WEDGETAIL
PROJECT CONSULTING

20 January 2021

Director of Resource Assessments
Department of Planning & Environment
GPO Box 39,
SYDNEY NSW 2001

Attention: Mr Matthew Sprott

Delivered by email: matthew.sprott@planning.nsw.gov.au;

SUBJECT: SSD-6125 – CABBAGE TREE ROAD SAND QUARRY – MODIFICATION NO.2 (MR2) – SUBMISSIONS REPORT

Dear Matthew

Wedgetail Project Consulting Pty Ltd have been engaged by Williamtown Sand Syndicate Pty Ltd (WSS) to prepare this Submissions Report in response to submissions received from regulatory authorities for the proposed Modification No.2 (Mod2) to the Development Consent for the Cabbage Tree Road Sand Quarry (SSD-6125). WSS are the owners of the quarry operator Newcastle Sand.

Mod2 is to permit the inclusion and use of a sand wash plant onsite, which is considered likely to reduce overall environmental impacts of the quarry. It is expected the wash plant may process up to 60% of the total quarry output.

This Submissions Report includes an updated project description in response to the NSW EPA's submission and additional engineering project design. An updated assessment of the potential impacts and any management measures to ensure the quarry activities result in minimal or lower environmental impacts is included. The document demonstrates that the development remains substantially the same as the original approved development. Given the minimal environmental impacts, Mod2 remains consistent with Section 4.55(1a) of the *Environmental Planning & Assessment Act 1979*.

We look forward to the assessment and determination of this application.

Yours Sincerely

Jonathan Berry
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Attached: Mod2 Submissions Report – Wash Plant

MOD2 SUBMISSIONS REPORT – WASH PLANT

1. Current Status

The Cabbage Tree Road Sand Quarry was approved under SSD_6125 on 9 May 2018. The quarry commenced construction in August 2019, after more than nine months of construction, largely owing to delays in the final signoff by Transport for NSW (formerly RMS) for the construction of the intersection with Cabbage Tree Road, the quarry commenced operations in May 2020.

During the construction phase, Newcastle Sand were approached by Sibelco and Owens Illinoi (OI) regarding the supply of specific sand for glass manufacturing. Sibelco (now owned by Holcim) process and provide glass making quality sand to OI for glass manufacture, however with existing reserves nearing exhaustion, a request for 5000 tonnes of sand was made to evaluate the suitability of a new sand resource. Modification 1 was requested to facilitate the trial, as the formal intersection with the quarry had not been completed. Modification 1 was granted on 26 March 2020. The trial was completed in late March / early April. The sand supply was deemed to be suitable for glass manufacture.

Since the quarry commenced operations in May 2020, the quarry up to the end of October 2020 has sold approximately 63,000 tonnes of sand from the site. This is comprised of fill and landscape sand (41 %), glass sand (26 %) and concrete sand (33 %). This constitutes less than 30% of the approved peak production of the quarry. Output has increased significantly during October.

The quarry currently employs six people, plus contractors and consultants involved in day to day operations.

The application for Mod2 was made on 16 November 2020. The NSW Environmental Protection Authority (EPA), Port Stephens Council (PSC) and Hunter Water Corporation (HWC) made submissions on the application.

2. Submissions

The NSW EPA, PSC and HWC made submissions on the application, these are described below including the proposed response to matters raised.

2.1.1 NSW EPA

The NSW Environmental Protection Authority submission (undated, ref DOC20/961779-2) noted the proposed modification will be suitably managed under the Environmental Protection Licence (EPL) 21264 and made the following comment against the relevant conditions in relation to the proposed modification:

- *Condition L3 Noise limits.*
  - *Noise limit conditions remain current and should not be affected by the wash plant that will generate less noise than the existing approved plant.*

No additional response required.

- *Condition O5.2 – Bunding of above ground tanks*

- *"1.2 million litres of Hunter Water Corporation (HWC) mains water is proposed to be stored in a series of 100 and 375 kilo litres tanks. The tanks will be contained within a sand bund with a capacity of 360 kilo litres."*
- *"HWC mains water contain chemicals, such as but not limited to fluoride and chloride, that are not naturally found in the environment. Therefore, HWC mains water stored within above ground tanks must be bunded. The use of a 360-kilo litre sand bund will not meet licence conditions."*

Pursuant to Condition O5.1 of the EPL 21264, bunding is required where above ground tanks are containing material that is "likely" to cause environmental harm to be bunded or have an alternative spill system in place. The purpose of the sand bund proposed is to contain sediments in the event of a tank failure, the storage of HWC potable water was not considered "likely" to cause environmental harm. There are no known EPL's that apply to reservoirs or water tanks that store potable water, nor is the activity of storing water listed as a scheduled activity under the *Protection of Environment Operations Act 1997*.

The provision of bunding for all water tanks onsite, while possible, is not considered practical and would add considerable additional cost to construct and maintain. To address the EPA's concerns, the following key amendments to the project (listed below and described further in Section 3) have been proposed in response to minimise and avoid the risks and potential for environmental harm from the use of the above ground water tanks for storing potable water:

- Reduction in the maximum storage tank size to 50,000 L.
- Inclusion of a carbon filter (or equivalent) to remove chlorine compounds and aluminium within the water stored onsite.
- The reduction in water tank sizes has necessitated the inclusion of a small dosage of coagulant and flocculant into the washing process to improve sediment settling and recycling of water.

- Conditions O6.5, 06.6 and 06.7 – Stormwater Management
  - *The proposal states that processed water containing sediment will be used for dust suppression and to irrigate plants in rehabilitated areas of the Premises. The proponent should meet operational stormwater management conditions.*

No additional response required.

2.1.2 Port Stephens Council

Port Stephens Council's submission (undated), raised matters relating to Development Contributions under Condition 21 of the Development Consent. Condition 21 relates to annual financial contributions to Council in accordance with Port Stephens S.94A Development Contribution Plan.

> *Council propose an amendment to Condition 21, to more accurately reflect how the payment of S94A contributions to Council should occur, and that these contributions should be payable on the issue of a construction certificate for building works that occur on the site.*

At this stage, no works at the quarry have been undertaken that require the issue of a construction certificate. Further clarification is required of how the S94A plan applies to land owned by Port Stephens Council and tendered for quarrying on their behalf and for which royalties are already paid.

It is unclear how the proposed amendment relates to the modification proposed, and no further consideration of this matter is considered relevant to this application. Should Council wish to further pursue this matter it should occur independent of the proposed modification.

2.1.3 Hunter Water Corporation

HWC made a submission dated 21 December 2020. HWC had no objection to the proposed modification. The following matters were raised for resolution, most likely within an amendment to the Soil and Water Management Plan.

> *HWC confirmed that there is adequate water supply to cater for the project, however, during drought conditions HWC are likely to recommend additional water saving measures across all industrial users irrespective of the commitments proposed within the modification.*

Newcastle Sand accept the need to minimise water use, particularly during drought conditions.

> *HWC recognised that, if managed correctly, there is potential benefit in distributing process water with residual silt, clay and organic material back onto the site to assist the site rehabilitation process. It is therefore recommended that the irrigation of 'dirty' process water be undertaken in a way that optimises the objectives of dust suppression and site rehabilitation. In that regard, the broad distribution of process water is favoured over the recovery of concentrated soil fines and subsequent blending with topsoil or subsoil.*

Newcastle Sand recognise the importance of reintroducing additional sediments into the rehabilitation where feasible, though note, this is over and above the topsoil that will be re-applied during rehabilitation (i.e it is not essential to the rehabilitation process). The inclusion of flocculant and coagulant will enable a reduction in water use, whilst also enabling the spread of additional sediments within rehabilitation and landscape sands. Additional commitments have been included to ensure sediments reapplied to rehabilitation areas area suitably blended.

3. Proposed Modification

The proposed modification is to permit the inclusion and use of a sand wash plant onsite, which is considered likely to reduce overall environmental impacts of the quarry. It is expected the wash plant may process up to 60% of the quarry output at maximum.

For the purposes of operational logistics and meeting the required power supply only the air separator or wash plant would be used at any one time, these plants would not be run concurrently.

The proposed wash plant would consist of the following key components, listed below:

- **The wash plant**. Similar in size to the air separator, the wash plant will be mounted on skids to be relocated around the site to limit haulage and maintain consistency with the approved processing method. The wash plant will include a dewatering screen that will reduce moisture content of processed sand to approximately 10%. The wash plant would receive screened sand from the electric screen.
- **Water and sediment management system**. The wash plant consistently cycles large volumes of water to remove the organics, silts and clays. This includes the following key components:
    - **Coagulant and flocculant dosing system**. Automated system introducing positively-charged polmer coagulant (polyDADMAC at 2 parts per million), then negatively charged flocculant at

approximately 6kg per million litres (6 parts per thousand). Both are drinking water grade polymers used in water treatment for potable networks that will biodegrade. Both are dosed proportionally to the sediment content.

- **Head Tank**. A surge tank receiving the dosed process water before passing to the settling water storage tanks.
- **Settling tanks**. A series of 50 kL heavier gauge baffled water tanks sufficient to hold approximately 300,000 litres (300 kL) for the settling of sediments. Rather than being transferred around the site to each processing area, these tanks are likely to be installed in only two or three locations (one within the southern resource area, and one to two in the northern resource area), with piping (within the resource area) between the plant and tanks. The tanks ensure evaporation is minimised and will provide adequate volume to settle out fine particles. Some tanks may be co-located with wash plant where needed to improve sediment settling and consistency of water supply.
- **Sump and cone tanks.** Will receive thickened sediment from settling tanks. Thickened sediments will be applied directly to areas for rehabilitation, providing dust suppression and additional rehabilitation media or blended with landscape sand on stockpile with bleed water recovered through a shallow sump.
- **Water storage tanks**. Two 50 kL rural style water tanks sufficient to hold approximately 100,000 litres (100 kL), these tanks receive the clarified water and will be the feed water for the wash plant.
- **Carbon filter**. Top up to the water tanks will be from the HWC mains network after passing through a carbon filter (or similar) to reduce chorine compounds and aluminium from the mains supply.

- **Stockpile pad**. A graded stockpile pad (similar to existing hardstand), with a shallow sump will be used to recover excess water from processed sand where needed. While the processed sand passes through a dewatering screen, it is expected to increase in moisture content by up to 4-5%, some of this may drain from the stockpile.
- **Water reuse**. In order to minimise silt build up in the tanks it is proposed to use the process water for rehabilitation irrigation and dust suppression in addition to blending these sediments with landscape sand. The net outcome is a negligible change in water demand compared to that proposed in the EIS.

As the quarry progresses the wash plant use could increase to 50 to 60% of the resource. The use of the wash plant will be dependant on the need for removing the fine fraction sufficient to meet required specifications.

The wash plant and air separator are shown below in **Photograph 1** and **Photograph 2**.

Photograph 1: Example of wash plant (skid mounts to be added, feed tank not shown.

Photograph 2: Approved air separator onsite.

3.1 Power

The proposed wash plant will require up to 80 kW of electric power to operate. This is approximately half that used by the air separator. The inclusion dosing system and sediment transfer pumps will not significantly increase the power demand. This is considered to remain and improvement in the energy efficiency of the operations.

3.2 Noise Levels

The proposed wash plant comprises a series of pumps, cyclones and vibrating screens with a combined sound power level of 93 dB(A). For context, the approved air separator was modelled with a sound power level of 98 dB(A) representing a 5 dB reduction. When operated in conjunction with the primary screen at 103 dB(A), the wash plant or air separator make negligible contributions to total noise emissions from the site.

3.3 Water

Water will be drawn from the Hunter Water Corporation mains network through the existing water connection. Water from the mains supply will be passed through a carbon filter (or equivalent) to remove residual chemicals (e.g. chloride and chlorine) from the water. With the inclusion of the carbon filter the stored water is considered to be of little or no "environmental harm" in the event of a spill or leak, as such, under Condition O5.1, 5.2 of EPL 21264, bunding of the above ground water tanks is no longer considered necessary.

Water will be stored within a series of water tanks placed near the floor of the quarry within the approved disturbance footprint. The tanks will store up to a total of 400 kL. The largest of the tanks will be approximately 50kL in capacity. These tanks are smaller than the 100 kL or smaller permitted as exempt development under the Mining SEPP. The tanks will be located within an infiltration basin (with the floor above the maximum extraction depth) to retain sediments in the event of a tank failure, and will include concrete barrier blocks or suitable bunding around their perimeter to minimise collision risks onsite where susceptible to potential collision with mobile equipment.

The estimated water demand based on the EIS water balance is 125 kL per day consisting of gravel road dust suppression, static stockpile sprays and potable water for use in office facilities. An estimated 45 kL per day was estimated for batter and stockpile dust suppression. This was estimated in the Soil and Water Management Plan to be between 10.2 ML and 29.65 ML per annum.

During 2020, where construction occurred for five months and operations for approximately seven months, a total of 5.7 ML was dawn from the Hunter Water Mains Network for use onsite. This averaged out to 12.5 kL per day and is less than the 10.2 ML / year estimated in the EIS for Years 1 and 2. This demonstrates the extent of water for dust control on batters and stockpiles may be lower than initially anticipated in the EIS. EIS estimates for batter and stockpile dust suppression assumed bare batters, rehabilitation of batters as currently being completed is likely to substantially reduce water demand.

The wash plant will process sand at up to approximately 150 tonnes per hour, (the same as the air separator). While the system is essentially closed, water is lost due to a more consistent increase in the moisture content of the product sand and removal of flocculated sediments. These water loses are described below:

- Sand will enter the plant at approximately 3 - 6 %, with the product sand leaving the plant at about 10%. It is expected the field moisture capacity (i.e. the typical product sold) is likely to settle at 5-8%. Excess water (i.e. about 2-5%) will be captured and re-circulated. On average, this is expected to equate to 15 m3 per day (at 1500 tonnes per day). It's worth noting that an increase in the moisture content of the concrete sand product will effectively result in a reduction in water use at the offsite concrete batch plants, where sand is delivered locally, this is likely to result in no net change to water use in the HWC network.
- The sediments will be transferred directly to landscape sand or rehabilitation areas for dust suppression at up to 66 m^3 per day (on a 10 hour day), or per 1500 tonnes washed. It is likely that a portion of this sand will be recovered as bleed from landscape sand stockpile. In either event, this water is dust suppression for the landscape sand and rehabilitation areas.
- This amounts to 81 m^3 per day of water use (i.e. 81 kL/day or 1500 tonnes). Annually, if processing 60% of the product (i.e. 318,000 tonnes), this equates to 17.2 ML per annum, or about 60% of the estimated peak water usage and 7 ML above the 10.2 ML estimated for batter and stockpile dust suppression.

Within the EIS the dominant peak water use was for dust suppression on the gravel road in the northern resource area, accounting for up to 28 ML per annum. Where the water use across the site approaches the maximum demand estimates, additional water saving measures can be introduced as needed to reduce water usage, such as bitumen sealing or dust suppressant additive application to the gravel road.

Given the current lower estimates of water consumption during the current operations, and the ability to further reduce consumption as the project progresses, it is considered reasonable to expect the net water consumption through the incorporation of the wash plant will be consistent with the approved water consumption estimates.

3.4 Fines Material

The sediments (flocculated and coagulated as needed to settle) will be pumped directly to rehabilitation areas or the landscape soil stockpile. These sediments will have varying moisture contents depending on the final configuration of the system being used. These sediments are expected to be spread (e.g. similar to hydromulch) over rehabilitation areas and batters and directly onto the landscaping sand stockpile to increase the fines content and water retention capabilities of the landscape sand product and rehabilitation areas.

Occasional sediment removal in the tanks may also be undertaken as needed, as the settling rates may be variable depending on final configuration. These recovered fines materials will also be placed within rehabilitation areas and blended with topsoil or subsoil. The material recovered by the wash plant is consistent with that removed by the air separator in the approved process. The wetter nature of the fines removed from the wash plant will be less prone to wind erosion. The small additions of polymer coagulant and flocculants are likely to be similar to polymer dust suppressants and are expected to bind fine sediments prior to biodegrading.

4. Environmental Risk Screening

An environmental risk assessment was undertaken to consider the likelihood and consequences of certain environmental aspects. The risk screening assessment is presented in **Table 2** and was undertaken with input from Wedgetail Project Consulting, Victory Engineering (chemical engineer) and Williamtown Sand Syndicate Pty Ltd.

The screening outlines the potential environmental, social or project risks, the risk assessment without controls and the design controls incorporated into the design and the additional and controls required for construction and operations. A residual risk assessment is then completed on the Project with the implementation of the design and likely construction and operational controls. The risk assessment is based on the matrix shown within **Table 1**.

Table 1: Risk assessment matrix for Table 2 risk screening

Risk Level	A. Small localised environmental impact onsite, no exceedance of health or amenity criteria	B. Moderate impact to local environment OR low level exceedances of health or amenity criteria *Moderate cost implications to operations (Ops)*	C. Major impacts, significant adverse impacts to health and safety of community or significant offsite environmental impacts. *Significant cost implications to operations (Ops)*
1. Unlikely to occur, may occur once in 20 years	**1A. Negligible**	**1B. Low**	**1C. Medium**
2. Could occur, may occur once per year	**2A. Low**	**2B. Medium / *Medium Ops***	**2C. High / *High Ops***
3. Likely to occur, occurs more than 5 times every year	**3A. Medium**	**3B. High**	**3C. Very High**
Neutral Outcome Proposed modification will result in no discernible change in environmental or social impacts			
Beneficial Outcome Proposed modification will result in a reduction in environmental or social impacts			

Table 2: Environmental risk assessment of proposed modification to permit processing with water

Aspect	Environmental / Social / Project Risk	Risk Level (no controls)	Design Control included in Modification	Proposed Operational Controls	Risk Level (with controls)
Air Quality	Use of water during processing is expected to reduce dust generation. The mine safety regulatory environment currently has a focus on reducing the risks of air-borne silicosis. The use of the wash plant will reduce these risks.	**Beneficial**	• Nil required.	• Nil required.	**Beneficial**
Noise	The proposed water processing unit effectively replaces the air separator within the approved process method. The water processing unit generates 93 dB(A), this is below the 98 dB(A) of the air separator used under the existing approval. The proposed modification will therefore result in reduced noise output from the quarry.	**Beneficial**	• Selection of plant with lower sound output.	• Maintain existing noise controls under the Noise Management Plan (NMP).	**Beneficial**
Water Demand	As shown in Section 4.3, the wash plant is unlikely to significantly change water use from the approved estimates within the EIS. As the project progresses the water throughput can be managed and additional water reducing measures can be introduced to maintain water consumption within the estimates provided in the EIS.	**Neutral**	• Water used for processing will be recycled for use in dust suppression. • Bleed water will be captured from base of product stockpile and landscape sand stockpile (where feasible) for reuse.	• Visual monitoring of tank levels when system is not operating to monitor for leaks. • Accounting of water usage onsite (metered by HWC). • If water usage approaches EIS estimates, increase water saving measures such as additional bitumen sealing of roads.	**Neutral**

Aspect	Environmental / Social / Project Risk	Risk Level (no controls)	Design Control included in Modification	Proposed Operational Controls	Risk Level (with controls)
Water Storage Failure	The proposed modification involves the storage of approximately 400 kL on the quarry site. The storage will be in a series of water tanks up to an individual capacity of 50 kL. Catastrophic failure of all water storages simultaneously is highly unlikely. In the rare event that a single storage tank failed, the reduced maximum storage tank capacity would be unlikely to result in any significant inundation of the quarry floor. Given high infiltration rates and the natural composition of sediment (e.g. organic material, ash, silts and clays), the risk of this failure on the environment is unlikely to have a significant impact. During the assessment process the EPA raised concerns regarding the other residual chemicals within drinking water, and the potential for these chemicals to affect the environment, noting under the EPL that tanks with potential to cause environmental harm should be suitably bunded with an impervious bunded area. The provision of bunding for all tanks within the sand beds while possible is considered to introduce significant additional cost and practical limitations to the process. A carbon filter (or equivalent) will now be included at the HWC intake point to filter chlorine compounds and aluminium from the potable water. This will ensure that the stored water is of little or no environmental harm and less than that already approved, and that bunding as per the EPL is longer required. Fluoride is present within the existing water measured during baseline monitoring, any fluoride introduced from HWC potable water by a tank failure (and absence of a bund) is highly unlikely to result in environmental harm, and would be of no increase to that already approved within the original consent (and subsequent EPL).	**1B Low**	• Inclusion of a carbon filter (or similar) to filter residual chemicals from the HWC mains network. • Relatively small individual tank sizes. • Water tanks are less than 4 m in height, providing minimal head pressure. • Place water storage tanks within quarry area within an infiltration area to capture sediments in event of tank rupture. • Progressive water extraction from the tank with highest sediment content for use in dust suppression ensures reduced storage of sediment laden water.	• Leak monitoring and regular visual inspections of tank condition. • Concrete barrier blocks or suitable barriers around the tank perimeter to minimise collision risks onsite, where susceptible to potential collision with mobile equipment. • Regular maintenance of carbon filter (or equivalent).	**1A Negligible**

Aspect	Environmental / Social / Project Risk	Risk Level (no controls)	Design Control included in Modification	Proposed Operational Controls	Risk Level (with controls)
Groundwater and Surface Water	As noted above, there is not expected to be an increase in the estimated water usage onsite above that approved in the EIS. As water is drawn from the potable water (and passed through a carbon filter), there is negligible risk to groundwater or surface water from storing potable water onsite. The inclusion of a carbon filter will further reduce potential for changes in water quality beyond that already approved for dust suppression. As noted above, the risk of failure is unlikely, and in the event of failure risks are negligible. Leaks in piping are unlikely to have any appreciable effects on surface or groundwater. The addition of "food grade" polymer coagulant and flocculant within the wash process (as used in typical drinking water treatment) represents negligible risk to surface water and groundwater systems given the following: • Automated dosing system to minimise the risk of overdosing. • Dosing occurs at low concentrations (2 parts per million and 6 parts per thousand for coagulant and flocculant respectively). • The coagulant and flocculant are polymers preferring solid over aqueous phases (i.e. become bound to sediments) and bio-degrade. • Dosing is relative to sediment content of water, reduced as needed to ensure feed water is of suitable clarity.	**1A Negligible**	• As above for water demand and water storage failure. • Covered impervious bunding of concentrated flocculant and coagulant.	• As above for water demand. • Regular inspection of piping and joints.	**1A Negligible**
Natural Resource Use	The proposed modification seeks to maximise the beneficial use of the available sand resource by upgrading fill sand to concrete sand.	**Beneficial**	• Nil required.	• Nil required.	**Beneficial**
Waste Management	No change in offsite waste disposal.	**Neutral**	• Nil required.	• Nil required.	**Neutral**

Aspect	Environmental / Social / Project Risk	Risk Level (no controls)	Design Control included in Modification	Proposed Operational Controls	Risk Level (with controls)
Rehabilitation	The proposal includes the irrigation of sediment (i.e. organics, clays and silts) laden water over rehabilitation areas and landscape sand stockpiles. Increased sediment (i.e. organics, clays and silts) in the sandy surface soils is expected to have a net benefit for rehabilitation. However, if applied too heavily within rehabilitation areas or depending on the location result in an unnatural topsoil profile that is not conducive to target vegetation communities. For example, high sediment content is likely to be consistent with soils in swamp sclerophyll communities in lower lying areas, though unlikely to be suitable for dry sclerophyll communities. Where these sediments have been coagulated and flocculated in the washing process, the additional binding is likely to further reduce the potential for dust, and may require alternate management to improve blending.	**2A Low**	• Utilise existing irrigation network to irrigate sediments if feasible, depending on consistency, or irrigate rehabilitation areas with suitable pipe and spray configuration.	• Two-weekly inspection of sediment irrigation areas to avoid excessive build-up of unblended sediments in any one area (e.g. avoid unblended sediment layers above a nominal 100mm thick). • Ensure sediment irrigation areas are within the quarry disturbance area. • Cycling as needed (between fresh and process) of feed water to flush lines.	**1A Negligible**
Economic	The proposed change of the quarry to water-processing will result in increased expenditure to install and construct the processing plant.	**Beneficial**	• Nil required.	• Nil required.	**Beneficial**
Social	While the quarry can be operated as approved without air quality impacts, the use of the water in processing will reduce dust emissions. The increased ability to meet the demand for concrete sand has the potential to maintain construction costs across the Sydney and Hunter regions. The ability of the quarry to meet the demand increases financial security of the quarry, ensuring the quarry remains open and provides employment.	**Neutral - Beneficial**	• Nil required.	• Nil required.	**Neutral - Beneficial**

Aspect	Environmental / Social / Project Risk	Risk Level (no controls)	Design Control included in Modification	Proposed Operational Controls	Risk Level (with controls)
	With reduced noise, the same operational footprint and no appreciable change in traffic, the proposed modification will have a neutral to potentially beneficial social outcome.				
Heritage	The proposed modification will occur wholly within the existing approved disturbance boundary. No further consideration regarding heritage is required.	**Neutral**	• Nil required.	• Nil required.	**Neutral**
Biodiversity	The proposed modification will occur wholly within the existing approved disturbance boundary. The proposed modification will not result in any changes to direct or indirect impacts to biodiversity. Matters relating to sediment laden water are addressed above in the water storage, groundwater, surface water and rehabilitation sections and noise emissions will be similar or lower.	**Neutral**	• Nil required.	• Nil required.	**Neutral**
Greenhouse Gas Emissions	The proposed water processing plant is expected to have a similar or lower power demand to the air separator, as such the modification will not result in an increase in green-house gas emissions. The water processing of the sand is expected to reduce handling costs in the quarry as fill sand can be processed for concrete as opposed to being stripped and stockpiled for fill sand.	**Neutral to Beneficial**	• Nil required.	• Nil required.	**Neutral to Beneficial**
Traffic	The proposed change to water processing will have no change to traffic associated with the quarry. The establishment of the processing equipment will result in a slight increase in traffic above existing but will remain below approved haulage / traffic levels.	**Neutral**	• Nil required.	• Nil required.	**Neutral**

5. Changes to the Conditions of Development Consent

The existing Development Consent includes, through the Statement of Commitments the term air separator once, and only in relation to precautions for hydrocarbon spills. There is no condition that specifically requires an air separator be used. The air separator is therefore incorporated through Schedule 2, Condition 2, being:

> *"2. The development may only be carried out:*
> *(a) in compliance with the conditions of this consent;*
> *(b) in accordance with the Statement of Commitments in Appendix 2;*
> *(c) in accordance with all written directions of the Secretary;*
> *(d) generally in accordance with the EIS and MR (Mod 1); and*
> *(e) generally in accordance with the Development Layout Plans in Appendix 1."*

The wash plant is similar to the air separator in that the unit can be relocated around the site generally in accordance with the Development Layout Plans. The key difference is water is proposed to be piped from two water storage areas to the wash plant. Relocating all water tanks with the plant is unlikely to be feasible without increasing risk of damage to the tanks.

Changes required to the Consent as a result of this modification, is only likely to require amendment to Condition 2 (d) and inclusion of the additional Commitments.

6. Additional Commitments

The existing commitments remain relevant and applicable to the proposed modified development. In addition the following commitments are made to provide better certainty on maintaining impacts within those approved by the original Development Consent. The additional Commitments are as follows:

- The air separator will not be operated concurrently with the wash plant.
- Where water use onsite, measured on the water meter with the HWC network, exceeds 27 ML/year (approx. 90% of the maximum level estimated in the EIS of 29.65 ML/yr), further water saving measures will be employed, such as, the use of dust suppressant additives, increased bitumen sealing of road surfaces or other suitable measures.
- Regular visual leak monitoring and inspection of tank and pipeline condition.
- Covered impervious bunding of concentrated flocculant and coagulant.
- Regular maintenance of carbon filter (or equivalent) to filter the potable water.
- Concrete barrier blocks or suitable barriers around the tank perimeter to minimise collision risks onsite, where susceptible to potential collision with mobile equipment.
- Two-weekly inspection of sediment irrigation areas to avoid excessive build-up of unblended sediments in any one area (e.g. avoid unblended sediment layers above 100mm thick).
- Ensure sediment irrigation areas are within the quarry disturbance area.
- Cycling as needed (between fresh and process) of feed water to flush lines.

In addition to the above commitments, the Soil and Water Management Plan (in particular) will be amended to reflect the inclusion of the wash plant onsite.

7. Justification

The proposed inclusion of the wash plant on the site as a method to process sand is of minimal environmental impact and will result in numerous Project, environmental and community benefits, including:

- The modified project remains substantially the same as the original development consent.
- A reduction in noise emissions.
- A decrease in air quality emissions.
- Reduced worker risks around the plant associated with fine dry particles.
- An improvement in the utilization of natural resources to the highest beneficial use, effectively upgrading fill sand to concrete sand.
- Improved flexibility to process a range of sand types onsite of variable qualities diversifying the products that can be supplied.
- An improvement in energy efficiency through a reduction in power consumption when using the wash plant.
- Will reduce diesel emissions through a reduction in double handling of sand resources.
- Will reduce current demands for concrete sand, helping concrete batch plants meet demand and help maintain current construction levels (and associated employment).
- Will not increase traffic, extend the footprint, approved production levels, or change operational hours.

The proposed modification can be approved on the basis of the above consistent with Section 4.55(1A).

8. Conclusion

This modification report describes the proposed modification to SSD_6125 for the inclusion of a wash plant within the existing processing arrangement at the Cabbage Tree Road Sand Quarry.

The proposed modification meets numerous quarry operational needs and the needs of concrete manufacturers in the local and regional markets through helping satisfy the substantial market shortfall and demand for concrete sand.

The modification will result in lower environmental impacts from the quarry, for the benefit of quarry workers and the community.

It is respectfully requested the Department of Planning Industry and Environment provide a timely determination of this modification to enable equipment to be ordered as soon as possible to enable WSS to assist in meeting the significant sand shortfall in the market.