DOC18-327885-35

May Patterson
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms Patterson

Sutton Forest Quarry Project, Hume Highway, Sutton Forest (SSD 6334)

I am writing further to the above development application and accompanying Environmental Impact Statement.

Further to the Environment Protection Authority's (EPA) initial response provided to the Department of Planning and Environment (DPE) on 21 June 2018, please find attached a further detailed submission to assist DPE in the assessment of this project. These matters are discussed in **Attachment A** and include the following:

- Surface Water
- Groundwater
- Noise
- Air Quality

The EPA may have further comments upon receipt and review of any requested information.

If you have questions regarding the above, please phone the contact officer on (02) 4224 4100.

Yours sincerely

09/07/18

PETER BLOEM
Manager Regional Operations Illawarra
Environment Protection Authority

Contact officer: CRAIG PATTERSON
(02) 4224 4100

Attachment

Phone 131 555
Phone +61 2 4224 4100
(from outside NSW)
Fax +61 2 4224 4110
TTY 133 677
ABN 43 692 285 758
PO Box 513
Wollongong
NSW 2520 Australia
Level 3, 84 Crown St
Wollongong
NSW 2500 Australia
info@epa.nsw.gov.au
www.epa.nsw.gov.au

Attachment A

Surface Water

Fines storage areas

1. Two fines storage areas are proposed to contain fines produced from the sand washing process during the first three stages of extraction. The full range of potential pollutant risks associated with wash water and runoff from crushed sandstone activities has not been adequately considered.

   The Environmental Impact Statement (EIS) has only considered sediment concentration and fuel/oil spills and has only proposed discharge targets and monitoring for pH and salinity, total suspended solids and oil and grease. The EIS states that there are no proposals to use process chemicals and there are no known concentrations of heavy metals in the proposed product.

   There may be potential, however, for metals, sulfate, low dissolved oxygen/biochemical oxygen demand and nutrient related risks to surface waters that should be considered and assessed. Naturally occurring radioactive materials should also be assessed.

2. Silting of downstream waters by fines and sand particles can cause water quality impacts. The *Water and Tailings Management Plan* (WTMP) proposes treating combined process water and runoff using sedimentation measures consistent with *Managing Urban Stormwater, Soils and Construction Vol. 1* (Landcom, 2004) and *Vol 2E Mines and Quarries* (DECC, 2008). Sediment basins used to manage runoff from these areas are proposed to be Type F/D (wet) basins (for fine soils), however, these measures are designed to treat stormwater containing 'clean' sediment and may not be adequate to treat water containing other pollutants. Controlled discharges are proposed for these dams. The fines storage area may be considered a waste storage area and therefore a disturbed area for which Volume 2E controls would not apply.

   Due to the nature of the catchment and relevant environmental values, additional controls should be considered to minimise fine sediment leaving the site. This should include any further engineering designs for type F/D basins that could be implemented (sizing/performance) and the use of further mitigation measures downstream of the basins such as bioswales and maintaining vegetated filter strips and riparian zones.

3. Section 6.4 of the Surface Water Assessment appendix (Table 12) includes proposed water quality targets for sediment basins discharges. The proposed discharge trigger for sediment of 50 mg/L of suspended solids is based on Volume 2E guidance and is not related to an assessment against the NSW Water Quality Objectives. In addition, Volume 2E states that more stringent requirements might be necessary in particularly sensitive environments.

   ANZECC (2000) trigger value for turbidity in upland streams is 2-25 Nephelometric Turbidity Units (NTU) and the guidance states that most good condition upland streams have low turbidity. Given the sensitive nature of the catchment (including the environmental values of aquatic ecosystem protection and drinking water) and based on an appropriate assessment against the NSW Water Quality Objectives, it is expected that a range of further controls beyond the practices and principles of Volume 2E are required. These additional measures can also reduce potential sedimentation impacts associated with managed overflows.

4. The EIS flags the potential use of coagulants or flocculants. The potential impacts of any chemical constituents in settling agents on receiving waters must be assessed and appropriate mitigation, discharge criteria and monitoring implemented for their use. This should take into consideration the matters listed in Section 45 of the POEO Act.

   The general approach may include:
   a) use of settling agents with known lower toxicity such as alum (unless the receiving water pH is less than 6) or gypsum.
   b) use of other settling agents with available information on their level of risk (for example, suitable ecotoxicity information/testing results).

c) establish a best practice regime that would result in low risk of residual settling agents being present in discharges.
d) demonstrate the best practice regime with appropriate discharge trigger values, active constituents and associated monitoring.

5. As noted above, a 50mg/L trigger value for sediment is not considered appropriate for the site and activity. Trigger values would also be required for any flocculant or coagulant chemicals and any other analytes following an appropriate characterisation and consideration of potential impacts on receiving waters.

   Section 6.5 "Surface Water Response Plans" proposes stream water triggers and monitoring to develop a site-specific suite of trigger values. For surface water discharges, this system may have limited usefulness to detect impacts from the site but may have potential application for groundwater-surface water interaction risks. For surface waters, sedimentation and changes to water quality during discharges and managed overflows would need to be targeted in discharge monitoring and any ambient monitoring program.

6. Based on the information provided in the surface water assessment, it is not possible to determine whether the discharges contain pollutants at non-trivial levels. The proponent should assess the potential discharge quality in terms of concentrations and loads of all pollutants and consider the potential impact on the environmental values of the receiving waterway with reference to the ANZECC (2000) default trigger values. Site-specific trigger values can be used provided they have been derived consistent with the methodology provided in the ANZECC (2000) guidelines.

   The proponent should also complete a risk assessment on the potential for the presence and impact of other pollutants in wastewater (other than sediment and oil and grease) and the risks of fine sediment loads and concentrations in the downstream environment.

Processing and stockpiling area

7. Surface water runoff from the processing and stockpiling area would be captured and diverted into Water Storage Dams A and B as it could potentially contain significant quantities of sediment. It is proposed to be directed through sediment controls prior to flowing into either water storage dam.

   The reuse of process water may have the potential to concentrate any pollutants in the water recovered from the sand washing process. A similar assessment for the fines storage area should be conducted for potential discharges from this area.

Erosion and sediment controls

8. For erosion and sediment controls outside of the fine storage areas, it is proposed that Type C sediment basins will be used, designed for the 2-year ARI design rainfall event, which would be calculated based on the catchment size draining to each sediment basin. This type of basin is designed to slow down flows sufficiently to allow natural settling and/or filtration of soil particles before the water is self-released to receiving waters.

   Due to the nature of the catchment and environmental values, additional controls should be considered to minimise sediment leaving the site including any further engineering design improvements to Type C basins that could be implemented (sizing/performance) and the use of further mitigation measures downstream of the basins including bioswales and maintaining vegetated filter strips and riparian zones.

   As Type C basins will be primarily used in initial stages before extraction areas become free draining, the EIS notes that Type C soils, due to soil variability, might mean a Type C basin may not achieve the required water quality outcome. If it can't, a 'wet' type basin, and its appropriate management, would be required. Similar consideration, as discussed above, for the fines stockpile areas would also apply in relation to additional controls and appropriate assessment and management of any settling agents.

Backfilling the extraction void

9. Backfilling material is proposed to be residual fines from the processing operations together with Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM). An assessment of the potential groundwater contamination threats posed by the materials used for backfilling should be undertaken. This information typically includes Toxicity Characteristic Leaching Procedure (TCLP) test analyses.

On-site Wastewater Management

10. Section 2.9.6 of the EIS (Section 3.2.7 of Volume 1, Part 3) describes the sewage and effluent disposal. The EIS states that all sewage would be captured on site and treated in an aerated wastewater treatment system before being disposed into subsurface absorption trenches or beds or irrigation area. The EIS does not appear to include an assessment of the proposed treatment system to demonstrate that it has sufficient capacity to adequately and sustainably treat and reuse the water onsite without resulting in an environmental impact.

    Alternatives to discharge should be considered in the first instance such as reuse on a dedicated irrigation area based on water and nutrient balance calculations. Nutrients and other potential pollutants in effluent are to be reused by plant uptake or safely stored in the soil on a temporary basis to minimise potential discharges via runoff or ground water pathways. Any excess effluent (after reuse) that may be discharged via sub-surface absorption trenches or beds must have the potential impacts on groundwaters and surface waters appropriately assessed. This should involve demonstrating that relevant environmental and human health performance outcomes will be satisfied and include the provision of a water and nutrient balance.

Other comments

11. Subject to the assessment of other potential contaminants in discharges and any additional mitigation measures that may be proposed to control pollutants and fine sediment loads, a reduced frequency of managed overflows may be required.

12. Mechanical methods of weed control should be used wherever possible. Any pesticide applications should be addressed in site management plans to mitigate potential for runoff and discharge of pollutants.

13. Action 3.6 in Table 6.1 in the Summary of Environmental Management and Monitoring Measures relates to monitoring surface water quality in downstream areas. The monitoring program should include provision for collecting baseline data for downstream locations prior to the commencement of any activity on the site as well as monitoring upstream locations to provide any ongoing baseline comparison.

Groundwater

14. The baseline groundwater data information provided in the EIS detailed groundwater quality sampling and level readings were taken at dates between October 2012 and July 2014, as well as between July 2015 and August 2016. Details regarding the sampling procedures for the collection of data during the sampling rounds does not appear to have been included, other than to describe the use of a bladder to obtain samples. Details including whether the wells were purged prior to obtaining representative samples is unknown.

    Details from the EIS reveal that baseline water quality across the site location was limited to two sampling collection dates between June 2014 and March 2016. Table 17 in the Groundwater Impact Assessment (GIA) provides a summary of water quality analytical results for the monitoring bores from the sampling round carried out in March 2016. The baseline information collected from the monitoring bores in July 2014, or any other subsequent quality measurements do not appear to have been included in the GIA. Providing only one round of groundwater quality data is not a sufficient representation of baseline groundwater quality data for the local groundwater system.

There are limitations in the GIA when justifying how the baseline water data (both levels and quality) was obtained. Further information is sought to better define the characteristics of the local groundwater setting.

15. Some of the details described in the GIA appear to contradict the information provided in Table 8 for the 14 monitoring bores established on the site. For example,
    a) Section 13.1.3 of the GIA states that monitoring bore SFQ DDH 4 D, installed with a data logger, was dry during the sampling period (July 2015 to August 2016). This bore was not included in the subsequent hydrograph (Figure 18). Table 8 however indicates that the elevation of the standing water level in SFQ DDH4 as of the 11 May 2015 was 635m AHD which is 15 metres above the height of the base of the drilled bore depth.
    b) SFQ OH1 in Table 8 shows that it was dry during the 11 May 2016 sampling round. The sampling round from October 2012 to July 2014 (Figure 15) shows the bore had a suitable water column that could be measured.

    For groundwater level readings, further clarification is sought for water level readings where aspects of the GIA contradict each other.

16. Baseflow contributions to Long Swamp creek are detailed thoroughly in the EIS with the swamp being the closest High Priority Groundwater Dependant Ecosystem (GDE) to the site. Limited impacts are predicted to baseflow volumes over the lifetime of site activities and their progression.

    Lateral seeping perched systems have also been detailed throughout the EIS. The EIS identifies that elevated springs are fed by the discharge from the local perched systems underlying the site surface. There is limited information in the EIS and GIA regarding the impact to the perched systems/local elevated springs (non-identified GDE's) should quarrying activities be approved. The EIS does not describe whether the elevated springs contribute beneficially to the local hillside terrestrial systems and vegetation nor does it discuss the potential for loss of flow to these elevated springs. It is inferred quarrying activities which intercept and remove the stratigraphy that allows for lateral shallow subsurface flow will restrict the discharge flowing from this system.

    Further information is required to clarify the above and to understand the potential local changes that may occur if the perched system is intersected by the quarry activities. For example, do the perched systems provide water for upgradient non-identified GDE's?

17. The network of existing 14 groundwater monitoring bores, with the exception of SFQ OH5, are located within the internal site limits of the sandstone extraction area. Given the potential for the use of GW104765 to supply water, in conjunction with quarry inflow rates from the regional groundwater system, the change in water levels as a result of drawdown and the potential influence on local water quality should be maintained throughout the life of the project. Replacement bores should be installed prior to the decommissioning of the existing network and extraction stage progression. Based on the information provided, it is unclear where the applicant proposes to install replacement monitoring bores once extraction stages cause the removal of the existing network. The potential locations for the replacement groundwater monitoring bores should be provided and assessed prior to the commencement of quarrying activities should quarrying activities be approved.

18. Section 5.2.9 describes the proposed long-term groundwater monitoring program. Collection and analysis of groundwater quality data in the monitoring bore network is proposed to be carried out on a quarterly basis for an initial period of 24 months to verify baseline groundwater quality and establish any natural variation. The EIS also states that the results of the Coffey (2016) numerical groundwater modelling assessment indicate that no impacts on the regional water table would occur within the first three years of extraction. To establish a true baseline and establish any natural variation, the baseline groundwater monitoring should be completed prior to any disturbance activities being conducted at the site. If during the first three years of extraction the monitoring program identifies a variation in groundwater quality, it is unclear how the proponent will determine if it is due to natural variability or as a result of the extraction activities. The monitoring program

should also have flexibility to increase the frequency of monitoring should identified trigger levels be exceeded. Additional information should be provided to clarify this issue.

19. Action 2.8 in Table 6.1 in the Summary of Environmental Management and Monitoring Measures states that an annual review of groundwater monitoring data will be conducted to identify any impacts resulting from the operation of the quarry. Section 5.2.9 however proposes that quarterly monitoring will be undertaken for an initial period of 24 months. Assessment of potential groundwater impacts against relevant water quality trigger values should be undertaken upon receipt of the groundwater monitoring results. This is to ensure that any identified impacts can be responded to in an effective and efficient manner and to enable suitable management and mitigation measures to be implemented promptly to prevent future impacts.

Noise

20. Table 6 of the Noise and Vibration Impact Assessment (NVIA) prepared by Spectrum Acoustics Pty Limited dated March 2018 shows time periods during which the various proposed operational activities are to take place. Some of the time periods (site establishment and construction as well as extraction operations) differ from those presented in Table 1 of the NVIA (Proposed Hours of Operation).

    Site establishment and construction works are proposed to take place from 6am to 10pm in Table 1. The period 6am to 7am is part of night-time, and Table 6 should reflect this. Similarly, extraction operations are proposed to occur from 5am to 10pm in Table 1. Table 6 should be amended to include daytime, evening and night-time periods for extraction operations.

21. Table 6 states that extraction operations are to occur during a 3-hour morning shoulder period. No further discussion is provided to support the adoption of a morning shoulder period for this proposal. Unless a morning shoulder period can be justified as per Section A3 of the Noise Policy for Industry, references to a morning shoulder period should be removed from the NVIA and the standard daytime, evening and night-time periods should be adopted for this assessment.

22. For Section 5.4.3.3 of the EIS, the following issues require additional information and/or clarification:
    a) The value provided in Table 5.9 for location N5 for the Evening period does not appear to represent the high traffic noise amenity criteria as indicated. The value appears to reflect the intrusive criteria. The LAeq value (58 dBA) provided in Table 5.8 appears to be more than 10 dB above the recommended amenity noise level for the area. The revised value should be 43 dBA based on Section 2.4.1 of the Noise Policy for Industry (NPI).
    b) For the night time project noise trigger levels at location N3, Table 5.9 states that intrusiveness noise level applies due to absence of other industrial sources at R15. In accordance with the Section 2.4 of NPI, where cumulative industrial noise is not a necessary consideration because no other industries are present in the area, the relevant amenity noise level is assigned as the project amenity noise level for the development.
    c) For the maximum noise level assessment, the EIS refers to the incorrect section of the NPI. The correct section of the NPI is 2.5 not 2.4.1.

23. Section 5.4.6.1 lists the sound power levels of the equipment used in the modelling of each scenario. Section 5.9.3.2 identifies the use of onsite power generation for electricity for lighting towers and other equipment. This piece of equipment does not appear to have been included in the noise modelling. Given that the site will operate 24/7, the noise modelling does not appear to include all relevant operating equipment. This may underestimate the noise levels predicted by the model.

24. Table 5.17 presents data for certain locations as <35 and <40dB(A) however some of the predicted noise levels in the table are below 35dB(A) (For example, location R16). It is unclear why the data has been represented as less than values when values lower than this have been presented.

Air quality

25. Figure 2.1 indicates that the "Fines storage area 1" appears to be located on top of a ridge. Section 2.7.3 states that this area will store up to approximately 350,000m3 of fines up to 8m high. Given the contours provided in Figure 2.1, this location may be more exposed to prevailing winds which may increase dust generation from the stockpile. This must be taken into consideration when developing suitable dust mitigation measures for the site should the development consent be granted.

26. Section 5.9.2 of the EIS includes information on dust deposition monitoring. The five deposited dust deposition gauges identified in Figure 5.21 used to record average monthly deposited dust levels over a 10 month period (November 2013 to August 2014) are predominantly located to the east and north east of the proposed site. Section 5.4.3.2 states that westerly and south-easterly winds occurred for more than 30% of the time during some seasons. No monitors appear to have been located to the north west to take into account the south easterly winds in determining the average monthly deposited dust levels. Additional information should be provided to clarify this issue.

27. Section 5.9.3.1 identifies the main sources of particulate emissions. Section 5.4.5.2 refers to crushing activities. It is unclear from the information provided whether this activity has been included or is required to be included as a potential source of generating particulate emissions. Other potential sources of dust emissions which do not appear to have been addressed include:
    - Particulate emissions from the construction of the noise barriers as well as the two fines storage areas.
    - General movement of heavy vehicles on seal roads (for example, north bound on-ramp) due to soil drag out (haul truck wheel dust).

    Additional information should be provided to clarify this issue.

28. Section 5.9.6 details the proposed Management and Monitoring Measures to minimise dust impacts. This section does not however include the proposed automated fixed sprinklers at key operational areas around the site as described in Section 2.7.1. The automated system should also be linked to a weather station and automatically activate under specific wind conditions.

29. Figure 5.26 shows some 24-hour PM10 contours of 40ug/m3 offsite near location R18. This is approaching the assessment criteria of 50ug/m3 and may result in an offsite impact to this property. This must be taken into consideration when developing suitable dust mitigation measures for the site should the development consent be granted.

30. The key provided for Figure 5.2.6 appears to be incorrect. The key refers to annual average PM10 contours whereas the figure title refers to 24-hour PM10 concentrations.

31. Section 5.9.9 states that the Applicant would recommence monitoring of deposited dust and PM10 using the existing deposited dust gauges and High-Volume Air Sampler following the receipt of development consent. As stated above, the five existing dust gauges are not located in suitable areas to monitor potential dust impacts during south east winds. Should development consent be granted, the monitoring locations would need to be reviewed to ensure that the gauges are located in appropriate locations to monitor all wind conditions experienced at the site. Monitoring should also be conducted for a minimum of two years post commencement and also include a period of baseline monitoring prior to any works commencing.