



Appendix 14

Waste Impact Assessment

Appendix Section	Description
14A	Waste Impact Assessment

Brandy Hill Expansion Project
Environmental Impact Statement



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Environmental Impact Statement

Waste Management Impact Assessment

1. Background

The legislative requirements for dealing with waste on site comes under the following Acts and Regulations:

- Protection of the Environment Operations Act 1997.
- Protection of the Environment Operations (Waste) Regulation 2005.
- Waste Avoidance and Resource Recovery Act 2001.

The requirement for BHQ to manage waste correctly comes under Section 143 of the POEO Act which requires that waste be transported to a place that can lawfully accept it. The Proponent is also aware that under section 115 clause 1 of the POEO Act, it is an offence if a person wilfully or negligently disposes of waste in a manner that harms or is likely to harm the environment. It is also an offence under the POEO Act to supply false or misleading information about the type, classification, characteristics, composition or quantity of any waste.

Waste is classified in groups that pose similar risks to human health and the environment. This allows for correct management of these waste types and their disposal. The Department of Environment, Climate Change and Water (DECCW) *Waste Classification Guidelines 2008* identifies six waste classes and they are:

- Special waste
- Liquid waste
- Hazardous waste
- Restricted solid waste
- General solid waste (putrescible)
- General solid waste (non-putrescible)

If it is not possible to separate wastes the whole waste must be classified according to the highest waste classification present within the waste. Waste generated at BHQ can be categorised as non-production wastes and production wastes. Production waste is waste that will increase in quantity due to increased production levels. Waste at BHQ consists of:

Table 1: Non-production waste generated at BHQ.

Non-production Waste	Classification
Domestic waste	Non-putrescible
Sewage	Putrescible
Sediment	Non-putrescible
Overburden	Non-Putrescible
Construction waste	Non-Putrescible

Table 2: Production waste generated at BHQ.

Production Waste	Classification
Tyres	Special
Metal	Non-putrescible
Oil and grease	Liquid Waste
Batteries	Hazardous waste

2. Management of wastes on site

Management of waste at BHQ follows the established hierarchy under the *Waste Avoidance and Resource Recovery Act 2001* which ensures that resource management options are considered with the following priorities:

1. **Avoidance** including action to reduce the amount of waste generated.
2. **Resource Recovery** including reuse, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources.
3. **Disposal** including management of all disposal options in the most environmentally responsible manner.

BHQ prioritises waste avoidance and strives for best practice with extraction and processing of material. This ensures the most efficient use of the available resource with minimal waste generation.

Sediment and overburden are included in this section due to them requiring attention on site. However, both sediment and overburden will not be removed off site and will be used as required for quarry activities. Sediment quantities cannot be quantified as measurement is difficult. Overburden required to be moved will be quantified due to the available geotechnical report.

3. Waste generated at BHQ

3.1. Domestic waste

General office and staff waste is collected fortnightly by Veolia. The bin can hold approximately 2.5m³ of waste and is, on average, collected fortnightly. This equates to 65m³ of general waste on a yearly basis assuming a full bin. This number can be expected to remain stable throughout the quarry life. Extra staff will mean slightly higher waste but with new recycling initiatives being introduced and more awareness emerging, the quantity of general waste should remain stable.

A larger waste bin is located at the workshop. This consists of general waste from quarry activities including packaging, wood offcuts, containers, used rags and other non-putrescible waste. This bin is 10m³ and is removed every 3 weeks. This equates to a maximum of 170m³ of waste per year as the bin is never at capacity.

Increased production will mean higher general waste due to higher maintenance requirements. If quarry production increases to the proposed limits under the new consent the general waste generated at the workshop can be expected to double.

3.2. Sewage

BHQ currently operates a transpiration system which does not comply with Environment Protection Authority (EPA) regulations and standards. Therefore BHQ has initiated system upgrade applying an aerated sewage system with sub surface irrigation. Waste will be pumped onto a grassed area situated just south of the main car park. This will be done via around 600 m of subsurface irrigation, which will be run out in parallel lines.

The proposed sewage system upgrade satisfies requirements from Marten's Wastewater Impact Assessment (**Appendix 13**). These being;

- The selected septic system is able to cope and exceed the required site demand of 31 people
- Subsurface irrigation, burial depth to be no lower than 100mm.
- The sub surface design is to cover 1232 m²

During stage 4 the amenities will be moved and a new system will be installed. The specifics of this system are unknown and will be investigated based on current technology and site characteristics prior to relocation of infrastructure. Based on current technology, it is anticipated that the new system could be a transpiration system or a aerated system.

3.3. Oil and Grease

During routine maintenance by contractors or staff, oils and grease are collected and stored in bulk storage. Maintenance takes place within the maintenance workshop area, unless a breakdown prevents moving a vehicle at which time all oils and greases are pumped from the equipment and transferred to the bulk storage. An oil and grease trap, located in the maintenance workshop, is routinely cleaned to maintain the effectiveness of the trap.

Waste oil is collected approximately every 2 months by nationwide Oil for re-processing and reuse. The majority of material taken from site is oils. Machinery is self-greasing and any waste grease is treated with the waste oils. The container used for storing this material is a 3000L fully bunded container. On an annual basis this equates to a maximum of 18,000 litres of oil sent for reprocessing and reuse. If production levels increase under the new consent, this number can be expected to double.

3.4. Batteries

Any batteries that have reached the end of usefulness are stored on site until they can be taken to an appropriate licenced disposal location. Batteries are not a predominant waste stream at BHQ and are changed as required. Approximately 6 batteries a year are used at BHQ. If vehicle use increases so will battery use. This number could be expected to double due to extra vehicles and longer vehicle hours on site.

Employees are aware that transporting in excess of 200Kg of lead acid batteries is illegal without a licence to do so. Batteries are stored in a bunded area until they are taken for disposal.

3.5. Sediment

Dams at Brandy Hill require de-silting to ensure they have sufficient capacity to capture water during heavy rain events. Dams have measuring guides installed to allow for measurement of sediment levels. De-silting occurs as needed and it is identified within the BHQ Environmental Management Plan to occur from 2017 onwards. This should allow for sufficient levels of silt to have built up to make removal necessary. This waste material is used on site for regeneration purposes. The mineral content is high and it has proven effectiveness in rehabilitation exercises.

3.6. Tyres

Tyres are classified as special waste. Tyres are not sent offsite to landfill due to their usefulness on site. They are essentially recycled to be used for creating roundabouts, bund walls, parking markers and make effective barriers. Depending on tyre wear BHQ uses between 4 and 8 tyres per annum. Most mobile plant requires new tyres every 3 years and depending on wear can last much longer. Some years two vehicles may require complete new sets while often two can be replaced and the best remaining tyres are rotated.

Tyres used will be higher if production levels increase. Efficiencies in loading directly from the plant to trucks due to increased sales will mean less driving for loaders and less wear on tyres. More mobile equipment will be needed if production levels reach the new consent levels. This will equate to approximately half as many tyres being used annually on top of the maximum existing levels.

Due to tyres being special waste, any removal of tyres from the site requires the Proponent to keep records of who transported the waste and to which facility it was taken to.

3.7. Metal

Scrap metal is sold to Baulcombs Recycling. The scrap metal bin gets picked up approximately every 6 weeks. The scrap metal bin can take 4m³ and it is estimated to contain approximately 3m³ of metal when taken by Baulcombs Recycling, this is because of the inability to fill the bin to capacity due to the size and shape of the scrap metal cut-offs. This equates to 26m³ of metal removed from site annually.

Scrap metal is often used on site for manufacturing storage areas, work areas or shelters to reduce the quantity sent for recycling.

Scrap metal quantities will be higher if production levels increase due to higher wear in the fixed plant. This could potentially mean a doubling in the quantity of scrap metal removed from site.

3.8. Overburden

A significant quantity of overburden will be required to be moved to expand the quarry extraction area. This overburden will be used to create a large bund wall to act as a screen from Clarence Town Road and the residences of Brandy Hill. Approximately 2 million m³ of overburden will need to be moved over the 30 year consent period. The majority will be used for bunding and

rehabilitation purposes. Any material that cannot be used in its final position will be stockpiled and returned to the pit prior to final rehabilitation occurring.

3.9. Construction waste

The construction of the concrete plant will generate non-putrescible waste over a short term period during construction. This will mostly consist of wood and metal offcuts. The quantity that will be generated is difficult to quantify but will be in the vicinity of 40m³ in total.

3.10. Total waste currently generated at BHQ

Table 0.3: Waste quantities currently generated at BHQ.

Waste	Quantity
Domestic waste (admin)	65m ³ per year
Domestic waste (workshop)	170m ³ per year
Sewage	Unidentifiable due to transpiration system
Sediment	Removed when required and used on site
Overburden	All stripping has occurred in the current extraction area
Tyres	4 – 8 per year
Metal	26m ³ per year
Oil and grease	18,000 litres per year
Batteries	4 – 6 batteries per year

3.11. Predicted waste due to proposal

Table 0.4: Predicted waste generated at BHQ at maximum production levels.

Waste	Quantity
Domestic waste (admin)	65m ³ per year
Domestic waste (workshop)	340m ³ per year
Sewage	Unidentifiable due to transpiration system
Sediment	Removed when required and used on site

Overburden	<i>2m m³ to be used on site over 30 year consent</i>
Tyres	<i>6 – 12 per year</i>
Metal	<i>52m³ per year</i>
Oil and grease	<i>36,000 litres per year</i>
Batteries	<i>4 – 6 batteries per year</i>
Construction waste	<i>40m³ during construction of concrete plant</i>

4. Mitigation and management

Instigating a recycling program for paper and plastics has been identified in the BHQ Environmental Management Plan and will be implemented by the end of 2015. This should help to reduce the quantity of general waste going to landfill. Any material that has potential be reused on site is stored in the area next to the workshop.

Concrete for recycling will be brought onto the site to be crushed and used in road base materials. This material will be kept separate from all other materials until it can be crushed in the fixed plant. The material will be taken from Hanson owned concrete plants so the risk of contamination from this product is extremely low.

Employees are made aware that management goals are to avoid waste where possible and employee contributions are sought in the best methods of reducing waste at the site through reuse of materials.