Figure 1 - Site Location Plan

Wolffdene Quarry

Hanson Construction Materials Pty Ltd

1:200,000

South Stradbrooke Island

Gold Coast
Figure 4.1 - Conceptual Quarry Development - Stage 1

Wolffdene Quarry
Hanson Construction Materials Pty Ltd

Legend:
- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Cadastral Boundary - Watercourse
- 8 ha Buffer
- Minimum 40m Wide Buffer
- Approved Quarry Area - PN138178/01/DA2
- Proposed Quarry Extension (Extraction Area)
- Proposed Quarry Extension (Buffer Lands)
Figure 4.2 - Conceptual Quarry Development - Stage 2

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Legend:
- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Proposed Quarry Extension (Buffer Lands)
- Proposed Quarry Extension (Extraction Area)
- Minimum 40m Wide Buffer
- Approved Quarry Area - PN131878/01/DA2

Wolffdene Quarry

E 519500 m  N 6925000 m  1:10,000

Landair Surveys.  2012-10-31

1. Updated Quarry Stage Footprint, Vegetation Buffer, Cadastre.
   23/04/12 LT

2. Redesign to suit new topo/buffers and short-term dev plans (Hanson)
   08/03/13 LT

Quarry Access Road
8 ha Buffer
Minimum 40m Wide Buffer

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**Figure 4.3 - Conceptual Quarry Development - Stage 3**

Wolffdene Quarry

Hanson Construction Materials Pty Ltd

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**Legend:**
- Silo Boundary
- Cadastral Boundary
- Easement Boundary
- Cadastral Boundary - Watercourse
- 8 ha Buffer
- Minimum 40m Wide Buffer
- Approved Quarry Area - PN131878/01/DA2
- Proposed Quarry Extension (Extraction Area)
- Proposed Quarry Extension (Buffer Lands)
1. The peak runoff from a 24 hour, 1 in 10 year rainfall event will be captured and treated within an appropriately sized sump as shown and the quarry pit/void floor.

2. Proposed stormwater management and ESC structures subject to approval by a suitably qualified person.

3. Plans and all calculations have been conducted in accordance with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control Guidelines, November 2008.

4. All sediment control devices must be de-silted and made fully operational as soon as the demand for sediment treatment capacity falls below 75% of its design capacity.

5. All temporary and/or permanent stormwater management and sediment treatment features must be appropriately protected from the adverse effects of sediment runoff.

6. Sump location and configuration is conceptual only and not to scale. Treatment capacity may be provided in stages as disturbed areas are developed.

7. This plan has been prepared based on the assumption that the treated waters from the sump can be discharged to the surrounding environment. This plan may need to be amended/updated pursuant to the conditions of approval.

Notes:

1. The peak runoff from a 24 hour, 1 in 10 year rainfall event will be captured and treated within an appropriately sized sump as shown and the quarry pit/void floor.

2. Proposed stormwater management and ESC structures subject to approval by a suitably qualified person.

3. Plans and all calculations have been conducted in accordance with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control Guidelines, November 2008.

4. All sediment control devices must be de-silted and made fully operational as soon as the demand for sediment treatment capacity falls below 75% of its design capacity.

5. All temporary and/or permanent stormwater management and sediment treatment features must be appropriately protected from the adverse effects of sediment runoff.

6. Sump location and configuration is conceptual only and not to scale. Treatment capacity may be provided in stages as disturbed areas are developed.

7. This plan has been prepared based on the assumption that the treated waters from the sump can be discharged to the surrounding environment. This plan may need to be amended/updated pursuant to the conditions of approval.
1. The peak runoff from a 24 hour, 1 in 10 year rainfall event will be captured and treated within an appropriately sized sump as shown and the quarry pit/void floor.

2. Proposed stormwater management and ESC structures subject to approval by a suitably qualified person.

3. Plans and all calculations have been conducted in accordance with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control Guidelines, November 2008.

4. All sediment control devices must be de-silted and made fully operational as soon as the sump can be discharged to the surrounding environment. This plan may need to be amended or updated pursuant to the conditions of approval.

5. All temporary and/or permanent stormwater management and sediment treatment features must be appropriately protected from the adverse effects of sediment runoff.

6. Sump location and configuration is conceptual only and not to scale. Treatment capacity falls below 75% of its design capacity.

7. This plan has been prepared based on the assumption that the treated waters from the sump can be discharged to the surrounding environment. This plan may need to be amended or updated pursuant to the conditions of approval.

Figure 5.2 - Conceptual Stormwater Management Plan - Stage 2

Wolfdene Quarry
Hanson Construction Materials Pty Ltd

M.S. - 10 October 2013

Scale: 1:1000

Legend:

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Cadastral Boundary - Watercourse
- Proposed Perimeter Bund
- Proposed Diversion Bund
- Existing Engineered Drainage Channel
- Existing Engineered Rock Filter Bund to detain clean water runoff

Figure 5.2 - Conceptual Stormwater Management Plan - Stage 2
Notes:
1. The peak runoff from a 24 hour, 1 in 10 year rainfall event will be captured and treated within an appropriately sized sump as shown and the quarry pit/void floor.
2. Proposed stormwater management and ESC structures subject to approval by a suitably qualified person.
3. Plans and all calculations have been conducted in accordance with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control Guidelines, November 2008.
4. All sediment control devices must be de-silted and made fully operational as soon as treated within an appropriately sized sump as shown and the quarry pit/void floor.
5. All temporary and/or permanent stormwater management and sediment treatment features must be appropriately protected from the adverse effects of sediment runoff.
6. Sump location and configuration is conceptual only and not to scale. Treatment capacity may be provided in stages as disturbed areas are developed.
7. This plan has been prepared based on the assumption that the treated waters from the sump can be discharged to the surrounding environment. This plan may need to be amended/updated pursuant to the conditions of approval.

Figure 5.3 - Conceptual Stormwater Management Plan - Stage 3
Notes:
1. The peak runoff from a 24 hour, 1 in 10 year rainfall event will be captured and treated within an appropriately sized sump as shown and the quarry pit/void floor.
2. Proposed stormwater management and ESC structures subject to approval by a suitably qualified person.
3. Plans and all calculations have been conducted in accordance with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control Guidelines, November 2008.
4. All sediment control devices must be de-silted and made fully operational as soon as reasonable and practicable following a storm event if the device's sediment retention capacity falls below 75% of its design capacity.
5. All temporary and/or permanent stormwater management and sediment treatment features must be appropriately protected from the adverse effects of sediment runoff.
6. Sump location and configuration is conceptual only and not to scale. Treatment capacity may be provided in stages as disturbed areas are developed.
7. This plan has been prepared based on the assumption that the treated waters from the sump can be discharged to the surrounding environment. This plan may need to be amended/updated pursuant to the conditions of approval.

Wolfdene Quarry
Hanson Construction Materials Pty Ltd

Figure 5.4 - Conceptual Stormwater Management Plan - Long Term

Catchment Area
Existing Culvert
Engineered Drainage Channel

Legend:
--- Site Boundary
--- Cadastral Boundary
--- Easement Boundary
--- Cadastral Boundary - Watercourse

Sub Catchment 2B
117.83 ha

Sub Catchment 2A
372.64 ha

Catchment 1
2.288 ha
(Queen Ashes Rock)

Catchment 2
490.47 ha

Catchment 3
3.17 ha

Catchment 5
23.67 ha
Figure 6.2 - Discharge, Emission and Monitoring Location Plan - Stage 2

Hanson Construction Materials Pty Ltd

Wolffdene Quarry

North
Figure 6.3 - Discharge, Emission and Monitoring Location Plan - Stage 3
Hanson Construction Materials Pty Ltd

Legend:
- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Cadastral Boundary - Watercourse
- Watercourse
- Dust Emission Source
- Light Emission Source
- Noise Emission Source
- Blasting Emission Source
- Water Monitoring Point
- Water Release Point

Wolffdene Quarry

Landair Surveys. 2012-10-31
All loose material removed and bench rounded.

Barrier formed from minus 100mm/plus 50mm screened rock, shot rock, overburden or boulders to satisfaction of Quarry Safety Officer (maximum)

Minimum 500mm thick plant rooting medium (preferably >1.0m thick)

Rill approx 600mm height above cell floor formed with plant rooting medium and top soil (refer plan view and long section)

Boulders may be used to increase height

Rip-Rap or Shot rock mulch over plant rooting media if required

Scale loose material on face

Alignment varies depending on construction detail

Refer to Alternate Barrier Detail

Concept Cross Elevation

Concept Long Elevation

Figure 10 - Schematic of Quarry Bench Rehabilitation

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6 June 2013

F:\Jobs\1000\1001 Hanson_Wolffdene\000 Generic\Drawings\1001_237 Schematic Bench Rehab.dwg

FILE NAME:
JOB SUB #:

LEGEND:

Drainage Media (aggregate or shot rock)
Boulder 300mm Shot Rock

0m to 15m
10m to 15m
1m to 4m (Varies)

Rill approx 600mm height above cell floor formed with plant rooting medium and top soil (refer plan view and long section)

Scale loose material on face

Rip-Rap or Shot rock mulch over plant rooting media. Alternative ground layers or mulch may be used

Topsoil

Scale loose material on face

Rill approx 600mm height above cell floor formed with plant rooting medium and top soil

Topsoil 100mm

1m

12m

10m

300mm

3

500mm

1 on 6

1 on 6

1 on 6

1 on 6

100mm

15m
HIGHLY TO MODERATELY WEATHERED ROCK TREATMENT

1. Topped/demanded planting media applied to each bench
2. Shot rock from Final Blast Shot
3. Pre-existing sub-soil

FRESH ROCK TREATMENT

1. Rock shattered to allow root penetration
2. Planting media returned to plant site to a depth of 0.5 to 1.2 metres
3. Tree and shrub seedlings planted
4. Loose Rock Dislodged
5. Edge rounded with hydraulic pick

COMpletely WEATHERED ROCK