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Department of Planning and Environment
Attention: Deana Burn
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Dear Ms Burn

Bluescope Steel (AIS) Pty Ltd – SSI-22545215 - Blast Furnace 6 Reline Project

I am writing in response to the Department of Planning and Environment (DPE) request of 23 March 2022 to provide advice on the Bluescope Steel Blast Furnace 6 Reline Project – SSI-22545215. The proponent, Bluescope Steel (AIS) Pty Ltd holds an Environment Protection Licence issued by the Environment Protection Authority (EPA) for operations at the Port Kembla Steelworks.

The EPA has reviewed the Environmental Impact Statement (EIS) and provides comments in Attachment 1 to this letter. The comments refer to specific sections of the documentation where the EPA recommends the proponent provide further information and clarification to assist DPE in the assessment of this proposal. These include the:

- Water Quality Impact Assessment;
- Air Quality Impact Assessment; and
- Noise Impact Assessment.

The EPA may have further comments upon receipt and review of this additional information. The EPA continues to meet with the proponent to discuss these matters. The proponent has already provided some additional information to the EPA. However, further information and best management practice assessment is required, or alternatively, commitments to environmental performance standards. The EPA can meet with DPE at a mutually convenient time to discuss any of our comments should that be required.

Should you require any further information please contact Greg Newman on (02) 4224 4100.

Yours sincerely

20/4/2022

JULIAN THOMPSON
Manager Regulatory Operations

Attachment: Additional information request

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ATTACHMENT 1

Water Quality Impact Assessment (WQIA)

Appropriate level of Protection for Port Kembla Harbour

The WQIA (p65) proposes to consider criteria and data other than those presented in the ANZG 2018 *slightly to moderately disturbed ecosystems*. The assessment proposes to *rely on site-specific scientific studies, together with professional judgement and other relevant information, to derive site-specific trigger values.*

The work of the community, government and industry since the 1970's has led to a significant reduction in pollution across Port Kembla Harbour and the quality of the marine environment has markedly improved. In many cases, currently degraded waterways can be eventually restored to the status of a 'slightly to moderately disturbed' ecosystem and this is the appropriate level of protection where there is a community expectation for this level of waterway health and action can be taken over time to reduce the impacts on a degraded waterway.

While a reduced level of protection may be accepted as a pragmatic short-term goal (e.g. a construction stage of a project) for a highly disturbed waterway, the aim is to eventually restore it to the status of 'slightly to moderately disturbed'. Contemporary environmental management and improved pollutant discharges must be considered even if a waterway is currently degraded.

Recommendation
The proponent ensure the water quality impact assessment includes targeting the ANZG 95% species protection criteria (99% species protection for contaminants that can bioaccumulate). This is consistent with recent development proposals within Port Kembla. Other considerations include the practicable measures that can be taken to mitigate the impacts of the pollution and maintain or restore the environmental values of the waterway.

Discharges from the Blast Furnace

The proposed wastewater discharges from the blast furnace have not been characterised for all pollutants and there is no assessment of practical measures to mitigate pollutant levels in discharges to the site drainage system. The assessment refers to the current licence condition, Pollution Reduction Program (PRP 182) for Number 5 Blast Furnace (5BF) and that the outcomes would be applied to No 6 Blast Furnace (6BF).

The proposed blast furnace gas wet scrubber wastewater is to report to an effluent treatment system, where a portion of the treated water is 'blowdown' (discharged) at a rate of 30 – 45 cubic metres per hour (m3/hr) into about 26,000 m3/hr of salt cooling water and discharges into Allans Creek and the Inner Harbour via the No. 2 Blower Station (2BS) Drain. This 5BF wastewater stream has not been characterised and assessed for the full range of potential impacts & mitigation measures such as improved treatment.

The 2BS Drain receives process water discharges from multiple sources including the blast furnace. Large volumes of cooling water are presently used to dilute some high concentration pollutants in the 2BS drain, that then discharge to Allans Creek and Port Kembla Inner Harbour. This is not an appropriate long term management measure and does not constitute best practice. Additionally, reliance on compliance with existing licence limits is a secondary consideration as they are largely based on historical results and part of the PRP investigation is to determine if these limits remain fit for purpose.

The EIS assesses future discharges to Allans Creek and the Inner Harbour on the basis that the 6BF discharge contribution to the 2BS drain will be the same as that associated with 5BF. The data acquired from licence monitoring and load based licencing requirements at the 2BS drain discharge to Allans Creek have been used to inform this assessment. The EIS assessment refers to PRP 182 as a basis for ongoing management of the potential water quality impacts of discharges to Allans Creek.

All potential water pollution risks, including prevention and treatment options should be considered in the EIS, in the context of pollutant concentrations and loads, including: at-source; in blast furnace wastewater prior to discharge to 2BS drain; and in diluted site discharges from the 2BS drain. The assessment should include:

- consideration of the full range of analytes that may have a non-trivial risk of harm to human health or the environment (discussed further below)
- preventing or minimising the generation of any pollutants at source or into 2BS Drain, including the full range of analytes being considered in the current PRPs
- new treatment options at-source or prior to discharge to 2BS Drain, consistent with the current PRP to reduce reliance on cooling water dilution in the 2BS Drain
- where impacts cannot be addressed prior to discharge to 2BS Drain, consideration of options to reduce the frequency, load and concentration of pollutant discharges at the point of discharge to Allans Creek.

Abnormal Operation

Currently during abnormal furnace operation, the chemical composition of the wastewater may vary; as such, the blowdown water from the effluent treatment system is diverted to contingency storage to prevent release to the environment. It is then stored until such time as the quality of the water is confirmed to be acceptable for discharge in accordance with the EPL. This is also proposed for 6BF however further treatment or storage of this wastewater has not been considered and it may contain highly elevated levels of some pollutants such as ammonia and cyanide which could be further mitigated prior discharge to the 2BS Drain.

Default Guideline Values

The EIS refers to analytes without Default Guideline Values (DGV) in ANZG (2018), e.g. iron, fluoride. Where there is no DGV, there is less understood regarding the risks which therefore requires a precautionary approach. Information on risk in often available in ANZG (2018) technical briefs or relevant information may be available in international literature/guidelines. This information should be assessed when there are no DGV for a pollutant of potential concern for the site.

Cyanide

Cyanide is present in the blowdown water discharged from the blast furnace effluent treatment system. Investigations are currently underway at 5BF to determine additional, online treatment solutions to reduce the concentration of cyanide in the blowdown water before it is discharged to the 2BS Drain. Solutions identified through the investigations are proposed to be implemented at 5BF. Learnings and solutions for cyanide treatment at the 5BF are proposed to be applied to future operation of the 6BF.

Potential practical mitigation measures to mitigate discharge concentrations into 2BS Drain are not assessed in the EIS including risks during abnormal operation of 6BF. Thiocyanate should also be considered in the assessment.

The proponent has stated to the EPA that it is installing best available technology (BAT) for water treatment at 6BF based on the European BAT reference document. This document references the treatment of cyanide using formaldehyde. However the proponent is investigating ozonation as a preferred treatment option given the risks associated with the transportation, storage, and use of formaldehyde. While this investigation is underway for 5BF, the proponent has stated the outcomes will be applied to 6BF during its campaign. The EPA would look to have this, or similar, commitments encapsulated in any planning approval.

Metals

The detection levels used for copper, lead and zinc are not sensitive enough to compare to ANZG (2018) DGVs and enable consideration of the need for further mitigation measures.

Hexavalent chromium is listed in the EIS as not having a DGV. While chromium VI was not detected in the data presented in the EIS, the ANZG (2018) marine DGV for chromium VI is 4.4 µg/L (this value referenced as a DGV for total chromium used elsewhere in the WQIA).

Aluminium, boron, manganese, magnesium, manganese, molybdenum, nickel, and titanium are potential risks in discharges to 2BS Drain but there is no assessment of these metals in the EIS.

Other toxicants

Sulfur compounds, a range of hydrocarbons, organohalogen compounds such as PCDD/F (dioxins and furans) and PCB; and fluoride compounds from any waste gas cleaning/condensate are not assessed in the EIS but may be a risk in wastewater. They should be assessed and addressed in a response to submissions report or equivalent.

Flocculants and coagulants

Flocculants and coagulants are added to the effluent treatment system to assist with the settling of solids in the clarifier (part of the effluent treatment system) and prevent excessive scaling. The slurry formed in the clarifier is sent via pipework for dewatering at the sinter plant, with recovered water returned to the effluent treatment system and the remaining solids transported to the PKSW Recycling Area.

Resultant concentrations of flocculants and coagulants (or their key constituents) in wastewater discharges are not assessed against relevant water quality guidelines to consider any need for further mitigation or consider consistency with label requirements.

Ammonia as a nutrient stressor

Ammonia as a toxicant is discussed above, however, ammonia is not considered as a nutrient stressor risk. ANZG (2018) states that: "*For ecoregions where regional PC-stressor DGVs are not yet provided and local jurisdictions have not yet derived finer scale (for instance catchment, basin or physiographic level) guideline values, refer to the regional DGVs provided in the ANZECC & ARMCANZ (2000) guidelines*". The ANZG (2018) DGV for ammonia is therefore 0.02 mg/L (Table 3.3.2, ANZECC (2000). In addition, load risk of nutrients should be considered.

The EIS refences "EPA advice regarding mixing zones". Section 2.5 of the WQIA quotes that advice as follows:

> "*Mixing zones should not be used to manage the biostimulant impacts of nutrients, since the stimulation of algae (e.g. phytoplankton) may occur at considerable distances away from the nutrient source and is mediated by the biological characteristics of the waterbody as a whole*."

This highlights the need to consider the nutrient concentration & the load risk of ammonia in the EIS.

Other physical and chemical stressors

Key physico-chemical stressors are not considered in the EIS or have not been compared to relevant DGVs, e.g. phosphorus, turbidity/total suspended solids (TSS), pH, total nitrogen, oxides of nitrogen.

- DGVs for total phosphorus, total nitrogen and turbidity are correctly listed in Table 2.2 of the WQIA but these analytes are not assessed further in the EIS
- TSS-turbidity correlations are commonly used and are straight-forward to develop on a site-specific basis. Turbidity DGVs have not been assessed in relation to TSS risk. Sediment loading risks are also not assessed as discussed below.
- pH level is an important wastewater characteristic for 6BF discharges and should be assessed.
- Nitrate is a key water quality indicator for blast furnace wastewater and oxides of nitrogen are not assessed in the EIS for surface water discharges. The nutrient stressor guideline value for nitrate is 0.04 mg/L.

Pollutants loads

ANZG (2018) refers to ANZECC (2000) load-based guideline packages/factsheets covering general guidance on:

- load-based guidelines
- why loads are important, and
- how loads could be considered for suspended particulate matter and nutrients.

There may be a range of potential risk factors that have not been assessed in the EIS including:

- the rate of sedimentation in relation to an ecological risk such as smothering
- the concentrations of metals (dissolved and sediment attached) to ensure contaminant concentrations in sediment of the harbour are not exceeded
- nutrient loading risks related to stimulation of nuisance plant or algae growth in the harbour.

Recommendation
Further information is required to inform the above characterisation, impact assessment, and potential mitigation measures associated with proposed blast furnace discharge to 2BS Drain.

Temperature
The proposed 6BF furnace cooling systems are a closed loop design with heat exchangers. This differs from the evaporative cooling tower currently utilised at Number 5 Blast Furnace (5BF). The closed loop design would require additional salt water and would result in an increased volume of salt cooling water discharge (approximately 10%) compared to current operations, with a temperature increase predicted at the No. 2 Blower Station Drain (2BS Drain) Licence Discharge Point (LDP 79). An increase of about 0.5 – 1°C is predicted at the LDP.

ANZG (2018) refers to ANZECC (2000) for temperature guidelines as follows:
- *Hot water discharges should not be permitted to increase the temperature of the aquatic ecosystem above the 80%ile temperature value obtained from the seasonal distribution of temperature data from the reference system. This is the Default Guideline Value (DGV).*
- *A less stringent cut-off than 80th percentile value may be used for highly modified ecosystems, however, the 80th percentile value should be used as a target for site improvement*.

The EIS has not assessed the less stringent cut-off value listed above and in general, for an ongoing discharge, the less stringent value is not appropriate as it would not provide for site improvement but would lock-in a deterioration in water quality for the site.

The WQIA has compared the discharge to the temperature DGV for slightly to moderately disturbed ecosystems, however, the assessment then accepts a deterioration in water quality by stating that discharges will comply with the temperature limits specified in the current Environment Protection Licence (EPL) and the predicted increase in temperature at the point of discharge into Allans Creek will comply with the site-specific temperature criteria (an increase of less than 3°C). This does not adequately address the SEARs (specifically around NSW Water Quality Objectives and avoid / minimise water pollution) or follow best practice (continual improvement in water quality over time).

The WQIA references a previous 2006 study on site-specific temperature criteria which concluded a “water temperature trigger value of 3°C be adopted”. The context for this study is unknown and a 3°C temperature change is not consistent with guidelines for continual improvement (ANZG (2018)).

Possible mitigation options for site improvement do not appear to have been assessed in the EIS. Section 6.3 does not adequately consider mitigation options. Section 4.4.3 considers two alternative cooling systems (air cooling towers and evaporative cooling) but these were considered unreliable or more energy intensive.

The proposed cooling system without further mitigation therefore results in increased water pollution due to temperature increases in the inner harbour.

Recommendation
Further information is required to address the SEARs; the EPA mixing zone policy of needing to remove the need for mixing zones over time; and include assessment of all practical measures to avoid or minimise water pollution and protect human health and the environment from harm.

Stormwater
The stormwater drainage system proposed for the project should capture and reuse stormwater and contain any spills. The ‘first flush’ system should capture and hold the initial hardstand surface runoff during a rain event before discharging any stormwater off-site.

The WQIA indicates *The project site has established stormwater drainage consisting of a series of sumps and collection tanks which capture the 'first flush' of rainfall events and any potential spills. These sumps are capable of pumping back to the effluent treatment system should further treatment be required. In a rain event, a "first flush" of stormwater (10 millimetres in a day) is collected in sumps and tanks in the stormwater drainage system.*

Based on the information provided within the EIS it is difficult to determine how this system will operate. In the absence of detailed information, the EPA seeks a commitment from the proponent that the designed system will achieve the proposed "first flush" rainfall capture and reduce any discharge of polluted stormwater from the premises.

Recommendation
The proponent provides a commitment that the designed system will achieve the proposed "first flush" rainfall capture and reduce any discharge of polluted stormwater from the premises.

Air Quality Impact Assessment

New Equipment and Controls - Proposed Environmental improvements

The EIS and AQIA outline that BSL is proposing to implement several additional process and emission controls as part of the project. These include cast house floor manipulator and trough covers, additional extraction at the main trough and tapholes, lowered tilting platforms during casting, extraction at the iron ladles and lag tilting spouts, a slag handling condensing unit, and stove hot blast waste gas heat recovery. EPA supports such improvements however requests further details, explanation and/or assessment on the information provided in the EIS as listed below. Additionally, some of the proposed controls are new, while others operated during the previous 6BF campaign.

Recommendation
The proponent clarify which of the proposed controls were operational in the previous 6BF campaign.

a) Cast House Fugitives and Iron Kish
AQIA, Section 10.2 describes improvements in cast house fugitive emissions control through covers (manipulator and trough), additional extraction (main trough, tapholes), and lowered tilting platforms during casting. Additionally, extraction at the iron ladles and lag tilting spouts is proposed. However little descriptive information is provided on these additional controls.

Recommendation
For both cast house and iron kish fugitives, EPA requests details on:

i. The operating principle(s) of proposed covers and how they reduce emissions.
ii. The size of proposed additional extraction points, and the volume of air proposed to be collected for each additional extraction point;
iii. Where additional air extraction will be piped too, and how collected fugitive air emissions will be treated; and
iv. If there are fugitive emission points that aren't proposed to include fugitive emission capture and control as part of the proposal.

b) Slag handling
AQIA, Section 10.2 states that cold water slag granulation with a condensing unit is proposed to minimise H_2S generation for 6BF. The condensing unit uses water sprays to condense steam generated during granulation. This condensate is collected and circulated through a cooling tower with the water from slag dewatering. H_2S emissions from the granulation process may be emitted from the slag granulation cooling tower. This is a change to operations since previous 6BF operating campaigns.

The AQIA is based on H_2S sampling data collected for 5BF. The AQIA does not provide an assessment (quantitative or qualitative) of the potential reduction in H_2S emissions that could be achieved through the implementation of this proposed process modification.

Recommendation
EPA requests details of how the slag handling area will be configured, a clear description of the process flow, equipment, and infrastructure, and additional details on the anticipated changes in H_2S emissions.

c) Hot Blast Waste Gas Heat Recovery
Table 9.18 outlines that the proposed recovery of waste heat from the hot blast stoves would allow for a reduction in fuel consumption. However, any fuel reductions or changes to air emissions (with the exception of greenhouse gas emissions) have not been presented (qualitatively or quantitatively)

Recommendation
For each of the above controls or systems (a-c), where practicable to do so, a quantitative assessment of the potential emission (or fuel reduction) changes that could be achieved (as compared with emissions from previous 6BF operating campaigns) should be provided. If this is not practicable, a qualitative assessment and detailed description should be provided.

Further Assessment of Identified Best Practice Measures

The AQIA provides an assessment of Best Available Techniques (BAT) for the proposed 6BF operations. The assessment references the BAT conclusions contained in the European Commission BAT Reference Document for Iron and Steel Production.

Blast Furnace Gas
BAT 64 as referenced in the AQIA is to reduce blast furnace dust emissions by using a combination of techniques. The BAT associated emission level for cleaned blast furnace gas is a dust concentration < 10 mg/m^3 determined over the sampling period. The AQIA states that BSL will achieve this emission level however no data, explanation, or comparison has been provided to support this conclusion.

Additionally, the emission concentration contained in Table 7.2 appears incorrect (possibly due to a unit conversion error). EPA estimate a TSP discharge concentration of 19 mg/Nm^3 for No 6 Blast Furnace Stove Waste Gas Stack, whilst the AQIA states a TSP discharge concentration of 0.019 mg/Nm^3. Where this data has been used to inform the AQIA conclusions (including the benchmarking against best practice), it should be revised and resubmitted as necessary.

Recommendation
EPA requests information on:

a) how the referenced dust concentration will be achieved and
b) clarification and inclusion (as necessary) of any revised emission rates in the AQIA.

Hot Blast Stoves
BAT 65 as referenced in the AQIA for hot blast stoves is to reduce emissions by using sulphurised and dedusted surplus COG, dedusted blast furnace gas, dedusted basic oxygen furnace gas and natural gas, individually or in combination.

BAT associated emission levels are referenced in the AQIA which are determined as a daily mean value related to an oxygen content of 3 %.

The AQIA outlines that the 6BF stoves use dedusted blast furnace gas, dedusted coke oven gas and natural gas.

The AQIA advises that current emissions do not achieve the associated BAT emission levels, however reductions in emissions are anticipated.

A comparison of the emission performance at the BSL premises against the BAT emission levels has not been included to understand any disparity between current/future emissions and the referenced BAT emissions levels.

EPA also notes that the referenced BAT emission levels are daily averages. It is not clear if there is emission data available to inform a comparison against emission levels derived for a daily averaging period. There may be limitations to such comparisons depending on data availability.

Recommendation
Where reasonable and practical to do so, the proponent provide a comparison for 6BF performance against the BAT emission levels referenced.

Fuel Types

It is unclear if the development application incorporates new alternative fuels.

The EIS describes proposed additional technologies as part of the project. This includes dual lance tuyeres which would allow the use of supplementary gaseous fuels such as COG or hydrogen gas. EPA supports the use of alternative or new fuels which result in environmental improvements or improved equipment / site efficiencies. New or alternative fuels could result in a change in air emissions and impacts. When seeking any approval for use of alternative fuels as part of this development application, then an assessment of the air emissions, changes on current emissions, and potential air quality impacts associated with the use of alternative fuels should be provided.

Recommendation
EPA requests clarification on the planning process. That is, if BSL is seeking approval for these alternate fuels in this application, or if they would be the subject of future modifications or development applications.

Measures to Minimise Air Emissions During Commissioning

The AQIA states that the commissioning period will take several months with the furnace blown in and gradually uprated to full production over 6 weeks. The AQIA identifies the potential for visible emissions during commissioning and reduced capacity of the dedusting system during parts of the commissioning phase. Details on the measures to minimise emissions during this period have not been provided.

The AQIA explains that during the commissioning period, combustion pollutants will occur during charging, purging and heating of the furnace. During blow-in, gas generated during the initial combustion period varies slightly in composition when compared to blast furnace gas and is unable to be re-used in other areas at the premises. This gas will be vented through the furnace top bleeders being directed through the gas cleaning system. The AQIA states that this will result in visible emissions for a period of approximately two to three hours. Additionally, the AQIA states the cast house dedusting system will be operating with reduced capacity during the initial commissioning phase.

Recommendation
EPA seeks further information on the gas cleaning system to be used during the commissioning phase, and the proposed measures to minimise emissions during commissioning.

EPA suggests that some of this information could be used to inform a future commissioning management plan which would also incorporate community consultation and information distributed in advance of the commissioning period.

Noise Impact Assessment

EPA considers the proposal relatively low risk given the history of noise performance of the BSL premises. The operational NIA has been undertaken against the Noise Policy for Industry (NPfI – EPA, 2017).

Sound Power levels supporting the NIA draw on previous studies for 5BF derived by measurement. This approach is preferred by EPA over data base type libraries of similar plant.

Recommendation
The proponent must confirm that the modelled sound power levels in the original 5BF assessment are reasonable and appropriate for this NIA. The EPA requests that the proponent confirm that 5BF is meeting its original design noise objectives.

The EIS proposes that the 6BF satisfy existing EPL limits for 5BF and for the combination of the 6BF and the slag handling area and stockhouse to satisfy existing Port Kembla Steel Works current noise emissions minus 10dB so that the total site noise does not increase. This approach is allowable under the NPfI (s.6.1) and is commonly termed the “discrete process” approach.

This discrete criteria approach has been developed from monitoring undertaken by SLR in 2018 at three locations. These locations are identified as M2, M5 and M6 in the assessment but are not clearly marked in Figure 5-1. The NIA requires additional justification that noise levels at these 3 monitoring locations (M2, M5 and M6) are suitable to describe existing site noise levels at all residential locations surrounding the steelworks.

Recommendation
EPA requests the proponent:
a) clearly identify locations M2, M5, & M6 on Fig 5.1,
b) provide additional justification that the noise levels and monitoring locations (M2, M5 and M6) used to derive the discrete process assessment levels (SLR, 2018) are appropriate and representative of long term noise emissions from the Port Kembla Steel Works; and,
c) *provide additional information to inform the discrete process assessment levels.*