



Broken Head Quarry

Enforceable Undertaking Progress Report

Report #5 – December 2018

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## 1 Introduction

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This Report is the monthly report required to be given under clause 4.4(a) ("Reporting") of the Enforceable Undertaking given by Leadshine Pty Limited on 20 August 2018 ("**Enforceable Undertaking**"). The Enforceable Undertaking commenced operation Tuesday 28 August 2018, the date of receipt of the withdrawal of the Order 15 issued by the Department of Planning and Environment.

This is the fifth progress report under clause 4.4(a) of the Enforceable Undertaking. It relates to the period from Saturday 1 December 2018 until Monday 31 December 2018. The Quarry was officially closed from 3.00PM on Friday 21 December 2018 until 7 January 2019, so no activities were undertaken from 22 December 2018 until 31 December 2018.

The report describes works undertaken on the following aspects:

- Planning for the undertaking of rehabilitation works;
- Landforming Works and Stormwater Management Works carried out in December 2018;
- Vegetation Work carried out in December 2018; and
- Other rehabilitation related activities carried out in December 2018.

The director of Leadshine Pty Limited (Stuart Dixon-Smith) did not attend at the Quarry during December 2018 and this report is based on telephone discussions with Quarry staff (John Ward, Quarry general manager) and Ken Watkins (Assistant to John Ward) and photos sent by both of them during the month.

## 2 Executive Summary

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Works during the month were limited due to a number of factors, including absence of John Ward for 10 days annual leave and limited work after return from leave due to personal matters, and the shortness of the month due to the timing of the Christmas break and weekend, leaving only 15 working days for the month. Activities concentrated mainly on removal of the washplant. Other work involved continuation of the works on the batter on PZW21 and clearing of drains, including the Cut-off Drain, and general preparation for the Christmas shutdown period.

No planting works were undertaken during the month.

Further details are set out below.

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### **3 Rehabilitation Planning**

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December involved planning for the next revegetation campaign, this time to be focussed on the Westside. It was decided to undertake shrub planting in January (subject to plant availability and staff availability) in areas PZW13 (batter above the Lilypond), PZW17 (grassed area above Process Pond), PZW18 (grassed area below Central Dam wall), part of PZW19 (south west bank of the Central Dam), PZW20 (South Bank of Central Dam, including rehabilitated watercourse), upper part of PZW23 (batter west of Westside upper access trail), part of PZW24 (plateau west of Westside upper access trail), PZW25 (area between Westside upper access trail and the limit of extraction) and PZW26 (Area above washplant dump point).

### **4 Landforming Works and Stormwater Management Works Progress**

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During December 2018 the Quarry's landforming and stormwater works activities were primarily focussed on the continuation of fill activities on the Westside, particularly the continuation of the batter below PZE24 from PZE23 into PZE21.

#### **4.1 Westside batter works**

The main earthwork activities during December were focussed on the Westside, particularly in areas PZW21 and PZW23. In particular the batter comprising area undertaken in PZW21 has been continued with the bund and drain being finalised.

#### **4.2 Central Dam valves**

Manually operable valves were placed on order but installation was not possible by before the Christmas break. Installation is expected in January 2019.

#### **4.3 Eastside earthworks**

No earthworks were undertaken on the Eastside during the month, with earthworks equipment having been relocated to the Westside after completion of the Eastside fire trails repositioning work reported on in Report #2.

#### **4.4 Drain clearing**

Drain clearance and upgrade works were undertaken during the month, particularly on the Cut-off drain, which had become heavily silted, including due to the construction of the Central Dam.



**Figure 1 – Cleared cut off drain from close to entry point to Process Pond, looking northwest**

## **5 Vegetation Works Progress**

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No planting work was undertaken in December 2018.

The November 2018 plantings were irrigated with the water cart during December to assist in establishment.

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## 6 Other Works

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The removal of the Quarry washplant was fully undertaken during the first three weeks of December 2018.

Removal commenced on 3 December and was completed in the week ended 21 December 2018.

The following photos show the removal in progress and completed.



**Figure 2 – Cyclones and trommel removed, awaiting loading onto flatbed semi-trailer**



**Figure 3 – Trommel screen sorting hoppers removal**





**Figure 4 – Trommel, hoppers and cyclones removed, preparing to remove conveyor assembly, shaker deck and screen**





**Figure 5 – Preparing to remove conveyor assembly**





**Figure 6 – Conveyor assembly removal**



**Figure 7 – Shaker deck removal**





**Figure 8 – Screen and catwalk removal**





**Figure 9 – All washplant equipment removed at end of job, looking north towards drop point**

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The drop point was secured with barricades for safety and further work will be done to protect this high face from danger.

Tidy up works remain to be completed, including demolition of residual concrete structures, removal of concrete blocks and other safety related works. The electrical switchboard and two water tanks will remain. The electrical switchboard still services the work shed area. The water tanks are an important part of the Quarry water storage facilities, including for filling water carts for dust suppression and irrigation.

## **7 Other Matters**

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### **7.1 Works status**

The works undertaken during the month are detailed in the table attached to Annexure A and Annexure B, which Annexures are kept constantly up to date and each monthly change is shown in tracked text in the Annexure.



## 8 Glossary, Definitions and Locations of Features

### 8.1 Features at Broken Head Quarry

The following plan identifies key areas at Broken Head Quarry and names used to define those areas in this and other Report.



Figure 10 – Plan of major features of Broken Head Quarry

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The following waterbodies are contained at Broken Head Quarry:

- Sediment Pond No. 2 – this is the lower dam on the East Pit which has formed part of the Quarry for most of its operation.
- Sediment Pond No. 1 – this is the upper dam on the East Pit, constructed in 2014 with dam wall alterations undertaken in 2017.
- North No 1 Sediment Pond – this is the small pond on the West Pit at the north eastern edge of the limit of extraction.
- Temporary West Sediment Pond – or Central Dam – this is the pond in the centre of the West Pit which collects stormwater runoff from most of the West Pit and feeds the cut off drain.
- Process Pond – this is the main working waterbody for the Quarry, located north of the Maintenance Sheds on the West Pit. It supplied water for the sand and gravel washing plant.
- Upper Lilypond – This is a dam on the edge of the West Pit which collects natural waterflows from west and north of the Quarry and overflows from the Process Pond.
- Lower Lilypond – This is a dam on the edge of the West Pit which is downstream of the Upper Lilypond and collects natural waterflows from the Upper Lilypond.

## 8.2 Other Defined Terms

**Broken Head Quarry** means the former sand and gravel quarry operated on the land comprised in the Eastside Land and the Westside Land and consists of the following parcels of land:

- Lot 2, Deposited Plan (“**DP**”) 700806;
- Lot 1, DP 123302;
- Lot 1, DP 184443;
- Lot 1, DP 245836;
- Lot 1, DP 245605; and
- Auto Consol 12993-34.

**Department** means the NSW Department of Planning and Environment.



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**Eastside Land** means the land comprised in titles:

- Lot 1, DP 184443;
- Auto Consol 12993-34; and
- Lot 1, DP 245605.

**Enforceable Undertaking** means the enforceable undertaking given by Leadshine to the Department dated 20 August 2018 accepted by the Secretary of the Department on 27 August 2018.

**EPL 4860** means the Environmental Protection Licence (No 4860) issued to Leadshine by the Environmental Protection Authority relating to Broken Head Quarry.

**Leadshine** means Leadshine Pty Limited (ABN 21 102 229 943).

**Order** means the Order 15 order issued by the Department to Leadshine under section 121B of the *Environment Planning and Assessment Act 1979* on 11 August 2017.

**Rehabilitation Works Plans and Specifications** means the plans and notes in in Appendix 1 and Appendix 2 of the Enforceable Undertaking.

**Westside Land** means the land comprised in titles:

- Lot 1, DP 123302;
- Lot 1, DP 245836; and
- Lot 2, DP 700806.

Terms defined in the Enforceable Undertaking and not defined in this Report have the same meaning as defined in the Enforceable Undertaking.



## Annexure A Eastside Sectors





## Eastside Rehabilitation Zones

Zone	Description	Status	Activity in <del>November</del> December 2018 and Future Plans
PZE1	North Facing Batter below future fire trail	Well vegetated with established semi mature vegetation. <a href="#">Unlikely any further vegetation will be required</a>	Under observation to see if any damage from earthworks above requires remedial planting. Unlikely any further vegetation will be required. No damage sustained in earthworks activities.
PZE2	Batter below future fire trail. Comprises part of Area 1 in the Rehabilitation Works Plans and Specifications	<p>Future fire trail to be re-landformed to reduce slope of batter. Area was hydromulched in January 2018 and contains some areas with semi mature regenerated plants. However, large areas are bare soil due to landforming works.</p> <p>Once fire trail is re-landformed batter to be hydromulched and planted with shrubs selected by Mark Free.</p> <p>Rehabilitation Works Plans and Specifications requires the following action:            "REGRADE AREA TO LOWER TRACK ELEVATION TO MATCH GRADES TO SOUTH EAST. TRACK TO BE PROFILED WITH SINGLE CROSS FALL SOUTH EAST DISCHARGING TO EXISTING VEGETATED SLOPES. WHERE OUTFALL IS NOT POSSIBLE MITRE DRAINS TO BE PROVIDED AT 20 M INTERVALS.</p> <p>UNVEGETATED PORTIONS OF BATTER TO THE NORTH WEST OF TRACK TO BE REGRADE TO PROVIDE MAXIMUM 50% GRADE. BATTER TO BE TRACK ROLLED, TOPSOILED THEN REVEGETATED WITH SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES."</p> <p><a href="#">Planting now completed and no further work considered to be required except for monitoring and maintenance.</a></p>	<p>Landforming works were undertaken during September 2018 in accordance with the Rehabilitation Works Plans and Specifications.</p> <p>Topsoil emplaced in October 2018 and planting undertaken in early November 2018.</p> <p>Planting now completed and no further work<del>ed</del> considered to be required except for monitoring and maintenance.</p>
PZE3	East side of future fire trail. Comprises part of Area 1 in the Rehabilitation Works Plans and Specifications	<p>Area outside of areas to be revegetated under Enforceable Undertaking. However, this area will be impacted by the re-landforming of the fire trail. Following fire trail re-landforming it is expected this will need some revegetation.</p> <p>Once fire trail is re-landformed batter to be planted with shrubs selected by Mark Free.</p>	<p>Landforming works were undertaken during September 2018 in accordance with Rehabilitation Works Plans and Specifications.</p> <p>Planting not required by Enforceable Undertaking, although is under consideration. Planting not undertaken in November 2018 due to possible need for further landshaping. To be reviewed after visit by Martens &amp; Associates.</p>
PZE4	Lower west facing batter above Sediment Pond No 1	<p>Area landformed and hydromulched in January 2018. Grass well established with some native plants self-generating.</p> <p><del>Area to be planted with shrubs selected by Mark Free.</del> Minor additional grassing to be undertaken at edges of reformed road.</p> <p><a href="#">Planting now completed and no further worked considered to be required except for monitoring and maintenance.</a></p>	<p>Minor alteration to location of road, relocating the lower access trail further west to allow for reduction of batter in area PZE5 Upper was undertaken during September 2018 in accordance with Rehabilitation Works Plans and Specifications.</p> <p>Initial stages or shrub plantings undertaken in early November 2018.</p> <p>Planting now completed and no further work<del>ed</del> considered to be required except for monitoring and maintenance.</p>
PZE5 (upper portion)	Upper west facing batter above Sediment Pond No 1. Comprises Area 2 in the Rehabilitation Works Plans and Specifications	<p>Area landformed to remove eroded slope and rilling in March/April 2018. Enforceable Undertaking requires area to be re-landformed to reduce batter and then revegetated.</p> <p>Once the batter is reformed to a reduced gradient area to be hydromulched (if required) and planted with shrubs selected by Mark Free.</p> <p>Rehabilitation Works Plans and Specifications requires the following action:            REGRADE BATTER FROM LOWER TRACK TO PROVIDE MAXIMUM 50% GRADE. UPPER TRACK WIDTH TO BE ADJUSTED TO SUIT. UPPER TRACK SINGLE CROSS FALL TO SOUTH EAST TO BE MAINTAINED WITH DISCHARGE TO MITRE DRAIN AT NORTH EASTERN END OF AREA.</p>	<p>Landforming works were undertaken during September 2018 in accordance with the Rehabilitation Works Plans and Specifications.</p> <p>Mitre drain at bottom of upper trail yet to be installed.</p> <p>Planting undertaken in November 2018.</p> <p>Planting now completed. Some bare patches of soil exist where grass has not taken. Expect to scour these areas, apply topsoil and possibly hydromulch in 1<sup>st</sup> <del>q</del>Quarter of 2019.</p>

Zone	Description	Status	Activity in <del>November</del> December 2018 and Future Plans
		<p>LOWER TRACK TO BE REPROFIED WITH OUTFALL DRAINAGE TO REVEGETATED SLOPE TO WEST.</p> <p><u>Planting now completed. Some bare patches of soil exist where grass has not taken. Further monitoring required.</u></p>	
PZE5 (lower portion)	Southern batter facing west above Sediment Pond No 1.	<p>Site of new drain and reformed batters where topsoil store previously located, fringed by vegetated and rehabilitated areas.</p> <p>Topsoil store removed and area re-landformed and drain constructed in August 2018. Seeded topsoil spread in August 2018.</p> <p><u>Planting now completed and no further work considered to be required except for monitoring and maintenance.</u></p>	<p>Area to be monitored to see if grass germinates and strikes given sandy quality of the endemic topsoil store and monitoring for erosion. Grass strike beginning to be evident in early October 2018. Grass establishment has not been very successful and will likely require hydromulching.</p> <p>Depending on success or not of grass cover, the area may be hydromulched.</p> <p>Planting undertaken in November 2018.</p> <p>Bare patches have begun to establish grass cover, so hydromulching has been deferred and grass establishment is being monitored and assisted by water cart irrigation.</p>
PZE6	Dam wall and edges to Sediment Pond No 1	<p>No landforming works required. Large culvert from PZE5 (lower portion) drain to Sediment Pond No 1 discharges to a highly eroded bank. Downstream area to be concrete filled to prevent further erosion.</p> <p>Revegetation required.</p> <p>Dam wall to be topsoiled as required to support selected plantings. Area to be planted with grasses and other vegetation selected by Mark Free.</p>	<p>Drain concreting undertaken in November 2018.</p> <p>Planting expected to be undertaken in 2019 subject to availability of species.</p>
PZE7	Batter below level pad. Comprises Area 5b in the Rehabilitation Works Plans and Specifications	<p>Steeper batter showing some signs of rilling and erosion, but with a scattering of well-established shrubs. Hydromulched in January 2018 with limited grass cover established from that exercise.</p> <p>Bund to be constructed to stop water flowing from level pad PZE8 above. Erosion rills to be filled with seeded topsoil and plantings undertaken to assist in stabilising slope.</p> <p>Rehabilitation Works Plans and Specifications requires the following action: WHERE VEGETATION HAS NOT ESTABLISHED AND WHERE SURFACE RILLS HAVE FORMED REPROFILE WITH TOOTHED EXCAVATOR BUCKET {ACCESS FROM ROADWAY ABOVE OR ON SLOPE WHERE POSSIBLE). APPLY TOPSOIL THEN PROVIDE SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.</p>	<p>Bund established during September 2018.</p> <p>Half of the eroded area successfully re-topsoiled during September 2018.</p> <p>Further topsoil emplacement, scouring with excavator bucket teeth and shrub plantings expected in 1<sup>st</sup> Quarter 2019.</p>
PZE8	Level Pad	<p>Landform finished except bund described in PZE7. Seeded in November 2017 and Hydromulched in January 2018.</p> <p>Bund to be constructed to stop water flowing to batter in PZE7 below. Area to be planted with shrubs selected by Mark Free.</p>	<p>Bund established during September 2018.</p> <p>Minor additional grassing to be undertaken at edges where new bund erected.</p> <p>Timing of shrub plantings not yet determined.</p>
PZE9	Batter below access trail to settlement areas. Comprises Area 5a in the Rehabilitation Works Plans and Specifications	<p>Hydromulched in January 2018 with very limited success. Scattered shrubs developed in clusters.</p> <p>Rehabilitation Works Plans and Specifications requires the following action: WHERE VEGETATION HAS NOT ESTABLISHED AND WHERE SURFACE RILLS HAVE FORMED REPROFILE WITH TOOTHED EXCAVATOR BUCKET {ACCESS FROM ROADWAY ABOVE OR ON SLOPE WHERE POSSIBLE). APPLY TOPSOIL THEN PROVIDE SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.</p>	<p>Trial emplacement of seeded topsoil from road above undertaken during September 2018 which appears to have been successful.</p> <p>Trial hydromulch to be undertaken in 1<sup>st</sup> Quarter 2019 with shrub plantings to follow.</p> <p>Further seeded topsoil to be emplaced where required in 1<sup>st</sup> Quarter 2019, followed by hydromulching and shrub planting.</p> <p>Timing of shrub plantings not yet determined.</p>

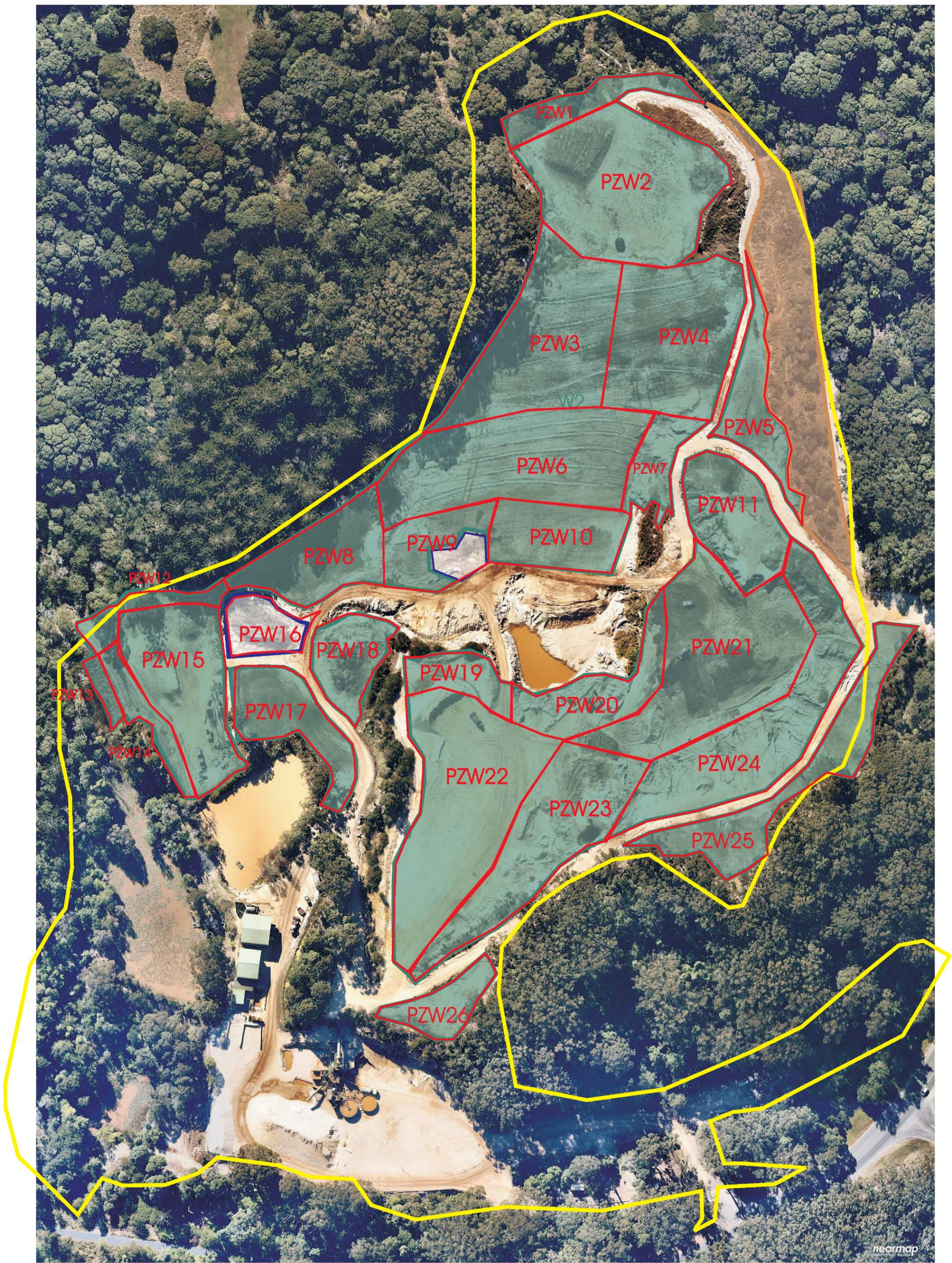


Zone	Description	Status	Activity in <del>November</del> December 2018 and Future Plans
PZE10	Site of concrete pipe drain from above.	Highly eroded and disturbed area.  Rehabilitation of highly eroded batter and new drain to be installed, and then hydromulched and revegetated.	Area filled with fill sand and seeded topsoil during September 2018.  Concrete canvas drain installed to take discharge from concrete pipe in September 2018. Drain across access trail rocked in November 2018. Minor repairs and bunding of new drain to be undertaken before hydromulching and planting.  Performance observed during recent rainfall and observed to perform well, future erosion eliminated.  Area to be hydromulched in 1 <sup>st</sup> Quarter 2019 and planted with shrubs selected by Mark Free. Planting expected to be completed by 1 <sup>st</sup> Quarter 2019.
PZE11	Batter area. Comprises Area 4 in the Rehabilitation Works Plans and Specifications	Partially completed batter, awaiting further fill material and topsoil.  Rehabilitation Works Plans and Specifications requires the following action:  EXTEND BATTER WEST AND SOUTH TO PROVIDE MAXIMUM 50% BATTER SLOPES DOWN FROM ROAD. BATTER TO BE TRACK ROLLED, TOPSOILED THEN REVEGETATED WITH SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.	Further fill emplacement undertaken and seeded topsoil spread during September 2018.  Now being monitored for drainage performance and erosion.  Area to be planted with shrubs selected by Mark Free.  Timing of shrub plantings not yet determined. Part of PZE12 planting extended into the northeast sector of PZE11 during the November planting campaign.
PZE12	South East facing batter	Landforming works complete and finished with seeded topsoil. Grass has germinated and beginning to establish.  <a href="#">Planting now completed and no further work considered to be required except for monitoring and maintenance.</a>	Now being monitored for drainage performance and erosion.  Area planted in November 2018.  <del>-Planting now completed and no further work</del> considered to be required except for monitoring and maintenance.
PZE13	Settlement area	Boggy and very wet flat area. Sedge grass and other suitable species have been established and are being monitored.  Planting of shrubs considered difficult if not impossible due to dangerous ground conditions meaning access for planting is unsafe.  <a href="#">Trial plantings conducted in November 2018 will be monitored, together with ground water conditions to establish if further plantings in PZE13 are possible or necessary.</a>	Drainage boxes were altered during September 2018 in an attempt to lower the water level within the settlement area to see if water can be better drained to improve access conditions. Subject to ongoing monitoring.  Planting at the very south end (where the ground level is higher is considered possible).  Trial plantings conducted in November 2018. These will be monitored, together with ground water conditions to establish <del>is</del> further plantings in PZE13 are possible or necessary.
PZE14	Upper reaches of Sediment Pond No 1	Comprises plume from settlement area PZE13 and runoff from road. Grasses slowly establishing themselves and small shrubs and sedge clumps establishing.  Area to be planted with grasses and shrubs selected by Mark Free.	Road to be stabilised with road fill and possibly some drainage works to prevent further eroded runoff.  Timing of shrub plantings not yet determined. Timing will depend on whether more radical earthworks are required to drain the settlement area PZE13 which might involve excavation of drainage lines in PZE14.
PZE15	East facing batter Comprises Area 3 in the Rehabilitation Works Plans and Specifications	Batter was landformed and topsoiled with seeded topsoil in late 2017. Small patches of un-topsoiled area remain where no vegetation exists, although these are not eroding. Shrubs have established well at the boundary with Sediment Pond No 1.  Bare patches to be ripped, topsoiled and hydromulched.  Area to be planted with shrubs selected by Mark Free.  Rehabilitation Works Plans and Specifications requires the following action:  ESTABLISHMENT OF VEGETATION TO BE MONITORED. WHERE VEGETATION ESTABLISHMENT IS INADEQUATE FURTHER SEEDING, HYDROMULCHING OR PLANTING TO BE UNDERTAKEN. WHERE SIGNIFICANT EROSION OCCURS (RILLS > 300 MM) FURTHER TOPSOILING, REPROFILING OR RIPPING WITH ADDITIONAL REVEGETATION WORKS TO ACHIEVE LONG TERM STABLE AND VEGETATED BATTER.	Timing of topsoil, hydromulch and shrub plantings not yet determined, likely to be early 2019.  Monitoring of batter has not revealed any erosion problems to date.

Zone	Description	Status	Activity in <del>November</del> December 2018 and Future Plans
PZE16	Flat pad former stockpile area	Stockpiles have all been removed during August 2018 and September 2018 except for topsoil awaiting emplacement in areas PZE7 through PZE12 inclusive.	Being monitored for erosion, at present no material erosion evident.  Identified as one of the final areas to be topsoiled and planted, due to its suitability for, and use for, access, equipment parking and stockpile location. Expected to be ripped, topsoiled, seeded and planted in 2 <sup>nd</sup> Quarter 2019.
PZE17	Existing topsoil stockpile	Stockpile remains and occasionally is accessed to remove and screen topsoil for use in rehabilitation.  Screening plant has been removed to Westside stockpile area.	Identified as one of the final areas to be rehabilitated and planted. Topsoil stockpile to be removed in 1 <sup>st</sup> Quarter 2019, then the site will be topsoiled, seeded and planted in 2 <sup>nd</sup> Quarter 2019.
"Stony Hillside"	Area identified as "stony hillside" in Mark Free monitoring report August 2018.  Not shown in the plan above.	Mark Free Report identifies "Plantings on the stony hillside continue to develop slowly and there is some leaf litter buildup. Although there is little natural recruitment in these difficult conditions, a number of planted trees are very well established with Blackbutt, Turpentine, Coast banksia and Blackwood wattle forming an open canopy. Conditions will improve as leaf litter and organic material continues to build up.  It has been decided to intervene to rehabilitate this area more quickly, and to introduce some topsoil, mulch and plant suitable species to complete the rehabilitation of area RE1 as identified in Mark Free's reports.  <a href="#">Planting now completed and no further work considered to be required except for monitoring and maintenance.</a>	This work was undertaken in November 2018.  Work has been undertaken in a manner that preserves access to the spillway for inspection, water sampling and maintenance.  Planting now completed and no further work <del>ed</del> considered to be required except for monitoring and maintenance.



Annexure B Westside Sectors





## Westside Rehabilitation Zones

Zone	Description	Status	Activity in <del>November</del> December 2018 and Future Plans
PZW1	Northern batter of western top pad	Well vegetated and not requiring further work. To be monitored	Nil
PZW2	Western top pad	Topsoiled and hydromulched in January 2018. Contains topsoil store.	Topsoil store required to be removed. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW3	South facing batter in lowland rainforest rehabilitation area. Contains Areas 6 and 7 in Rehabilitation Works Plans and Specifications	Topsoiled and successfully hydromulched in January 2018.	Drain rehabilitation work required in 1 <sup>st</sup> Quarter 2019 after inspection by Martens & Associates. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW4	Upper south facing batter in blackbutt rehabilitation area. Contains Areas 9, 10 and part 11 in Rehabilitation Works Plans and Specifications	Topsoiled and successfully hydromulched in January 2018.	Drain rehabilitation work required in 1 <sup>st</sup> Quarter 2019 after inspection by Martens & Associates. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW5	Upper south east facing batter and flat area in above Area W3	Hydromulched in January 2018. Grass establishment patchy.	To be reviewed for further topsoil application and hydromulching. Drain works on eastern side of access road work required in 1 <sup>st</sup> Quarter 2019 after inspection by Martens & Associates. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW6	Lower south facing batter	Topsoiled and successfully hydromulched in January 2018.	Drain rehabilitation work required in 1 <sup>st</sup> Quarter 2019 after inspection by Martens & Associates. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW7	Lower south east facing batter and drain location. Contains part Area 11 in Rehabilitation Works Plans and Specifications	Hydromulched in January 2018. Grass establishment patchy. Drain rehabilitation works undertaken in September 2018	To be reviewed for further topsoil application and hydromulching. Drain works on western side of access road required in 1 <sup>st</sup> Quarter 2019 after inspection by Martens & Associates. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW8	Flat area in lowland rainforest rehabilitation area	Grassed previously and well established	Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019. <a href="#">Cut-off drain cleared in December 2018, awaiting inspection from Martens &amp; Associates.</a>
PZW9	Upper wetland area	Initial establishment of wetland form undertaken in September 2018 and October 2018.	To be reviewed after inspection by Martens & Associates. Final drain rehabilitation and wetland changing and releases systems to be reviewed and implemented. Shrub planting and wetland planting expected in 2 <sup>nd</sup> Quarter of 2019.  Gradual establishment of new landform and wetland basin being undertaken, with progress work undertaken in November 2018 <a href="#">and December 2018.</a>
PZW10	Flatlands and Central Dam bypass batter	Being used for storage and drying of Central Dam desilting materials.	Materials partially removed in November 2018 <a href="#">and December 2018</a> , topsoil to be added and grassed/hydromulched once removal and landform complete. Shrub planting and wetland planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW11	North west sloping batter	Landformed and topsoiled in September 2018.	Further landform works still required, to be finalised in 1 <sup>st</sup> Quarter 2019. Shrub planting expected in 2 <sup>nd</sup> Quarter of 2019
PZW12	Former cut off drain area	Vegetation well established except in former cut off drain.	To be reviewed after inspection by Martens & Associates. Likely that former cut of drain to be reprofiled and vegetated and eroded areas upstream of Lilypond will be rehabilitated and vegetated
PZW13	Lilypond batter area	Landform finalised	Shrub planting expected in 1 <sup>st</sup> Quarter of 2019
PZW14	Lilypond pad west of bund	Landform finalised	Topsoil application and shrub planting expected in 1 <sup>st</sup> Quarter of 2019
PZW15	Lilypond pad east of bund	Landform finalised	Topsoil application and shrub planting expected in 1 <sup>st</sup> Quarter of 2019. Possible removal or relocation of bund to be undertaken subject to advice from Martens & Associates. <a href="#">Cut-off drain cleared in December 2018, awaiting inspection from Martens &amp; Associates.</a>



Zone	Description	Status	Activity in <del>November</del> December 2018 and Future Plans
PZW16	Lower wetland.. Contains Area 14 in Rehabilitation Works Plans and Specifications	Current location of topsoil store	Topsoil to be removed and used, likely on PZW15 and wetland to be formed in 1 <sup>st</sup> Quarter of 2019 and planted in 2 <sup>nd</sup> Quarter 2019.
PZW17	Flat pad west of Process Pond	Landform finalised. Previously grassed	Shrub planting expected in 1 <sup>st</sup> Quarter of 2019
PZW18	Flat pad west of Central Dam. Contains Area 13 in Rehabilitation Works Plans and Specifications	Landform finalised. Previously grassed	Shrub planting expected in 1 <sup>st</sup> Quarter of 2019
PZW19	North facing batter and dam bank south of Central Dam	Landformed in September 2018 and topsoiled in October 2018.	Replacement drain for runoff from batter on PZW24 and PZW21 established across PZW19 in November 2018. To be monitored to establish if hydromulching required. Shrub planting expected in 1 <sup>st</sup> Quarter of 2019
PZW20	South bank of Central Dam. Contains Area 12 in Rehabilitation Works Plans and Specifications	Landformed in September 2018 and topsoiled in October 2018.	Old drain into Central Dam diverted and rehabilitated in November 2018. To be monitored to establish if hydromulching required. Shrub planting expected in 1 <sup>st</sup> Quarter of 2019
PZW21	Westside fill emplacement area	Landforming continuing. Currently occupied by partially complete fill and fill and topsoil stockpiles. Water diversion bund established in October 2018.	Bund to manage waterflows across eastern end of PZW21 established in October 2018. Batter at western end of PZW21 on border with PZW23 regraded in November 2018 with drainage bund partially established. <a href="#">Further fill and grading work undertaken in December 2018.</a> Fill work to continue until March 2019, when final landform established, topsoil and drainage works to be established and hydromulching undertaken. Shrub planting to be carried out in 2nd Quarter of 2019
PZW22	Blue level pad	Landform finalised, currently occupied by fill and roadbase stockpiles	Fill to be relocated to PZW21 and PZW23 and roadbase used on roads throughout BHQ by March 2019. Topsoil and hydromulch to be applied in March 2019. Shrub planting to be carried out in 2nd Quarter of 2019
PZW23	Blue level batter	Landform largely finalised. Hydromulched in January 2018 but only upper areas were successfully grassed.	Lower areas may be re-landformed to reduce batter. Topsoil and hydromulch to be applied in March 2019. Shrub planting to be carried out in 2nd Quarter of 2019
PZW24	Upper level pad	Landform largely finalised. Hydromulched in January 2018. Patchy results due to impact of ongoing earthworks in PXW 21. Bund and minor temporary drainage works established in March 2018 and have been adjusted occasionally.	Final landform and further topsoil as required will be emplaced in March 2019. Bund and drainage works commenced in November 2018 and to be finalised by March 2019. Shrub planting to be carried out in 2nd Quarter of 2019
PZW25	Vegetation areas east of upper road	Landform finalised. Previously grassed	Shrub planting expected in 1 <sup>st</sup> Quarter of 2019. Possible road base application to road
PZW26	Vegetation areas south of upper road	Landform finalised. Previously grassed	Shrub planting expected in 1 <sup>st</sup> Quarter of 2019. Possible road base application to road and upgrade of drain to south of road.
<a href="#">Washplant</a>	<a href="#">Not subject to Enforceable Undertaking provisions, but intended to be removed</a>	<a href="#">Washplant removed, further infrastructure removal, safety work and works to be undertaken</a>	<a href="#">Washplant removed in December 2018. Further infrastructure removal, safety work and works to be undertaken in 1<sup>st</sup> Quarter 2019.</a>
<a href="#">Weighbridge</a>	<a href="#">Not subject to Enforceable Undertaking provisions, but weighbridge and weighbridge office intended to be removed. Other accommodation and toilet facilities and water tank to remain.</a>	<a href="#">Weighbridge sold and deposit received. No removal works undertaken, weighbridge still operational</a>	<a href="#">Expect weighbridge to be decommissioned and removed in 1<sup>st</sup> Quarter 2019.</a>