
BALLSWOOD QUARRY WATER MANAGEMENT SUMMARY

This summary is presented to meet the request from the Environment Agency as follows:

Environment Team require further information in relation to the maximum quantity of water that is abstracted from each of the abstraction points. It would be useful to know what the current daily quantity.

The current water management at the Ballswood Quarry site is presented in Drawing 1.

Two separate systems currently operate at the site as follows:

- Mineral Washing/Processing Plant: Abstraction from a surface water lagoon inside the main quarry. Water is abstracted for use in the wash plants in the processing area of the site and then recirculated through the site via silt lagoons for re-use.
- Wheel Wash: Abstraction from the southern quarry. Water is abstracted for use in the wheelwash system and returned to the lagoon in the base of the quarry.

The extension of the site into mineral working areas A and B (Drawing 1) will not increase the volume of water abstracted and recirculated at the site as a result of these workings.

Mineral Washing/Processing Plant Water Management

- Water is pumped from the surface water storage lagoons for use in the wash plants and processing area. These collect rainfall and surface water runoff/seepages that enter the quarry void.
- After passing through the plant, the water is pumped to settle in the silt lagoons.
- A small amount of water is lost to ground surface, this runoff is collected in a surface drain and recirculated to a smaller pond and then pumped into the wash plants for reuse.
- Water flowing from the first silt lagoon passes through a gravel matrix and into a second silt lagoon.
- The water then flows into the storage lagoons ready for reuse in the cycle. A second surface water lagoon is pumped into the main storage lagoon to top up the system. This second lagoon is fed via a surface drain running across the site.

Reference	Description	Photograph
1	Photograph looking west towards the storage lagoon. Water can be seen flowing in (from silt lagoons) on the western side of the lagoon. A pump on the eastern side abstracts water for use in the wash plants and processing area.	
2	Photograph looking east towards the wash plant and processing area.	
3	Photograph looking north towards the first silt lagoon. Water can be seen discharging in from the east side after being pumped from the wash plants and processing area.	

Reference	Description	Photograph
4	Photograph looking southeast towards the outflow of the silt lagoon. The water is fed through a gravel matrix to provide further natural treatment before discharging into a second silt lagoon.	
5	Photograph looking east towards the second silt lagoon where further settlement occurs. The water is then fed back into the storage lagoon.	
6	Photograph looking east towards the secondary surface water storage lagoon. Two pumps can be seen on the eastern side where water is pumped into the main storage lagoon.	

Mineral Washing/Processing Plant Water Use Volumes

Meter readings for the wash plant system from 23/11/16 to 16/09/16 were reviewed in order to quantify abstraction volumes. The same plant is currently in operation at the site therefore this data is representative of the existing system:

Volumes	m ³ /day
Maximum	430
Average	181
Standard Deviation	96.3

Wheel Wash Water Management

- Water is pumped from the lagoon in the south of the site.
- The water pumped to a storage tank adjacent to the wheelwash, at the entrance of the site.
- Water from the wheelwash, which is then collected in a sump to settle solids, the sump is dewatered by a pump on a float switch.
- The water is discharged back into the lagoon where additional settlement occurs.
- It is recognised by the quarry that additional settlement of solids is required prior to discharge into the lagoon to mitigate potential risks to water quality.

Reference	Description	Photograph
7	Photograph looking southeast towards the abstraction lagoon located in the south of the site. A pump is observed on the northern side.	

Reference	Description	Photograph
8	Photograph looking south showing the storage tank connected to the wheelwash, topped up from the abstraction. The tank has a storage capacity of 30,000 litres.	
9	Photograph looking southwest showing the wheelwash pump in use. The settlement sump can be seen on the northern side of the wash. The sump is emptied on a float switch which discharge back into the abstraction lagoon.	

Wheel Wash Water Use Volumes

Meter readings from the wheelwash from 14/06/22 to 20/06/22 were reviewed in order to calculate abstraction volumes. The volumes are as follows:

Volumes	m ³ /day
Maximum	188
Average	182.6
Standard Deviation	3.9

DRAWING 01

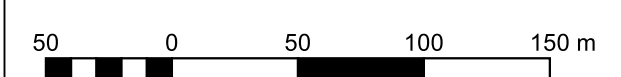
Current Water Management Schematic

KEY

- Existing Limit of Abstraction
- Planning Application Areas
- Site Boundary
- Surface Water Features
- Abstraction
- Discharge
- Pump
- Surface Drain



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