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Our ref: DEPWS2023/0151

Ms Mandy Trueman Department of Environment, Parks and Water Security PO Box 3675 DARWIN NT 0801

Dear Ms Trueman

Re: Notice of Significant Variation (NOSV#2) - Winchelsea Island Manganese Mine Project

The Department of Environment, Parks and Water Security (DEPWS) has assessed the information contained in the above Notice of Significant Variation (NOSV#2) and provides the following comments:

Flora and Fauna Division

The Flora and Fauna Division has reviewed the referral documentation, and comments are provided in Attachment 1. The comments for Marine Ecosystems/Coastal Processes reflect the minimum information requirements necessary for the Flora and Fauna Division to thoroughly assess the risks to these environmental values.

Environment Division

The Environment Division has assessed the NOSV#2, and comments are provided in Attachment 2.

Rangelands Division

Weed Management Branch

The Weed Management Branch has reviewed the NOSV#2. The proposed variation has listed no significant changes that would affect the proponent's responsibilities under the *Weeds Management Act* 2001; the previous comments made on the original referral remain valid.

Water Resources Division

The variation does not alter the comments already provided, and the terms of reference (ToR) adequately request the proponent to address the comments raised previously.

A permit is required to interfere with a waterway if there is:

- 1. a material change to the shape of a waterway;
- 2. a material change to the volume, speed or direction of the flow or likely flow of water in or into a waterway;

3. an alteration to the stability of the bed or banks of a waterway.

For further advice on permit requirements, contact the Water Resources Division (08) 8999 4455 or by email to water.licensing@nt.gov.au.

Should you have any further queries regarding these comments, please contact the Development Coordination Branch by email DevelopmentAssessment.DEPWS@nt.gov.au or phone (08) 8999 4446.

Yours sincerely

Maria Wauchope

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Executive Director, Rangelands

23 August 2023

Attachment 1 – Flora and Fauna Divisional comments

Attachment 2 - NT EPA Divisional comments

Attachment 1

Submission on Notice of Significant Variation referral and amendments to the existing approved Terms of Reference for an EIS

Winchelsea Mining Pty Ltd - Winchelsea Island Manganese Mine Project

This submission is made under regulation 171 of the Environment Protection Regulations 2020

NT EPA reference number: EP2021/004

Government authority: Department of Environment, Parks and Water Security - Flora and Fauna Division

Summary: Staff from the Flora and Fauna Division have reviewed the draft ToR with respect to the changes in the NOSV#2. The following additions/changes (highlighted in **Bold**) are recommended to be included in the ToR:

| Section of Referral | Theme/Issue | Comment |
|--|---|---|
| Table 5-1 Revised Terms of Reference | 2.2.6 - Construction and Operation – Table 2: Site layout and maps (p 12 Revised ToR) | the location and approximate dimensions of areas to be disturbed, structures to be built or repurposed, including (where applicable): all areas to be, dredged, cleared¹ and/or disturbed (including dredge spoil disposal and transhipment areas). all drainage areas where run-off from disturbed/mined areas can enter sensitive terrestrial habitats and/or the marine environment. |
| Table 5-1 Revised Terms of Reference | 2.2.6 - Construction and Operation – Table 2: Dredging (p 13 Revised ToR) | All proposed dredging activities should be in accordance with the procedures, methods and minimum requirements of the NT EPA's Guidelines for the Environmental Assessment of Marine Dredging in the Northern Territory (NT EPA 2013ac) and the National Assessment Guidelines for Dredging (Australian Government 2009). |
| | | The Flora and Fauna Division considers these Guidelines "out of date", therefore it is recommended that the ToR state: that the Proponent should use relevant websites that provide contemporary dredging related information (e.g. WAMSI, GBRMPA, Qld Ports and International Dredging nodes). |

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| Table 5-1 Revised Terms of Reference | 2.2.6 - Construction and Operation – Table 2: Construction (p 15 Revised ToR) | This will ensure that the proponent uses up-to-date literature to inform the impact assessment. More specific requirements around dredging and dredge spoil disposal related impacts have been included below under 3.8 Marine Ecosystems Table 12- Management. • feasible dredging and spoil disposal alternatives, including alternative dredging methods (where multiple alternatives exist, the choice of the preferred option(s) should be clearly explained, and a comparison provided against other options in terms of potential environmental impacts). This discussion should not be solely based on environmental impacts, but include overall environmental outcomes (both positive and/or negative). Therefore, it is recommended that the ToR be revised from: "potential environmental impacts" to environmental outcomes (severity of positive and/or negative outcomes). • barge loading and transport activities during construction including but not limited to: — dredging volume required, dredge material characteristics in terms of grainsize and chemistry, and spoil disposal location and its environmental characteristics To be included in list of proposed changes to ToR: • Discuss, wharf alternatives, including alternative wharf designs and locations, where multiple alternatives exist, the choice of the preferred option(s) should be clearly explained, and a |
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| Table 5-1 Revised Terms of Reference | 2.2.6 - Construction and Operation – Table 2: Operation (p 16 Revised ToR) | comparison provided against other options in terms of environmental outcomes. nearshore and offshore ship loading activities and transport operations, including: anchorage or mooring location and method, and where the ship would be loaded. the product loading and transfer location, mode, and method and mitigations measures to minimise spillage into the marine environment. |
| | | ongoing maintenance of onshore and offshore components, and servicing of infrastructure (e.g. expected frequency, volume and number of days of required dredging for the wharf maintenance). |
| Land - Terrestr | ial Ecosystems | |
| | 3.2 - Terrestrial Ecosystems | No additions/changes recommended. The proposal change in the terrestrial footprint can be assessed under the current ToR for Terrestrial Ecosystems. |

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| Sea - Coastal Processes | | |
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| 3.6 - Table 10 (original ToR) No changes Proponent | the proton to the proton to mir (1) | e proponent has not suggested any changes to the assessment for coastal processes. However, wharf structure and associated dredging and dredge spoil disposal will influence coastal cesses and potentially impact on coastal habitats and flora and fauna. enable a thorough assessment of the proposal, the Flora and Fauna Division recommends (at a simum) that the following information is provided in the Draft EIS: Hydrological Model: Currents and Waves: a) 3D Hydrodynamic modelling is undertaken (to facilitate sediment transport modelling); b) wave model is calibrated with seasonal wind data characteristics; c) performance of current and wave models are qualitatively and quantitatively validated; d) modelling is undertaken to establish existing and changes in current - wave energy characteristics at the seafloor from project activities; e) before, after and residual change spatial maps are included. Sediment Transport Model: a) 3D Hydrodynamic modelling is undertaken; b) all three sediment transport pathways (long-shore sediment drift, suspended sediments and bed load sediment parameters should reflect sediment and suspended sediment characteristics, and if appropriate should include multiple grain sizes classes; d) all models required to be calibrated and validated, and performance of all models is qualitatively and quantitatively validated; e) the cumulative effect of these three sediment transport pathways is assessed; f) seasonal aspects of sediment transport pathways are assessed; g) before, after and residual change spatial maps are included. Requirement for an independent review by an expert(s) for the undertaken hydrodynamic, sediment transport and plume modelling and submitted in full as an appendix to the Draft EIS. |

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| Sea - Marine Er | vironmental Quality | |
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| Sea - Marine En 3.7 Marine Environmental Quality - Table 11 | Environmental Quality Environmental values (p 18 Revised ToR) | The Flora and Fauna Division accepts the proposed changes for Environmental Values with the inclusion of "transhipping area" in the last dot point. the location and physical and biological characteristics of the spoil disposal site/reclamation site/transhipping area. To enable a thorough assessment of the proposal, the Flora and Fauna Division recommends (at a minimum) that the following information is provided in the Draft EIS: Suspended sediments: a) establish seasonal variability for Total Suspended Solids (TSS), turbidity (NTU) and light (Photosynthetic Active Radiation (PAR) to be expressed as a percentage of the sea surface intensity and daily light integrals); b) establish TSS NTIL and PAR relationships (surface mid water solumn and soafloor) for |
| | | b) establish TSS, NTU and PAR relationships (surface, mid-water column and seafloor) for existing sensitive receptors; c) establish baseline conditions that take into account temporal and spatial variability; d) temporal variability taken into account by undertaking monitoring over at least three consecutive neap-spring tides for the Wet, Dry and transitionary seasons (under natural environmental conditions). If cyclonic activities occurs during monitoring of baseline conditions, then additional three neap-spring tidal cycles after the cyclone is required; e) assessment of baseline conditions should include frequency and time duration of TSS, Suspended Sediment Concentration (SSC), NTU and sediment deposition and light. |
| | | 2) Plume modelling: a) requires 3D modelling; b) should be modelled to reflect seasonal conditions in which dredging and dredge spoil disposal is planned. If unsure of timing, then both Wet and Dry season conditions should be modelled; c) takes into account resuspension of deposited TSS from dredging and dredge spoil disposal; d) discuss how the Construction Environmental Management Plan (CEMP) will implement monitoring to validate plume behaviour and sediment deposition of TSS from dredging and dredge spoil disposal; |

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Environmental impact assessment under the Environment Protection Act 2019

| | | e) plume modelling outputs should at least include: Cumulative Probability TSS/SSC graphs |
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| | | for sites within sensitive receptors, time series SSC graphs and plume dispersion maps. |
| | | 3) Requirement for an independent review of the undertaken hydrodynamic and plume modelling is to be submitted in full as an appendix to the referral (see Coastal processes). |
| | Impacts and Risks (p 18 Revised ToR) | Describe potential impacts and risks to marine environmental quality including but not limited to: Impact on water quality and seabed as a result of dredging, transhipping, and spoil disposal (e.g. seabed disturbance, spoil accumulation, sediment plume, increased turbidity etc.). |
| | | To enable a thorough assessment of the proposal, the Flora and Fauna Division recommends (at a minimum) that the following information is provided in the Draft EIS: |
| | | Zone of Influence Zone of influence to be established using: the 80 percentile from natural background TSS / SSC / NTU concentrations (for dredging related activities); and zones where suspended sediments from dredging activities is predicted to be deposited. |
| 3.7 Marine Environmental | Management (p 20 of the Revised ToR) | The Revised ToR provides a list of management measures for avoiding impacts. |
| Quality – Table 11 | | The Flora and Fauna Division recommends that the NT EPA add the following dot point: • Management transhipping of ore |
| Sea - Marine Ec | osystems | |
| 3.8 Marine Ecosystems – Table 12 | Environmental Values | The Proponent has not proposed any changes to the ToR. To enable a thorough assessment of the proposal, the Flora and Fauna Division recommends (at a minimum) that the following information is provided in the Draft EIS: |
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| | | 1) Baseline Benthic Habitats: |
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| | | a) if underwater video or drop down cameras are used to characterise benthic communities, then the National benthic habitat classification scheme (CATAMI¹) should be used to classify communities; b) benthic habitat map is developed using predictive modelling (e.g. Udyawer et al, 2021) rather than drawing polygons around sites with similar community types; c) a qualitative and quantitative assessment of how well the collected data matches the predictive habitat maps should be undertaken; d) map extent sensitive receptors are provided and their condition is assessed – at the very least for mangrove, coral, macro algal, seagrass and autotroph/mixotroph sponge dominated communities and filter feeders within the zone of influence; e) established spatial and temporal variability (in particular seagrass and macro algal communities). |
| | | 2) Listed threatened and migratory species: a) provide baseline data to establish the abundance (time duration and frequency), distribution, seasonality, habitat use for feeding, reproduction, nursery, roosting and dispersal / migration characteristics for listed and migratory species; b) establish habitat requirements (physical and biological) in context of e.g. foraging, breeding, nesting, roosting, migration / dispersal (adults, juveniles and larvae). |
| 3.8 Marine Ecosystems – Table 12 | Potential significant impacts and risks (P20 Revised ToR) | Determine the proposal footprint and area of influence that could feasibly experience potential significant impacts (direct and indirect) and risks to habitats and EPBC Act and TPWC Act listed species, in particular to the wharf extension, and dredging, and spoil disposal and transhipping activities. |
| | | From a marine perspective, transhipping of ore could potentially significantly impact marine values, and therefore should be also specifically mentioned. |
| 3.8 Marine Ecosystems – Table 12 | Management (p 22 Revised ToR) | The Proponent has added Dredging operations to the list of impacts for which management actions is required. |

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The Flora and Fauna Division recommends that **transhipping activities** be included in the proposed changes to the ToR. Furthermore, it is presumed that dredging operations would also include dredge spoil disposal.

To enable a thorough assessment of the proposal, the Flora and Fauna Division recommends (at a minimum) that the following information is provided in the Draft EIS:

- 1) Sensitive receptors Thresholds: TSS/SSC and PAR:
 - a) Review relevant literature in terms of methods for establishing thresholds sensitive receptors and apply best practices to establish thresholds (e.g. Jones et al. 2019², Lavery et al. 2018ⁱ, Collier et al. 2016ⁱⁱ, Abdul Wahab et al. 2019ⁱⁱⁱ, Pineda et al. 2017^{iv}).
 - b) Develop trigger values that are absolute and set against natural background values (i.e. no Water Quality reference sites used to determine if a trigger is reached).
- 2) Requirement for an independent review by relevant expert of the proponents derived thresholds and zones of influence/impacts is undertaken and submitted in full as an appendix to the draft EIS.
- 3) Listed threatened and migratory species:
 - a) Establish trigger points for behavioural changes, noise levels for listed species, habitat use, decline in abundance/presence, and health.
 - b) Survey and monitoring design needs to be designed with sufficient statistical power to detect changes before and after impacts within local and regional ecological context.

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¹ Althaus et al. 2015. A standardised vocabulary for identifying benthic Biota and susbstrata from underwater imagery, CATAMI, https://catami.org/

¹ Jones et al. 2019. Theme 4 Synthesis Report: Defining thresholds and indicators of coral response to dredging-related pressures. Western Australian Marine Science Institution (WAMSI). Perth, Western Australia pp. 36.

¹ Lavery et al. 2018. Synthesis Report: Defining thresholds and indicators of primary producer response to dredging-related pressures. Report of Theme 5 prepared for the Dredging Science Node, Western Australian Marine Science Institution, Perth, Western Australia, 32 pp.

¹ Collier et al. 2016). Light thresholds for seagrasses of the GBR: a synthesis and guiding document. Including knowledge gaps and future priorities. Report to the National Environmental Science Programme. Reef and Rainforest Research Centre Limited, Cairns (41pp.).

¹ Abdul Wahab et al. 2019. Defining thresholds and indicators of filter feeder responses to dredging-related pressures - final synthesis report. Report of Theme 6 - prepared for the Dredging Science Node, Western Australian Marine Science Institution, Perth, Western Australia 26 pp.

¹ Pineda et al. 2017. Effects of combined dredging-related stressors on sponges. Scientific Reports. 7: 5155. DOI:10.1038/s41598-017-05251-x

Attachment 2

Submission on Notice of Significant Variation referral and amendments to the existing approved Terms of Reference for an EIS

Winchelsea Mining Pty Ltd - Winchelsea Island Manganese Mine Project

This submission is made under regulation 171 of the Environment Protection Regulations 2020

NT EPA reference number: EP2021/004

Government authority: Department of Environment, Parks and Water Security - Environment Division

Summary: The varied proposed action requires environmental impact assessment and updates are required to the Terms of Reference (ToR) issued 14 November 2021.

| Section of referral or terms of reference | Theme / issue | Comment |
|---|-------------------------------|---|
| ToR, Table 2 | Design and operation sections | It is recommended that the NT EPA update the table to require details about how the proponent intends to wash the ore and manage tailings in terms of treatment and disposal, including description of any chemical additives, thickening and dewatering of the tailings; disposal of the tailings solids and tailings liquid, with instructions to implement the waste management hierarchy and maximise reuse of the liquid where feasible; provide details about the physical and chemical qualities of both the solid and liquid fractions of the tailings: o dispose of tailings and measures to minimise; |
| | | o migration to ground, groundwater and to surface waters; |

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| Section of referral or terms of reference | Theme / issue | Comment | |
|---|---------------|---|--|
| | | generation of dust; generation of contaminated stormwater and volume of liquid tailings. minimise impacts to coastal processes (erosion and accretion) by: appropriate design and orientation of revetments, seawalls, wharf and boat ramp facilities; appropriate orientation of the navigation channel (also to minimise requirement for future maintenance dredging); manage waste, including minimising amount of waste generated, treatment and disposal methods (general waste and sewage). | |
| ToR, sections 3.7 & 3.8 | Dredging | It is recommended that the NT EPA update the ToR to ensure the proponent undertakes a relevant environmental risk assessment of the likely impacts of dredging and disposal of dredged material. The risk assessment must identify: • the hazards (stressors and pressures) of excavating seafloor sediment, operating dredging equipment; • the sensitive receptors (including consideration to location of any Beneficial Use Declarations, Sites of Conservation Significance, cultural heritage, recreational use, aesthetics, aquatic ecosystem status, benthic habitat, benthic assemblages, benthic photosynthesising primary producers (e.g. seagrass, corals, seagrass, some sponges), etc); • the exposure pathways (direct impact, sediment plume dispersion, seafloor sediment transport as determined by field measurements and numerical modelling of hydrodynamics and sediment transport; numerical models to developed using representative source terms and be validated and verified with consideration to representative source terms; • the risk of exposure, taking into account: • intensity, duration and frequency of exposure; • tolerance to exposure to the hazard (stressor or pressure); | |

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| Section of referral or terms of reference | Theme / issue | Comment |
|---|-------------------------------|---|
| | | this work should be carried out by suitably qualified people with a good understanding of the <u>WAMSI</u> <u>Dredging Science Node</u> ³ methods of assessment (do not use the data gathered from sites that are not relevant to the coastal waters of Winchelsea Island). |
| ToR, Table 2, sections 3.7 & 3.8 | Dredging | It is recommended that the NT EPA update the ToR to require the proponent to investigate options for management of dredged material in accordance with the waste management hierarchy and using a net environmental benefit analysis, noting that at-sea disposal might not be the preferred option. Consider beneficial re-use options. |
| ToR section 3.7 | Dredging | The quality of sediment to be dredged must be evaluated using nationally accepted guidelines for application to coastal waters, eg: |
| | | Simpson and Batley, 2016, A sediment quality assessment: A practical guide, CSIRO⁴ Simpson et al, 2005, A handbook for sediment quality assessment⁵ CSIRO Guidelines for the dredging of acid sulfate soil sediment and associated dredge spoil managemen⁶t Australian and New Zealand Guidelines for Fresh and Marine Water Quality⁷. |
| ToR, Section 4 | General environmental duty | It is recommended that the NT EPA add a section to the ToR to advise the proponent that the EIS must address the following matters: |
| | | Wastewater discharged beyond the boundaries of the mineral lease may require an approval and/or licence under other NT legislation administered by the Environment Division such as the Water Act 1992 (NT) and the Waste Management and Pollution and Control Act 1998 (NT) (WMPC Act). |

³ https://wamsi.org.au/research/programs/dredging

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https://publications.csiro.au/publications/publication/Plcsiro:EP165955

Handbook for Sediment Quality Assessment (csun.edu)
https://www.waterquality.gov.au/issues/acid-sulfate-soils/dredge-spoil-management

⁷ https://www.waterquality.gov.au/anz-guidelines

| Section of referral or terms of reference | Theme / issue | Comment |
|---|---------------|---|
| | | All persons are required to comply at all times with the General Environmental Duty under section 12 of the WMPC Act. To help satisfy the General Environmental Duty, the proponent is advised to take notice of the list of environmental considerations below. The list is not exhaustive and the proponent is responsible for ensuring their activities do not result in non-compliance with NT laws. |
| | | Dust. The proponent must ensure that nuisance dust and/or nuisance airborne particles are not discharged or emitted beyond the boundaries of the premises as a result of the action. |
| | | 2. Noise . The proponent is to ensure that the noise levels from the proposed premises comply with the latest version of the <u>NT EPA Noise Management Framework Guideline</u> 8. |
| | | 3. Erosion and Sediment Control (ESC). The proponent must ensure that pollution and/or environment harm does not result from soil erosion. ESC measures should be employed prior to and throughout the construction stage of the development. Larger projects should plan, install and maintain ESC measures in accordance with the current International Erosion and Sediment Control Association (IECA) Australia guidelines and specifications. |
| | | Where sediment basins are required, the Northern Territory Environment Protection Authority recommends the use of at least Type B basins, unless prevented by site specific topography or other physical constraints. |
| | | Water. If this activity requires the discharge of waste to water or could cause water to be polluted then a waste discharge licence under the Water Act 1992 (NT) may be required. Please refer to the <u>Guidelines</u>⁹. |

⁸ https://ntepa.nt.gov.au/ data/assets/pdf file/0004/566356/noise management framework guideline.pdf
9 https://ntepa.nt.gov.au/ data/assets/pdf file/0005/950603/guidelines-waste-discharge-licensing.pdf

| Section of referral or terms of reference | Theme / issue | Comment |
|---|---------------|--|
| | | 5. Storage . Unless otherwise specified in an Environment Protection Approval or Environment Protection Licence, the proponent should store liquids only in secure bunded areas in accordance with VIC EPA Publication 1698: Liquid storage and handling guidelines, June 2018, as amended. |
| | | Where these guidelines are not relevant, the storage should be at least 110% of the total capacity of the largest vessel in the area. Unless otherwise specified in an Environment Protection Approval or Environment Protection Licence, the proponent must only accept, handle or store at the premises listed waste, including asbestos, as defined by the WMPC Act, in accordance with that authorisation. |
| | | 6. Air . If the proposed activity will emit pollutants to air, an Environment Protection Approval or Licence and monitoring of emissions may be required under the WMPC Act. See the <u>NT EPA National Pollutant Inventory¹⁰</u> advice. |

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 $^{{\}color{red}^{10}}\ https://ntepa.nt.gov.au/your-environment/national-pollutant-inventory$