NAIF board can consider in its recommendations for financing, KMS has resubmitted its loan application seeking an expanded investment.

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Flexibility and Risk Management

Whilst KMS wishes to maintain the option to use the existing approved Derby trans-shipping solution and is continuing commercial discussions with the Shire of Derby-West Kimberley in this regard, KMS is currently progressing the option of utilising direct loading of all bulk product, onto ocean-going vessels at the Port of Broome. Pursuing this option requires an amendment to the existing Ministerial Statement 1080 for Thunderbird to allow export of up to 1.6 million tonnes per annum of bulk mineral sands product from the Port of Broome.

For Stage 1 of Thunderbird, it is anticipated up to 1 million tonnes per annum of bulk mineral sands product will be exported and with an increase for Stage 2 estimated to be up to 1.6 million tonnes per annum. The development of a Stage 2 of Thunderbird will be subject to second FID and is expected to occur in the 5th year of operation, around 2029.

The most attractive logistics solution for Thunderbird may change over the expected 40 plus year mine life as new infrastructure is developed, particularly in relation to the Port of Derby. Approval to export Thunderbird products from both Derby and Broome will achieve the required flexibility.

Changes in Shipping and Trucking Activity Linked to the Port of Broome Export Option

Should KMS obtain an amendment to the current Ministerial Statement 1080 and choose to utilise the Port of Broome as an export option for bulk mineral sands product, then this would result in increased trucking activity from the mine site to Broome.

It is important to note that current Ministerial Statement 1080 has granted approval for up to 7 round trips per day and the amendment would allow approximately 26 round trips per day in Stage 1 of the Project and approximately 42 round trips per day in Stage 2 of the Project.



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Transportation Logistics

At present, mineral sands product storage options for the Port of Broome are still being investigated and will need to be confirmed at a later date. This is also contingent on the selection of a logistics and transport contractor for the operations phase of Thunderbird being engaged and this will not occur until after the planned Stage 1 FID and construction is underway.

In the interim, it is anticipated, that the mineral sands product would be transported in the following stages:

- From mine site to a storage shed at Broome Road Industrial Park
- From Broome Road Industrial Park to a smaller portside storage sheds
- From portside storage sheds to the wharf to load onto ships

Transport of bulk mineral sands product from the mine site to the storage shed(s) is expected to be done using quad road trains. The trailers of the road trains will be covered to ensure there are no significant air quality impacts.

The use of quad type road trains is anticipated to require further approval by WA Main Roads. As part of seeking this approval, KMS will need to have appointed a logistics and transport contractor.

It is estimated that KMS's portside storage sheds will have capacity of circa 40,000 tonnes (which is 1-2 ship loads depending on vessel size). Sealed rotainers (covered rotating containers of about 20 tonnes capacity) would be loaded from within the portside sheds and placed onto trailers and driven the short distance to the wharf. The rotainers would be lifted by a mobile harbour crane from the trailers and lowered into the hull of the vessel, rotated and the product discharged. This system has been selected specifically to ensure there are no significant air quality impacts in line with best practice bulk material export processes.

The Port of Broome can generally berth vessels up to 40,000 tonnes, though in favourable tide conditions, Broome can berth vessels up to 60,000 tonnes. Thunderbird customer needs may determine the requirement for smaller, 20,000 tonne size vessels.



Image: Sealed rotainers would be loaded from within the portside shed, and onto trailers, and driven to the wharf. The rotainers would be lowered into the hull of the vessel, rotated and the product discharged

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Q&A – PORT OF BROOME APPROVAL – FEBRUARY 2022

1 What volume of trucks & trailers will be on the road each day and what safety measures are planned for vehicular and pedestrian safety?

As part of Ministerial Statement 1080, KMS currently has approval for up to 30 sailings per annum for the export of packaged mineral sand products from the Port of Broome which from a logistics perspective, equates to approximately 7 round truck trips per day from the mine site. If KMS is granted an amendment to Ministerial Statement 1080 to export Thunderbird mineral sands bulk product through Broome, there would be approximately 26 round trips per day in Stage 1 of the Project and approximately 42 round trips per day in Stage 2 of the Project. Stage 2 of Thunderbird is not the subject of the upcoming FID and at this time, will be considered to proceed approximately 5 years after Stage 1 operations commence in approximately 2024.

KMS will develop a Transport Management Plan in consultation with key stakeholders. This Plan will include implementing safety and noise management measures specific to the Broome haulage routes. Examples of measures being considered include avoiding the use of air brakes when trucks travel along Gubinge Road and Port Drive in Broome, reducing speeds to below signposted limits at night (10pm to 7am) to keep noise levels within acceptable limits (as set by the WA Department of Water and Environmental Regulation) and reducing truck movements at different times. This will also include undertaking ongoing noise modelling to ensure that actual noise levels during operations are proactively managed and that the management measures are operating effectively.

2 How will the trucking affect air quality and noise levels and how will KMS manage it?

KMS has undertaken additional noise and air quality modelling in 2021 in relation to the Port of Broome option. KMS does not expect a material change in air quality associated with the haulage of Thunderbird products to the Port of Broome. This is because the product particles are heavy, the trailers on the trucks transporting the mineral sands product will be covered and transfer of the mineral sands product to sealed rotainers for shipping will occur within a closed shed. This means there are no significant dust impacts anticipated. Further, mineral sands products do not have a detectable odour and are chemically inert.

In relation to noise levels, baseline Main Roads data (from the 2016-17 to 2021-22 Kimberley Traffic Digest) indicates that between 2,000 and 2,400 vehicle movements occur on the Gubinge Road south of Gantheaume Point Road each day with around 10-14% estimated to relate to heavy vehicles. For the portion of Gubinge Road south of Murray Road, there are around 5,500 vehicle movements per day, with around 7% estimated to relate to heavy vehicles.

In Stage 1 of operations of Thunderbird, planned from 2024, based on the above Main Roads data, it is estimated heavy vehicle movements will increase along Gubinge Road by 13.8% (south of Murray Road) to 21.1% (south of Gantheaume Road). For Port Road (south of Kavite Road), this is estimated to increase by 17.7%. For Stage 2 of operations of Thunderbird, planned from 2029 onwards, it is estimated heavy vehicle movements will increase along Gubinge Road by 22.1% (south of Murray Road) to 33.6% (south of Gantheaume Road). For Port Road (south of Kavite Road), this is estimated to increase by 28.2%.

In order to manage noise linked to Thunderbird trucking to acceptable levels, particularly at night, KMS will develop a Transport Management Plan in consultation with key stakeholders. This Plan will include implementing safety and noise management measures specific to the Broome haulage routes. Examples of measures being considered include avoiding the use of air brakes when trucks travel along Gubinge Road and Port Drive in Broome, reducing speeds to below signposted limits at night (10pm to 7am) to keep noise levels within acceptable limits (as set by relevant government authorities) and reducing truck movements at different times. This will also include undertaking ongoing noise modelling to ensure that actual noise levels during operations are proactively managed and that the management measures are operating effectively on an ongoing basis. This also means noise management measures can be changed over time, where necessary.

3 How many ships per year and how often - if KMS decides to export product through the Port of Broome?

The volume of product per ship load will vary, dependent on the product and/or customer requirements and ship capacity. In general, non-magnetic concentrate products will be loaded in 20,000 tonne lots and other products in 40,000 tonne lots. This equates to approximately 34 ships per year in Stage 1 and 53 per year in Stage 2 of the Project. For Stage 1, it is anticipated that there will be shipments approximately every 10 days and for Stage 2, every 6 days. The development of a Stage 2 of Thunderbird will be subject to second FID and is expected to occur in the 5th year of operation, around 2029.



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4 How will the increased shipping impact Roebuck Bay Marine Park, other neighboring areas of environmental significance and recreational port users?

Based on information available through the Kimberley Ports Authority Annual Reports for the four years from 2017-18 to 2020-21, the total number of vessels visiting the Port of Broome have averaged approximately 811 each year. This average has been impacted by COVID-19, particularly in 2019-20, with vessel numbers which dropped to 674 but increased again in 2020-21 to 794. In terms of a pre-COVID-19 comparison, annual vessel visits to the Port of Broome were 928 in 2017-18 and 847 in 2018-19. Based on the average, annual total vessels at the Port of Broome for the last four financial years of 811, the increase in vessels associated with Stage 1 of Thunderbird from 2024 (i.e. 34 ships) will be approximately 4%. For Stage 2, from approximately 2029 onwards, inclusive of Stage 1 shipping numbers (i.e. 49 ships), the increase will be approximately 6%. As there will be no construction impacts associated with the use of the Port of Broome to export Thunderbird product (existing Port infrastructure will be utilised), there are not anticipated to be any significant impacts on the Roebuck Bay Marine Park and other neighboring areas of environmental significance.

5 Radiation in Mineral Sands Products

Radiation occurs in our natural environment, and we encounter it every day through the food we eat, in building materials, items we commonly use and in activities such as air travel and medical procedures. Radiation levels in Thunderbird mineral sands products are low and are similar to other naturally-occurring sources such as granite. The specific radioactive concentrations of the mineral sands products are monitored and will be below 10 Bq/g. At this level, the mineral sands products are not classified as 'radioactive' for the purposes of transport and no special containerisation or placarding is required. Given the insoluble nature of the naturally occurring radioactive material in mineral sand products, specialised management is not required.

6 Why has KMS changed its plans to ship out of Broome instead of Derby?

The Ministerial Statement 1080 for Thunderbird currently allows for up to 30 sailings per annum for the export of packaged mineral sands products from the Port of Broome and up to 40 sailings per annum for the export of bulk mineral sands products from the Port of Derby. KMS is currently applying for an amendment of Ministerial Statement 1080 to allow for the option of exporting Thunderbird bulk mineral sands product through the Port of Broome, whilst still maintaining optionality round currently approved Ministerial Statement 1080 for the export of bulk product out of the Port of Derby, to ensure flexibility over time. Having the option of exporting the Thunderbird bulk mineral sands product from the Port of Broome means that the product can be directly loaded onto the ship, were as trans shipping is required at Derby. This also means advantage can be taken of the recent \$15 million investment by the Kimberley Ports Authority to optimise the shipping channel and the purchase a mobile harbour crane. Ultimately, the KMS Bankable Feasibility will determine the most attractive product export routes based on a cost, risk and benefit assessment to inform the FID and meet Thunderbird debt provider requirements.

7 Why do you need the flexibility to ship out of both Broome and Derby?

The most attractive logistics solution for Thunderbird may change over the expected 40 plus year mine life and as new infrastructure is developed, particularly in relation to Port of Derby. Approval to export Thunderbird bulk mineral sands product from both the Ports of Derby and Broome will achieve the required flexibility. For KMS, having alternate options readily available is a good business practice given the forecast life of Thunderbird.

8 When will KMS start trucking and shipping through Broome?

Once FID is reached, which is currently planned for towards the end of Q1/beginning Q2 2022, an expected 24-month construction period will commence with operations and the first products being shipped commencing in 2024.

9 Will the roads to the Port of Broome be changed to accommodate your trucking?

The roads to the Ports of Broome are public and the responsibility of the State Government. If the community has specific requests for road modification for safety reasons, KMS will work with the community and the Government to address these matters. The Great Northern Highway and access roads to the Port of Broome are multi-user roads, suitable for heavy vehicles.

