

# Enforceable Undertaking

To:

Secretary, Department of Planning and Environment  
320 Pitt Street, Sydney NSW 2000

20 AUGUST 2018

This enforceable undertaking ("**Undertaking**") is given under section 9.5 of the *Environmental Planning and Assessment Act 1979 (NSW)* ("**EP&A Act**") by **Leadshine Pty Limited** (ABN 38 755 709 681).

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## 1 Person giving the Undertaking

This Undertaking is given to the Secretary, Department of Planning and Environment (the "**Secretary**") by **Leadshine Pty Limited** (ABN 21 102 229 943) ("**Leadshine**"), for the purposes of section 9.5 of the EP&A Act.

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## 2 Background

- (a) Leadshine is the operator of Broken Head Quarry and entitled to act on the Development Consent pursuant to leases granted to Leadshine by the registered proprietors of Broken Head Quarry dated 16 December 2005.
- (b) The Minister for Planning issued Leadshine with the Order requiring rehabilitation works to be carried out comply with the Development Consent.

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## 3 Commencement of this Undertaking

This Undertaking comes into effect when:

- (a) this Undertaking is executed by Leadshine, and
  - (b) this Undertaking so executed is accepted by the Secretary or her delegate; and
  - (c) the Minister for Planning revokes the Order.
- (the "**Commencement Date**").

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## 4 Undertaking

Leadshine hereby undertakes as follows and will:

### 4.1 Westside Land

In respect of the Westside Land:

- (a) to complete by 31 March 2019, landforming works in the Westside Land in accordance with the plans at Annexure 1,. Any bunds, dams or other structures required by the plans at Annexure 1 must be constructed to a design which has been reviewed and approved as safe and stable for that site and use by an appropriate Australian chartered professional engineer.
- (b) To complete, by 31 March 2019, stormwater drainage and management works in accordance with the plans at Annexure 2.
- (c) To complete, by 30 April 2019, hand sowing of a 'cover crop' of Shirohie Millet and/or sterile Ryegrass, together with pre-treated native seed collected from the desired

vegetation community on the areas identified as W2 in Annexure 3.1 (**W2**) which have not already been sowed at the Commencement Date, in accordance with paragraph 2.6.4 (iv) 'Final Rehabilitation Procedures – Blackbutt and Scribbly Gum Woodland Communities - Post Quarrying Activities' (i)-(x) of the Western Quarry Sector FFMP and section 2.13.5.5 of the Broken Head Quarry EIS. The application of 'cover crop' must be sowed directly after the conclusion of land-forming works to reduce the risk of erosion and stabilise the landform required by clause 4.1(a) above.

- (d) to complete by 30 June 2019, planting of the areas identified as W2 which have not already been planted in accordance with sections 2.6.4 and 2.7 of the Western Quarry Sector FFMP at the Commencement Date with a variety of the species selected from the approved planting set out in table 2.6 in the Broken Head Quarry EIS (Annexure 4) for the vegetation communities identified in Annexure 6.1 for the area W2 in Annexure 3.1.

Plantings are to be undertaken on a progressive basis rather than being deferred until completion of the landforming works.

- (e) to complete by 30 June 2019, planting on the proposed dam wall for the new dam on the Westside Land. Such plantings are to be selected from the approved planting set out in table 2.7 in the Broken Head Quarry EIS (Annexure 5).
- (f) to undertake an inventory of existing plantings as at the Commencement Date in the area identified W3 in the plans at Annexure 3.1 (**W3**) within one month of the Commencement Date.
- (g) To the extent that the planting already existing in the area W3 is not compatible with the Blackbutt Forest vegetation community, to undertake additional plantings selected from the approved planting set out in table 2.6 in the Broken Head Quarry EIS (Annexure 4) to achieve vegetation compatible with the Blackbutt Forest vegetation community within 3 months of the completion of the inventory referred to in clause 4.1(f).
- (h) To undertake all landforming works and planting required to the undertaken under this Enforceable Undertaking after the Commencement Date in accordance with the steps set out in paragraphs 2.4, 2.5, 2.6.4 and 2.7 of the Western Quarry Sector FFMP and section 2.13.5.5 of the Broken Head Quarry EIS.
- (i) All works (including landforming works, stormwater works or planting) to be undertaken on the Westside Land must be undertaken in accordance with the Schedule of Works set out at Annexure 7.

## 4.2 Eastside

In respect of the Eastside Land:

- (a) to complete by 31 March 2019, landforming works in the Eastside Land in accordance with the plans at Annexure 1 (). Any bunds, dams or other structures required by the plans at Annexure 1 must be constructed to a design which has been reviewed and approved as safe and stable for that site and use by an appropriate Australian chartered professional engineer.
- (b) To complete, by 31 March 2019, stormwater drainage and management works in accordance with the plans at Annexure 2.
- (c) To complete, by 30 April 2019, hand sowing of a 'cover crop' of Shirohie Millet and/or sterile Ryegrass, together with pre-treated native seed collected from the desired vegetation community for the vegetation communities identified in Annexure 6.2 on the areas identified as E2 in Annexure 3.2 (**E2**), which have not already been sowed at the Commencement Date in accordance with paragraph 2.6.4 (iv) 'Final



Rehabilitation Procedures – Blackbutt and Scribbly Gum Woodland Communities - Post Quarrying Activities' (i)-(vi) of the Eastern Quarry Sector FFMP. The application of 'cover crop' must be sowed directly after the conclusion of land-forming works to reduce the risk of erosion and stabilise the landform required by clause 4.2(a).

- (d) to complete by 30 June 2019, planting of the areas identified as E2 which have not already been planted in accordance with sections 2.6.4 and 2.7 of the Eastern Quarry Sector FFMP at the Commencement Date with a variety of species selected from the approved planting set out in table 2.6 in the Broken Head Quarry (Annexure 4) for the vegetation communities identified for areas.

Plantings are to be undertaken on a progressive basis rather than being deferred until completion of the landforming works.

- (e) to complete by 30 June 2019, planting of a variety of species selected from the approved planting set out in table 2.7 in the Broken Head Quarry EIS (Annexure 5), on the dam walls for the upper dam on the Eastside Land.
- (f) To supplement the plantings existing as at the Commencement Date in the area identified E3 in plan in Annexure 3.2 to achieve vegetation compatible with the Blackbutt Forest vegetation community.
- (g) To undertake all landforming works and planting required to the undertaken under this Enforceable Undertaking after the Commencement Date in accordance with the steps set out in paragraph 2.6.4 and 2.7 in the Eastern Quarry Sector FFMP and section 2.13.5 of the Broken Head Quarry EIS.
- (h) All works (including landforming works, stormwater works or planting) to be undertaken on the Eastside Land must be undertaken in accordance with the Schedule of Works set out at Annexure 7.

#### **4.3 Maintenance**

Leadshine must:

- (a) carry out maintenance works in accordance with section 2.6.4(v) of the Western Quarry Sector FFMP and the Eastern Quarry Sector FFMP; and
- (b) carry out weed control in accordance with section 4.6 of the Western Quarry Sector FFMP and the Eastern Quarry Sector FFMP.

#### **4.4 Reporting**

- (a) Leadshine must provide a monthly update of the progress in complying with the obligations under this Enforceable Undertaking to the Minister within 7 days of the end of each month until such time as the Minister agrees in writing that Leadshine has met its obligations (excluding reporting obligations under this sub clause) under this Undertaking.
- (b) By 31 August 2019, Leadshine must commission and pay the full cost of an Independent Ecological Audit. This Audit must:
  - (i) be conducted by a suitably qualified, experienced and independent ecologist and erosion and sediment control expert whose appointments have been endorsed by the Secretary;
  - (ii) assess the works undertaken by Leadshine and whether they comply with the requirements of this Enforceable Undertaking (excluding the maintenance obligations under clause 4.3);

- (iii) recommend any measures or actions to improve the environmental performance of the works to be carried out under this Undertaking (excluding the maintenance obligations under clause 4.3) provided that such measures or actions cannot require Leadshine to undertake works of a materially greater scope than those works required by this Undertaking, including timeframes for recommendation implementation (**Audit Recommendations**); and
  - (iv) produce a report on the outcomes of the Audit, which must be submitted to the Minister within 4 weeks of commissioning (**Audit Report**).
- (c) Within 3 months of the submission of the Audit Report, Leadshine must submit a Response to any recommendations made within that report.
  - (d) Leadshine must comply with any reasonable requirement of the Secretary that results from a review of the Audit Report, which may include, but is not limited to implementing the Audit Recommendations.
  - (e) In the event that an action specified in this Enforceable Undertaking cannot be achieved in the timeframe indicated, Leadshine undertakes to notify the Secretary of the delay, or anticipated delay, and the reason for such delay as soon as reasonably practicable. Notification of any such delay or potential delay does not in any way affect Leadshine's responsibilities under this Enforceable Undertaking.

#### 4.5 Costs of proceedings

Leadshine undertakes not to seek any order for costs against the Secretary or the Department of Planning and Environment (**Department**) in respect of proceedings 2017/00272560 concerning the Order.

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## 5 Acknowledgments

Leadshine acknowledges that:

- (a) the Secretary and/or the Department will make this Enforceable Undertaking publicly available including by publishing it on the Department's public register of section 9.5 undertakings on its website.
- (b) the Secretary and/or the Department will, from time to time, make public reference to this Enforceable Undertaking including in news media statements and in Department's publications.
- (c) this Enforceable Undertaking in no way derogates from the rights and remedies or liabilities available to or affecting any other person arising from or associated with the subject matter of this Enforceable Undertaking.
- (d) this Enforceable Undertaking does not affect the ability of the Secretary and/or the Department from taking any other enforcement action or otherwise, in accordance with the EP&A Act, including but not limited to the issuing of further orders under part 9 of the EP&A Act.

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## 6 Definitions

In this Undertaking these meanings apply unless the contrary intention appears.

**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;



- 36136499 11

Accepted by the Secretary of the Department pursuant  
to section 9.5 Act on:

Date

24/4/18

and signed on behalf of the Department:

A handwritten signature in blue ink, consisting of a stylized 'R' followed by a long horizontal stroke.

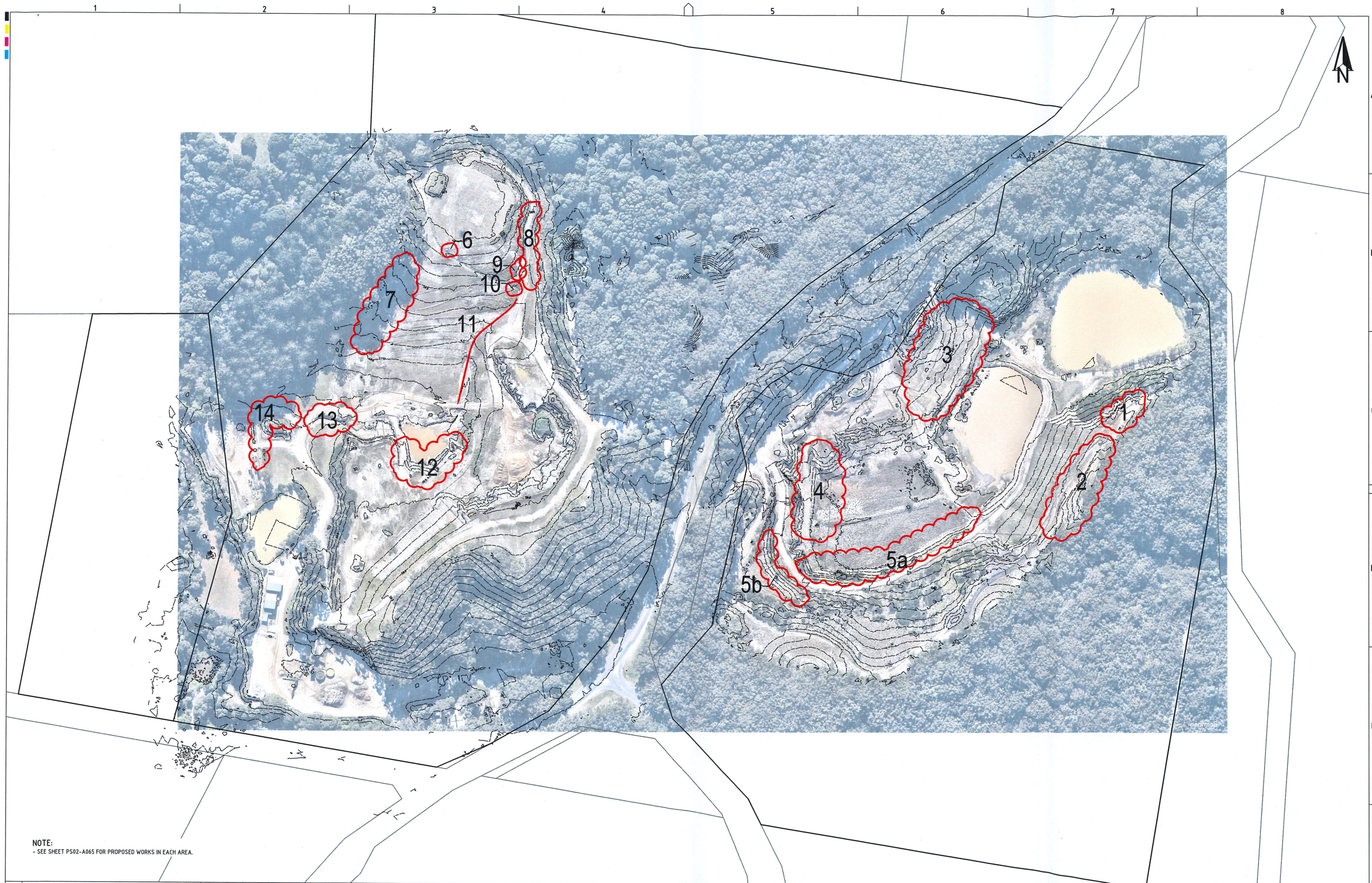
Secretary or her delegate

Date



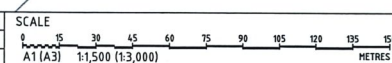
Annexure 1      Leadshine Landforming Works Plans





NOTE:  
- SEE SHEET PS02-A065 FOR PROPOSED WORKS IN EACH AREA.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	PROPOSED REHABILITATION WORKS	17/08/2018	LZ	AN	AN	AN



GRID	DATUM	PROJECT MANAGER	CLIENT
MGA	mAHD	AN	LEADSHINE PTY LTD
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PROJECT NAME/PLANSET TITLE
BROKEN HEAD QUARRY QUARRY REHABILITATION PLANS BROKEN HEAD ROAD, SUFFOLK PARK, NSW LOT 1 DP 123302 & LOT 2 DP 700806



**martens**  
& Associates Pty Ltd

Consulting Engineers  
Environment  
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Geotechnical  
Civil

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Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE				
SUMMARY OF PROPOSED REHABILITATION WORKS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1706289	PS02	R02	PS02-A060	A

PRINTED: 17/08/2018 - USER: LZ001

A17 A3 LANDSCAPE 16/11/18 v02.0.0/1

DRAWING ID: P1706289-PS02-R02-A060



PROPOSED REHABILITATION WORKS

REFER TO MARTENS PLAN PS02-A060 FOR NUMBERED LOCATIONS.

AREA 1

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. 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.

AREA 2

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. LOWER TRACK TO BE REPROFILED WITH OUTFALL DRAINAGE TO REVEGETATED SLOPE TO WEST.

AREA 3

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.

AREA 4

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.

AREA 5a and 5b

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.

AREA 6

RESHAPE DRAIN TO FORM PARABOLIC OR TRAPEZOIDAL DRAIN DISCHARGING TO EXISTING ROCK LINED WEST -EAST DRAIN. PROVIDE SHORT TERM COVER CROP AND PLANT WITH APPROVED SPECIES SUITABLE FOR A DRAIN (SEDGES OR SIMILAR).

AREA 7

ROCK CHECK DAMS TO BE RECONSTRUCTED TO PREVENT FLOW BYPASSING AND TO PROVIDE A SPILLWAY (150 MM LOWER THAN MAIN CREST) AT THE CENTRE OF THE DAM. DOWNSLOPE ROCK APRON TO BE PROVIDED TO PREVENT CHANNEL SCOUR. ACCUMULATED SEDIMENT TO BE (ROUTINELY) REMOVED FROM CHECK DAMS AND REVEGETATION WORKS TO PROCEED WITH APPROVED SPECIES.

AREA 8

WHERE CROSSFALL INADEQUATE REGRADE TRACK AND PROVIDE GRAVEL WEARING COURSE. REFORM CIRCULAR, PARABOLIC OR TRAPEZOIDAL DISH DRAINS CONNECTING TO DRAINAGE ELEMENT AT 'AREA 10' OR TO STABLE DRAINS DOWN REVEGETATED ADJACENT BATTER.

AREA 9

WHERE VEGETATION HAS NOT ESTABLISHED AND WHERE SURFACE RILLS HAVE FORMED REPROFILE WITH TOOTHED EXCAVATOR BUCKET (ACCESS FROM TRACK BELOW). APPLY TOPSOIL THEN PROVIDE SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.

AREA 10

CONSTRUCT ROCK LINED CHUTE FROM EXISTING ROCK LINED DRAIN TO THE NORTH WEST AND 'AREA 10' REFORMED DRAIN.

AREA 11

FORM TRAPEZOIDAL DRAIN TO CONVEY COLLECTED FLOWS (SIZED FOR 5 YR ARI CAPACITY OR GREATER) TO CENTRAL DAM. STABILISE WITH EITHER: (1) ROCK UNDERLAIN BY GEOTEXTILE; OR (2) TOPSOILED WITH ORGANIC FIBRE MESH THEN SHORT TERM COVER CROP THEN PLANT WITH APPROVED SPECIES SUITABLE FOR A DRAIN (SEDGES OR SIMILAR).

AREA 12

REPROFILE SOUTHERN BATTER SURROUNDING CENTRAL DAM TO PROVIDE STABLE FORM. BATTER TO BE TRACK ROLLED, TOPSOILED THEN REVEGETATE WITH SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.

AREA 13

PROPOSED DAM SPILLWAY TO BE ROCK LINED TO ADEQUATELY CONVEY 1 IN 100 YR ARI FLOWS WITHOUT EROSION.

AREA 14

REPROFILE CHANNEL WHERE REQUIRED TO PROVIDE 5 YR ARI CAPACITY WITH CHANNEL BATTERS OF 1 IN 3. WHERE INADEQUATE, EXISTING VEGETATION BATTERS TO BE REVEGETATED WITH SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES. ACCUMULATED SEDIMENT IN CHANNEL FLOOR TO BE (ROUTINELY) REMOVED. ONCE DAM CONSTRUCTION WORKS ARE COMPLETED CHANNEL BED TO BE PLANTED WITH APPROVED SPECIES SUITABLE FOR A DRAIN (SEDGES OR SIMILAR).

MONITORING REQUIREMENTS AND CONTINGENCY PLANNING

ALL AREAS OF REVEGETATION AND ALL DRAINAGE STRUCTURES ARE TO BE REGULARLY MONITORED AS FOLLOWS:


- 3 – MONTHLY INSPECTION OF ALL DRAINAGE STRUCTURES INCLUDING DRAINAGE SWALE AND ROAD SIDE DISH DRAINS, DAM SPILLWAY, ROCK CHECK DAMS.
- 3 – MONTHLY INSPECTION OF ALL REVEGETATION AREAS TO ASSESS ADEQUACY OF PLANTINGS AND PROGRESS OF VEGETATION ESTABLISHMENT.
- FOLLOWING MAJOR RAINFALL EVENTS (>50 MM IN 24 HOUR PERIOD) ALL DRAINAGE STRUCTURES TO BE INSPECTED TO ASSESS ANY DAMAGE.

WHERE DRAINAGE STRUCTURES ARE ASSESSED AS EITHER ERODING (>300 MM RILL DEPTH) OR INADEQUATELY VEGETATED (<70% COVER) FURTHER REMEDIATION WORKS ARE TO BE UNDERTAKEN. THESE MAY INCLUDE BUT IS NOT LIMITED TO:

- REGRADEING AND RECONSTRUCTION WORKS TO REINSTATE REQUIRED FORM.
- REVIEW OF DESIGN CAPACITY AND MODIFICATION OF DESIGN AS REQUIRED.
- ADDITIONAL REVEGETATION WORKS (SEEDING, HYDROMULCHING ETC) TO IMPROVE STABILITY.
- LINING OF DRAIN WHERE REPEATED SCOUR HAS OCCURED – LINING MAY BE: TEMPORARY (ORGANIC FIBRE MESH OR MATTING) TO ALLOW VEGETATION ESTABLISHMENT; SEMI PERMANENT (DURABLE GEOTEXTILES) WITH REVEGETATION FOR PERMANENT SOLUTION; OR PERMANENT (ROCK LINED OR OTHER) DEPENDING ON THE LOCATION.

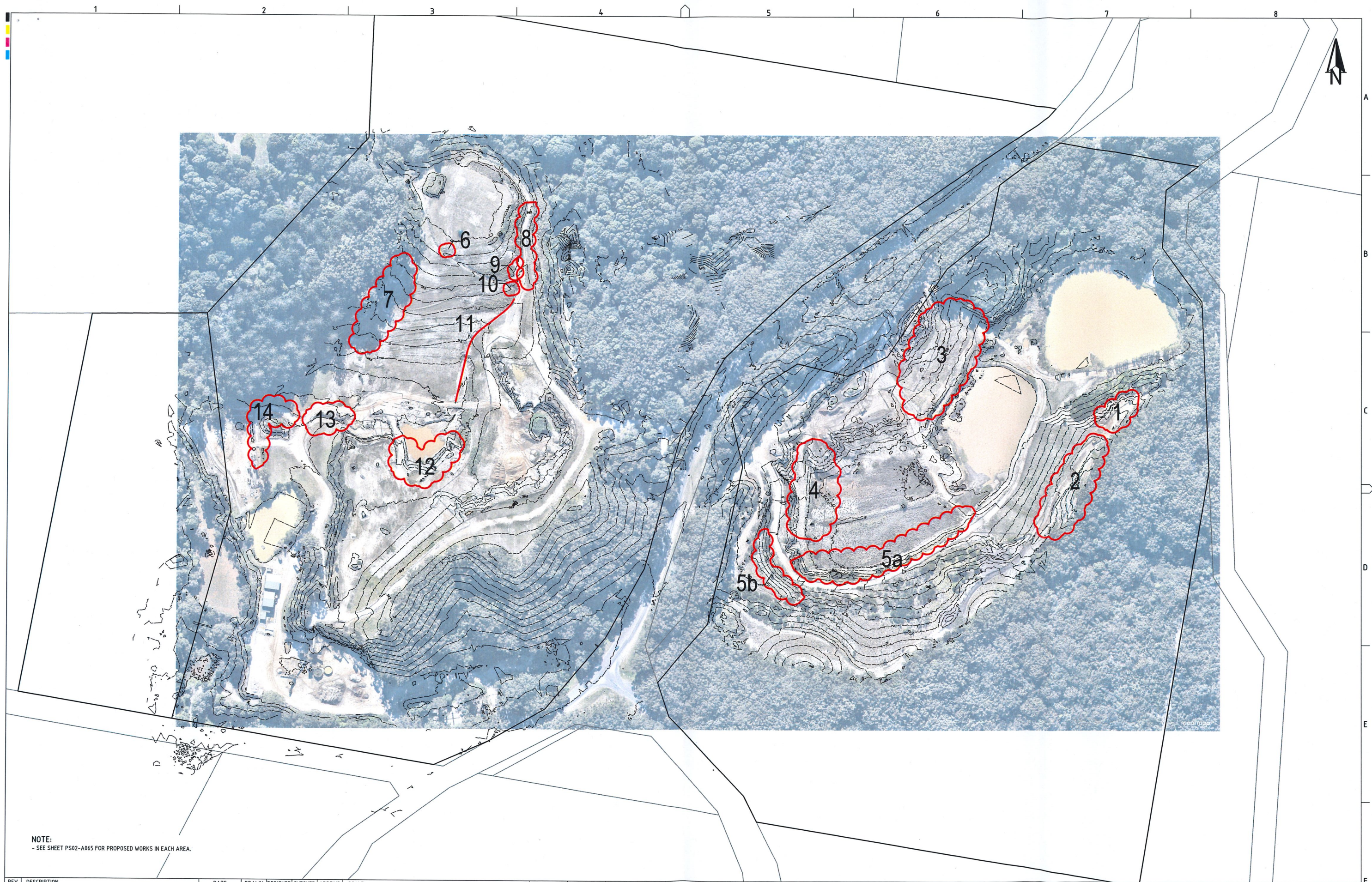
WHERE REHABILITATION AREAS ARE ASSESSED AS EITHER ERODING (>300 MM RILL DEPTH) OR INADEQUATELY VEGETATED (<70% COVER) FURTHER WORKS ARE TO BE UNDERTAKEN. THESE MAY INCLUDE BUT IS NOT LIMITED TO:

- MINOR REPROFILING / TOPSOILING TO REINSTATE DESIRED LAND FORM AND REMOVE EROSION.
- RIPPING OF SURFACE TO IMPROVE VEGETATION ESTABLISHMENT. THIS MAY BE COMPLETED USING TOOTHED EXCAVATOR BUCKETS, DIAMOND HARROWS OR OTHER EQUIPMENT AS SUITED TO THE AREA. PLACEMENT OF TOPSOIL MAY BE REQUIRED IN CONJUNCTION WITH THESE WORKS.
- SEEDING, HYDROMULCHING AND OTHER REVEGETATION TECHNIQUES AS REQUIRED TO ACHIEVE MINIMUM 70% VEGETATION COVER.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	 <div>Consulting Engineers Environment Water Geotechnical Civil</div>	DRAWING TITLE									
A	PROPOSED REHABILITATION WORKS	17/08/2018	LZ	AN	AN	AN				AN	LEADSHINE PTY LTD		PROJECT NAME/PLANSET TITLE	PROPOSED REHABILITATION WORKS NOTES								
								<div>DISCLAIMER &amp; COPYRIGHT</div> <div>This plan must not be used for construction unless signed as approved by principal certifying authority.</div> <div>All measurements in millimetres unless otherwise specified.</div> <div>This drawing must not be reproduced in whole or part without prior written consent of Martens &amp; Associates Pty Ltd.</div> <div>(C) Copyright Martens &amp; Associates Pty Ltd</div>					<div>BROKEN HEAD QUARRY QUARRY REHABILITATION PLANS</div> <div>BROKEN HEAD ROAD, SUFFOLK PARK, NSW LOT 1 DP 123392 &amp; LOT 2 DP 700806</div>					<div>PROJECT NO. P1706289</div> <div>PLANSET NO. PS02</div> <div>RELEASE NO. R02</div> <div>DRAWING NO. PS02-A065</div> <div>REVISION A</div>				
A1 / A3 LANDSCAPE (A3_L_v2.0.0.0)																						

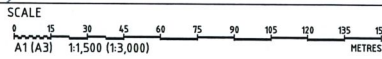
## **Annexure 2     Leadshine Stormwater Management Works Plans**





NOTE:  
- SEE SHEET PS02-A065 FOR PROPOSED WORKS IN EACH AREA.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	PROPOSED REHABILITATION WORKS	17/06/2016	LZ	AN	AN	AN



GRID  
MGA

DATUM  
mAHD

PROJECT MANAGER  
AN

CLIENT  
LEADSHINE PTY LTD

PROJECT NAME/PLANSET TITLE  
BROKEN HEAD QUARRY  
QUARRY REHABILITATION PLANS

BROKEN HEAD ROAD, SUFFOLK PARK, NSW  
LOT 1 DP 123302 & LOT 2 DP 700806

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DRAWING TITLE				
SUMMARY OF PROPOSED REHABILITATION WORKS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1706289	PS02	R02	PS02-A060	A

DRAWING ID: P1706289-PS02-R02-A060



REFER TO MARTENS PLAN PS02-A060 FOR NUMBERED LOCATIONS.

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.

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.

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. LOWER TRACK TO BE REPROFILED WITH OUTFALL DRAINAGE TO REVEGETATED SLOPE TO WEST.

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.

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.

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.

RESHAPE DRAIN TO FORM PARABOLIC OR TRAPEZOIDAL DRAIN DISCHARGING TO EXISTING ROCK LINED WEST-EAST DRAIN. PROVIDE SHORT TERM COVER CROP AND PLANT WITH APPROVED SPECIES SUITABLE FOR A DRAIN (SEDGES OR SIMILAR).

ROCK CHECK DAMS TO BE RECONSTRUCTED TO PREVENT FLOW BYPASSING AND TO PROVIDE A SPILLWAY (150 MM LOWER THAN MAIN CREST) AT THE CENTRE OF THE DAM. DOWNSLOPE ROCK APRON TO BE PROVIDED TO PREVENT CHANNEL SCOUR.  
ACCUMULATED SEDIMENT TO BE (ROUTINELY) REMOVED FROM CHECK DAMS AND REVEGETATION WORKS TO PROCEED WITH APPROVED SPECIES.

WHERE CROSSFALL INADEQUATE REGRADE TRACK AND PROVIDE GRAVEL WEARING COURSE. REFORM CIRCULAR, PARABOLIC OR TRAPEZOIDAL DISH DRAINS CONNECTING TO DRAINAGE ELEMENT AT 'AREA 10' OR TO STABLE DRAINS DOWN REVEGETATED ADJACENT BATTER.

WHERE VEGETATION HAS NOT ESTABLISHED AND WHERE SURFACE RILLS HAVE FORMED REPROFILE WITH TOOTHED EXCAVATOR BUCKET (ACCESS FROM TRACK BELOW). APPLY TOPSOIL THEN PROVIDE SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.

CONSTRUCT ROCK LINED CHUTE FROM EXISTING ROCK LINED DRAIN TO THE NORTH WEST AND 'AREA 10' REFORMED DRAIN.

FORM TRAPEZOIDAL DRAIN TO CONVEY COLLECTED FLOWS (SIZED FOR 5 YR ARI CAPACITY OR GREATER) TO CENTRAL DAM. STABILISE WITH EITHER: (1) ROCK UNDERLAIN BY GEOTEXTILE; OR (2) TOPSOILED WITH ORGANIC FIBRE MESH THEN SHORT TERM COVER CROP THEN PLANT WITH APPROVED SPECIES SUITABLE FOR A DRAIN (SEDGES OR SIMILAR).

REPROFILE SOUTHERN BATTER SURROUNDING CENTRAL DAM TO PROVIDE STABLE FORM. BATTER TO BE TRACK ROLLED, TOPSOILED THEN REVEGETATE WITH SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.

PROPOSED DAM SPILLWAY TO BE ROCK LINED TO ADEQUATELY CONVEY 1 IN 100 YR ARI FLOWS WITHOUT EROSION.

REPROFILE CHANNEL WHERE REQUIRED TO PROVIDE 5 YR ARI CAPACITY WITH CHANNEL BATTERS OF 1 IN 3. WHERE INADEQUATE, EXISTING VEGETATION BATTERS TO BE REVEGETATED WITH SHORT TERM COVER CROP. FINAL REHABILITATION BY PLANTING WITH APPROVED SPECIES.

ACCUMULATED SEDIMENT IN CHANNEL FLOOR TO BE (ROUTINELY) REMOVED. ONCE DAM CONSTRUCTION WORKS ARE COMPLETED CHANNEL BED TO BE PLANTED WITH APPROVED SPECIES SUITABLE FOR A DRAIN (SEDGES OR SIMILAR).

ALL AREAS OF REVEGETATION AND ALL DRAINAGE STRUCTURES ARE TO BE REGULARLY MONITORED AS FOLLOWS:


- 3 – MONTHLY INSPECTION OF ALL DRAINAGE STRUCTURES INCLUDING DRAINAGE SWALE AND ROAD SIDE DISH DRAINS, DAM SPILLWAY, ROCK CHECK DAMS.
- 3 – MONTHLY INSPECTION OF ALL REVEGETATION AREAS TO ASSESS ADEQUACY OF PLANTINGS AND PROGRESS OF VEGETATION ESTABLISHMENT.
- FOLLOWING MAJOR RAINFALL EVENTS (>50 MM IN 24 HOUR PERIOD) ALL DRAINAGE STRUCTURES TO BE INSPECTED TO ASSESS ANY DAMAGE.

WHERE DRAINAGE STRUCTURES ARE ASSESSED AS EITHER ERODING (>300 MM RILL DEPTH) OR INADEQUATELY VEGETATED (<70% COVER) FURTHER REMEDIATION WORKS ARE TO BE UNDERTAKEN. THESE MAY INCLUDE BUT IS NOT LIMITED TO:

- REGRADING AND RECONSTRUCTION WORKS TO REINSTATE REQUIRED FORM.
- REVIEW OF DESIGN CAPACITY AND MODIFICATION OF DESIGN AS REQUIRED.
- ADDITIONAL REVEGETATION WORKS (SEEDING, HYDROMULCHING ETC) TO IMPROVE STABILITY.
- LINING OF DRAIN WHERE REPEATED SCOUR HAS OCCURED – LINING MAY BE: TEMPORARY (ORGANIC FIBRE MESH OR MATTING) TO ALLOW VEGETATION ESTABLISHMENT; SEMI PERMANENT (DURABLE GEOTEXTILES) WITH REVEGETATION FOR PERMANENT SOLUTION; OR PERMANENT (ROCK LINED OR OTHER) DEPENDING ON THE LOCATION.

WHERE REHABILITATION AREAS ARE ASSESSED AS EITHER ERODING (>300 MM RILL DEPTH) OR INADEQUATELY VEGETATED (<70% COVER) FURTHER WORKS ARE TO BE UNDERTAKEN. THESE MAY INCLUDE BUT IS NOT LIMITED TO:

- MINOR REPROFILING / TOPSOILING TO REINSTATE DESIRED LAND FORM AND REMOVE EROSION.
- RIPPING OF SURFACE TO IMPROVE VEGETATION ESTABLISHMENT. THIS MAY BE COMPLETED USING TOOTHED EXCAVATOR BUCKETS, DIAMOND HARROWS OR OTHER EQUIPMENT AS SUITED TO THE AREA. PLACEMENT OF TOPSOIL MAY BE REQUIRED IN CONJUNCTION WITH THESE WORKS.
- SEEDING, HYDROMULCHING AND OTHER REVEGETATION TECHNIQUES AS REQUIRED TO ACHIEVE MINIMUM 70% VEGETATION COVER.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPROVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	 <b>martens</b> & Associates Pty Ltd Consulting Engineers Environment Water Geotechnical Civil Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8787 Email: mail@martens.com.au Internet: www.martens.com.au	DRAWING TITLE
A	PROPOSED REHABILITATION WORKS	17/08/2018	LZ	AN	AN	AN							
PRINTED: 17/08/2018 14:45 USER: LINDA AT1 / A3 LANDSCAPE (A1_LC_v02.0.01)							DISCLAIMER & COPYRIGHT This plan must not be used for construction unless signed as approved by principal certifying authority. All measurements in millimetres unless otherwise specified. This drawing must not be reproduced in whole or part without prior written consent of Martens & Associates Pty Ltd. (C) Copyright Martens & Associates Pty Ltd	PROJECT NAME/PLANSET TITLE <b>BROKEN HEAD QUARRY QUARRY REHABILITATION PLANS</b> BROKEN HEAD ROAD, SUFFOLK PARK, NSW LOT 1 DP 123302 & LOT 2 DP 700806	PROJECT NO. <b>P1706289</b>	PLANSET NO. AS02	RELEASE NO. R02	DRAWING NO. <b>PS02-A065</b>	REVISION <b>A</b>



## Annexure 3 Vegetation Areas

### Annexure 3.1 Westside Areas to be vegetated



AREA W2 - Final Plantings



AREA W3- Planting Inventory



## Annexure 3.2 Eastside Areas to be vegetated





# Annexure 4 Table 2.6 of the Broken Head Quarry EIS

TABLE 2.6

## Final Rehabilitation Species

Community Stratum or Micro - Habitat	Blackbutt Forest	Scribbly Gum Woodland	Moist Forest/Rainforest/Brush Box Forest	Wetlands	
				Eastern Sector	Western Sector
<b>TREES</b>	Blackbutt ( <i>Eucalyptus pilularis</i> ) Red Bloodwood ( <i>E. gummifera</i> ) Red Mahogany ( <i>E. resinifera</i> ) Turpentine ( <i>Syncarpia glomulifera</i> )		Blackwood ( <i>Acacia melanoxylon</i> ) Brown Kurrajong ( <i>Commersonia bartramia</i> ) Brush Box ( <i>Lopstemon confertus</i> ) Coast Banksia ( <i>Banksia integrifolia</i> ) Cabbage Palm ( <i>Livistona australis</i> ) Cudgerie ( <i>Flindersia schottiana</i> ) Firewheel Tree ( <i>Stenocarpus sinuatus</i> ) Foambark ( <i>Jagera pseudorhus</i> ) Hard Quondong ( <i>Elaeocarpus obovatus</i> ) Hoop Pine ( <i>Araucaria cunninghamii</i> ) Swamp Turpentine ( <i>Lophostemon suaveolens</i> ) Tuckeroo ( <i>Cupaniopsis anacardioides</i> ) Red Ash ( <i>Alphitonia excelsa</i> ) Turpentine ( <i>Syncarpia glomulifera</i> )	Damp/Waterlogged Areas  Broad-leaved Paperbark ( <i>Melaleuca quinquenervia</i> ) Swamp Mahogany ( <i>Eucalyptus robusta</i> )	Blackwood ( <i>Acacia melanoxylon</i> ) Brown Kurrajong ( <i>Commersonia bartramia</i> ) Cabbage Palm ( <i>Livistona australis</i> ) Cudgerie ( <i>Flindersia schottiana</i> ) Foambark ( <i>Jagera pseudorhus</i> ) Hard Quondong ( <i>Elaeocarpus obovatus</i> ) Swamp Turpentine ( <i>Lophostemon suaveolens</i> )
<b>TREES/TALL SHRUBS</b>		Scribbly Gum ( <i>Eucalyptus signata</i> ) Wallum Banksia ( <i>Banksia aemula</i> ) Common Tea-Tree ( <i>Leptospermum polygalifolium</i> )			
<b>SMALL TREES/TALL SHRUBS</b>	Corkwood ( <i>Duboisia myoporoides</i> ) Forest Oak ( <i>Allocasuarina torulosa</i> ) Midgen Berry ( <i>Austrorhynchus dulcis</i> ) Wattle spp. ( <i>Acacia longissima</i> , <i>A. longifolia</i> )		Black Wattle ( <i>Callitriche serratifolia</i> ) Blueberry Ash ( <i>Elaeocarpus reticulatus</i> ) Umbrella Cheese Tree ( <i>Glochidion sumatranum</i> ) Corkwood ( <i>Duboisia myoporoides</i> ) Guoia ( <i>Guoia semiglaucula</i> ) Lilly Pilly ( <i>Acmena smithii</i> ) Macaranga ( <i>Macaranga tanarius</i> ) Sweet Pittosporum ( <i>Pittosporum undulatum</i> ) Native Peach ( <i>Trema aspera</i> ) Red Kamala ( <i>Mallotus philippinensis</i> )		Adjacent to Wetlands  Guoia ( <i>Guoia semiglaucula</i> ) Scrub Turpentine ( <i>Rhodamnia rubescens</i> ) Umbrella Cheese Tree ( <i>Glochidion sumatranum</i> )
<b>UNDERSTOREY/ GROUND COVER</b>	False sarsparilla ( <i>Hardenbergia violacea</i> ) Feather Plant ( <i>Restio tetraphyllus</i> ) Kangaroo Grass ( <i>Themeda australis</i> ) Running Postman ( <i>Kennedia rubicunda</i> ) Sedge ( <i>Causis blakei</i> ) Twining Guinea Flower ( <i>Hibbertia scandens</i> ) Wonga Vine ( <i>Pandorea pandorana</i> )	Christmas Bells ( <i>Blandfordia grandiflora</i> ) Feather Plant ( <i>Restio tetraphyllus</i> ) Grass Tree ( <i>Xanthorrhoea johnsonii</i> ) Midgen Berry ( <i>Austrorhynchus dulcis</i> ) Rock Banksia ( <i>Banksia oblongifolia</i> ) Sweet-scented Wattle ( <i>Acacia suaveolens</i> )	Aristolochia ( <i>Aristolochia praevenosa</i> ) Bleeding Heart ( <i>Omalanthus populifolius</i> ) Five-leaf Watervine ( <i>Cissus hypoglauca</i> ) Midgen Berry ( <i>Austrorhynchus dulcis</i> ) Slender Palm Lily ( <i>Cordyline stricta</i> ) Spiky Mat-rush ( <i>Lomandra longifolia</i> ) Tree Heath ( <i>Trochocarpa laurina</i> ) Twining Guinea Flower ( <i>Hibbertia scandens</i> ) Bolly Gum ( <i>Litsia leefjeana</i> )	Damp Areas  Pouched Coral Fern ( <i>Gleichenia dicarpa</i> ) Saw-sedge ( <i>Gahnia clarkii</i> ) Selaginella ( <i>Selaginella uliginosa</i> ) Swamp Water Fern ( <i>Blechnum indicum</i> )	Slender Palm-lily ( <i>Cordyline stricta</i> ) Spiky Mat-rush ( <i>Lomandra longifolia</i> )
<b>WETLAND FRINGES (SHALLOW WATERS)</b>				Frogmouth ( <i>Phyllidrum lanuginosum</i> ) Lepironia ( <i>Lepironia articulata</i> )	Frogmouth ( <i>Phyllidrum lanuginosum</i> ) Lepironia ( <i>Lepironia articulata</i> )
<b>WETLAND FRINGES (DEEPER WATER)</b>				Common Reed ( <i>Phragmites australis</i> ) Lepironia ( <i>Lepironia articulata</i> )	Common Reed ( <i>Phragmites australis</i> ) Lepironia ( <i>Lepironia articulata</i> )

Source: Greenloaming Biostudies Pty Ltd (1997)

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# Annexure 5 Table 2.7 of the Broken Head Quarry EIS

**TABLE 2.7**

## **Rehabilitation Species and Locations Water Management Structures and/or Associated Bund Walls**

Species	Location
<b>EASTERN SETTLING POND WALL/VISUAL BUND</b>	
Blackbutt ( <i>E. pilularis</i> ) Wallum Banksia ( <i>Banksia aemula</i> )  Wattle species ( <i>Acacia longifolia</i> , <i>A. longissima</i> ) Spikey Mat-rush ( <i>Lomandra longifolia</i> )  Running Postman ( <i>Kennedia rubicunda</i> ) False Sarsparilla ( <i>Hardenbergia violacea</i> )	Toe of batter; irregular spacing < 3 m apart Interspersed with Blackbutt (1 Banksia: 5 Blackbutt) and extending up batter As for Wallum Banksia; scattered clumps with individuals at 2 m centres (approximately) Interspersed with wattles at 0.5 m to 1.0 m centres over wall and batter toe Interspersed with tree and shrub species; 2 m centres on access way
<b>Supplementary Species</b>	
<b>Trees</b> Red Bloodwood ( <i>Eucalyptus gummifera</i> ) Turpentine ( <i>Syncarpia glomulifera</i> ) <b>Tall Shrubs/Small Trees</b> Red Ash ( <i>Alphitonia excelsa</i> ) Corkwood ( <i>Duboisia myoporoides</i> ) Pittosporum ( <i>Pittosporum undulatum</i> ) <b>Understorey/Ground cover</b> Midgen Berry ( <i>Austromyrtus dulcis</i> ) Grass Tree ( <i>Xanthorrhoea macronema</i> )	
<b>WESTERN SETTLING POND WALL</b>	
Blackwood ( <i>A. melanoxylon</i> ) Black Wattle ( <i>Callicoma serratifolia</i> ) Guoia ( <i>Guoia semiglauc</i> ) Lilly Pilly ( <i>Acmena smithii</i> ) Macaranga ( <i>Macaranga tanarius</i> ) Umbrella Cheese Tree ( <i>Glochidion sumatranum</i> )  Hopbush ( <i>Dodonaea triquetra</i> ) Midgen Berry ( <i>Austromyrtus dulcis</i> ) Rough Flax-lily ( <i>Dianella caerulea</i> ) Running Postman ( <i>Kennedia rubicunda</i> ) Muttonwood ( <i>Rapanea variabilis</i> ) Spikey Mat-rush ( <i>Lomandra longifolia</i> )	Toe of batter; Random plantings        In clumps; Individuals at 1.5 m to 2 m centres
<b>Supplementary Species</b>	
<b>Tall Shrubs/Small Trees</b> Cheese Tree ( <i>Glochidion ferdinandi</i> ) Native Peach ( <i>Trema aspera</i> ) Mock Olive ( <i>Notolaea longifolia</i> ) Plum Myrtle ( <i>Philidostigma glabrum</i> ) <b>Understorey/Ground cover</b> Sandfly Zieria ( <i>Zieria smithii</i> ) Aristolochia ( <i>Aristolochia praevenosa</i> ) Wonga Vine ( <i>Pandorea pandorana</i> )	

## Annexure 6 – Vegetation Communities

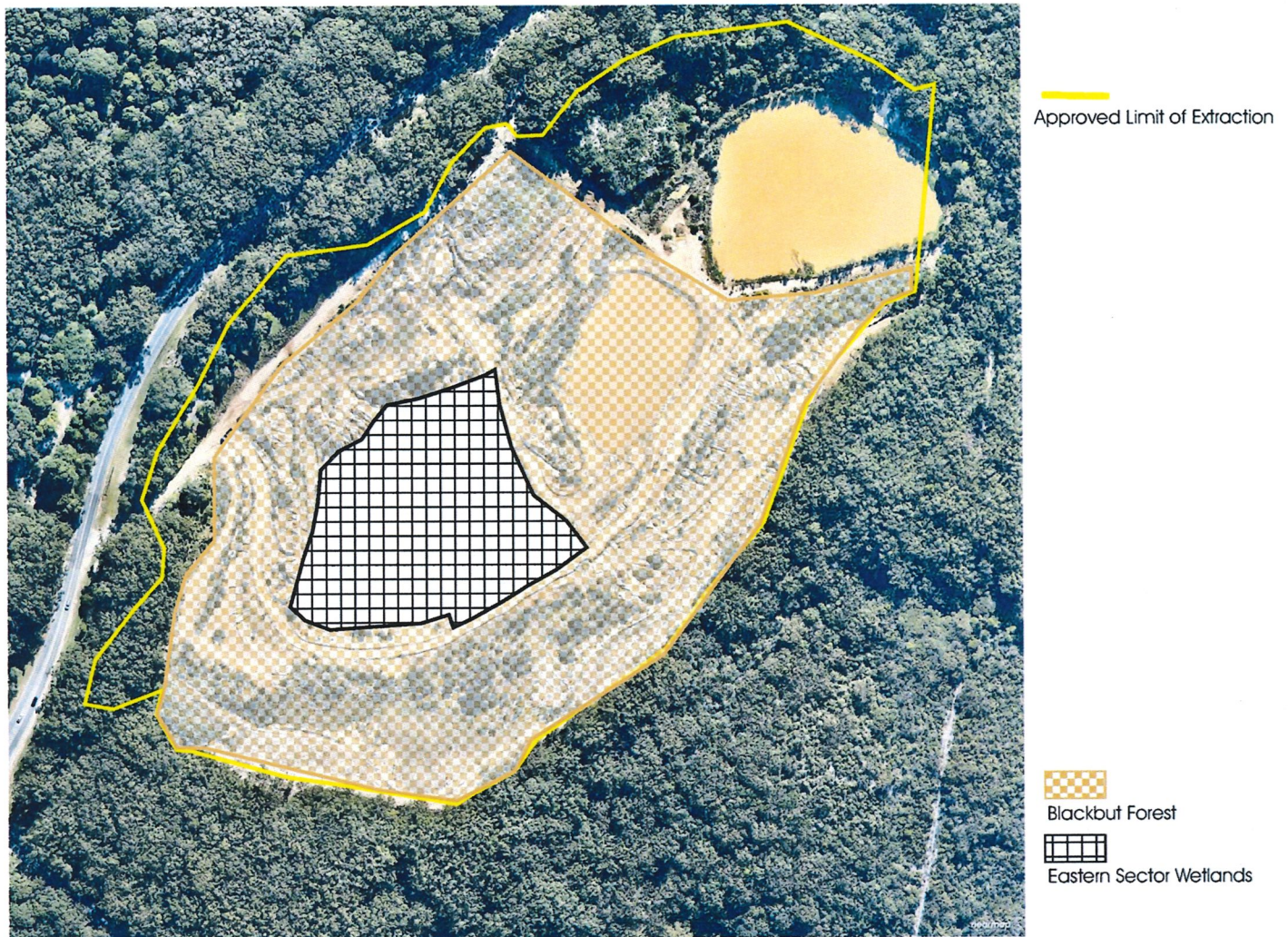
### Annexure 6.1 – Westside Vegetation Communities



-  Moist Forest/Rainforest/Brush Box Forest
-  Blackbutt Forest



## Annexure 6.2 – Eastside Vegetation Communities





## Annexure 7 – Schedule of Works

Completion Date	Action	Clause	Sub Clause
Commencement Date + 1 month.	Complete an inventory of existing plantings in area W3 of Annexure 3.1 as at the Commencement date.	4.1	f)
Commencement Date + 3 months.	Complete additional plantings in the area W3, to the Minister's satisfaction.	4.1	g)
31 March 2019	Complete all landforming works in the Westside Land to comply with Annexure 1.	4.1	a)
	Undertake and complete stormwater drainage and management works on the Westside Land, in accordance with the plans at Annexure 2.	4.1	b)
	Complete all landforming works in the Eastside Land to comply with Annexure 1.	4.2	a)
	To undertake and complete stormwater drainage and management works on the Eastside Land in accordance with the plans at Annexure 2.	4.2	b)
30 April 2019	To complete ground preparation and hand sowing of cover crop 'cover crop' of Shirohie Millet and/or sterile Ryegrass, together with pre-treated native seed collected from the desired vegetation community on the areas identified as W2 in Annexure 3.1, in accordance with paragraph 2.6.4 (iv) 'Final Rehabilitation Procedures – Blackbutt and Scribbly Gum Woodland Communities - Post Quarrying Activities' (i)-(vi) of the Western Quarry Sector FFMP and section 2.13.5.5 of the Broken Head Quarry EIS.	4.1	c)
	To complete ground preparation and hand sowing of a 'cover crop' of Shirohie Millet and/or sterile Ryegrass, together with pre-treated native seed collected from the desired vegetation community on the areas identified as E2 in Annexure 3.2, in accordance with paragraph 2.6.4 (iv) 'Final Rehabilitation Procedures – Blackbutt and Scribbly Gum Woodland Communities - Post Quarrying Activities' (i)-(vi) of the Eastern Quarry Sector FFMP;	4.2	c)

30 June 2019	<p>Complete all plantings in Area W2 in <b>Annexure 3.1</b>, in accordance with the Western Quarry Sector FFMP and section 2.13.5.5 of the Broken Head Quarry EIS, which require, among other things:</p> <ul style="list-style-type: none"> <li>i. Hand sow pre-treated native seed collected from the desired vegetation community and emphasis on planting of tube seedlings in relevant areas;</li> <li>ii. Supplementary planting of dominant/difficult to regenerate species;</li> <li>iii. Irrigation of the rehabilitated are as necessary;</li> <li>iv. Rehabilitation progress monitoring; and</li> <li>v. Rehabilitation maintenance, if required.</li> </ul> <p>Planted species to be selected from Table 2.6 of the Broken Head Quarry EIS (<b>Annexure 4</b>)</p>	4.1	d)
	<p>Complete all plantings on the Proposed Western Dam Wall, in accordance with the Western Quarry Sector FFMP, which relevantly requires, among other things:</p> <ul style="list-style-type: none"> <li>i. Batter faces will be constructed with a slope of 1.3(V:H) and with an access way along the top sloped inwards towards the water body to reduce runoff down the outside batter;</li> <li>ii. 100mm of topsoil will be spread over the batter surface followed by a cover of available ground litter, branches, brush and leaves.</li> <li>iii. A cover crop of Shirohie Millet and/or sterile Ryegrass will be sown at the rate of 2.5kg/ha over the entire surface to be re-vegetated to provide rapid surface stability without inhibiting development of Soil propagules. No fertiliser will be used;</li> <li>iv. Seedlings of tree and understory species will be planted during cover crop establishment.</li> <li>v. Re-vegetated surfaces will be irrigated during the first growing season to enhance vegetation establishment and development;</li> <li>vi. Regular inspection as for other rehabilitation areas to assess the progress of the cover crop and seedling and implementation of appropriate protective/ameliorative measures such as protection from grazing by macropods and supplementary plantings.</li> </ul> <p>Species to be used for the Western Settling Pond wall and their planting locations on the structures are identified in Table 2.7 of the EIS (<b>Annexure 4</b>).</p>	4.1	e)
	<p>Complete all plantings in Area E2, at <b>Annexure 3.2</b>, in accordance with the Eastern Quarry Sector FFMP, which relevantly requires, among other things:</p> <ul style="list-style-type: none"> <li>i. Hand sow pre-treated native seed collected from the desired vegetation community;</li> <li>ii. Supplementary planting of dominant/difficult to regenerate species;</li> <li>iii. Irrigation of the rehabilitated are as necessary;</li> <li>iv. Rehabilitation progress monitoring; and</li> <li>v. Rehabilitation maintenance, if required.</li> </ul> <p>Planted species to be selected from Table 2.6 of the Broken Head Quarry EIS (<b>Annexure 4</b>).</p>	4.2	d)



	Complete all plantings on the upper Eastern Dam Walls, in accordance with the Eastern Quarry Sector FFMP, which relevantly requires, among other things:	4.2	e)
	<ul style="list-style-type: none"> <li>i. Batter faces will be constructed with a slope of 1.3(V:H) and with an access way along the top sloped inwards towards the water body to reduce runoff down the outside batter;</li> <li>ii. 100mm of topsoil will be spread over the batter surface followed by a cover of available ground litter, branches, brush and leaves.</li> <li>iii. A cover crop of Shirohie Millet and/or sterile Ryegrass will be sown at the rate of 2.5kg/ha over the entire surface to be re-vegetated to provide rapid surface stability without inhibiting development of Soil propagules. No fertiliser will be used;</li> <li>iv. Seedlings of tree and understory species will be planted during cover crop establishment.</li> <li>v. Re-vegetated surfaces will be irrigated during the first growing season to enhance vegetation establishment and development;</li> <li>vi. Regular inspection as for other rehabilitation areas to assess the progress of the cover crop and seedling and implementation of appropriate protective/ameliorative measures such as protection from grazing by macropods and supplementary plantings.</li> </ul> <p>Species to be used for the Eastern Dam Wall and their planting locations on the structures are identified in Table 2.7 of the Broken Head Quarry EIS (Annexure 4).</p>		
	Supplement plantings in the area E3 in Annexure 3.2, to achieve to the minister's satisfaction, vegetation representative of the Blackbutt Forest vegetation community.	4.2	f)
31 August 2019	Leadshine to have commissioned and paid the full cost of an independent ecological audit in relation to Leadshine's compliance with the Enforceable Undertaking, and to make any recommendations as to works to be undertaken in compliance with the Undertaking.	4.5	b)
30 September 2019	Audit Report to be submitted to the Minister.	4.5	b) (iv)
31 December 2019	Leadshine to respond to any recommendations made in audit report.	4.5	c)
Ongoing	Maintenance of rehabilitation works to be undertaken in accordance with section 2.6.4 (v) of the Western Quarry Sector FFMP and the Eastern Quarry Sector FFMP	4.3	
Ongoing – until EU is agreed to have been complied with	Leadshine to provide ongoing monthly reports to the Minister within 7 days of the end of each calendar month	4.5	a)