

Appendix 1.1

Mine Closure Team Job Descriptions

Mine Closure Team Job Descriptions
SHE Manager (Mine Closure Manager)
The individual with the overall responsibility for the delivery of the Mine Closure Project.
Mine Closure Project Manager
The individual with the overall responsibility for implementing, within budget, the individual work packages of the Mine Closure Project .
Environmental Coordinator
The individual with the overall responsibility to ensure compliance to the IPC Licence conditions. Manage day to day operations in the environmental department (sampling and analysis).
Accountant
The individual with the overall responsibility for Mine Closure & Aftercare accounting and reporting. Including cash management, accounting, Insurance and claims, and Corporation Tax returns.
Civil Engineer
The individual responsible for on-site supervision of contractors and day to day record keeping of all contractor activities on site.
Site Services Supervisor
The individual with the responsibility for managing site services until final closure has been reached.
Site Services Operatives
The individual with the responsibility for general site maintenance.
Electrician
The individual with the responsibility to inspect, test and maintain electrical systems, equipment, and components for the mine closure project.
Fitter
The individual with the responsibility to assist with all (non-contractor) mechanical fitting required by mine closure project. Provide assistance / advice to contractors.
Environmental Technician
The individual with the overall responsibility for carrying out chemical tests in the environmental laboratory and carrying out environmental sampling and monitoring as set out in the IPC Licence.
Environmental Technician
The individual with the overall responsibility to collect environmental samples and maintain environmental monitors and carrying out analysis in the environmental laboratory.
Waste Officer
The individual with the overall responsibility to manage the waste in accordance with the IPCL conditions. Assist in environmental sampling and monitoring as required.
Management Accountant
The individual with the overall responsibility for VAT administration, accounting system support, legal compliance, accounting of prepayments and receipts, CSO returns, cost control and pensions
Commercial Manager
The individual with the overall responsibility to obtain quotations, tender for contracts and processing requisitions and purchase orders

Appendix 1.2

EPA CRAMP Approval Letter 2011

Mr. Stephen Wheston
Environmental Manager
Vedanta Lisheen Mining Limited
Killoran
Moyné
Thurles
County Tipperary

South/South West Region
Environmental Protection Agency
Regional Inspectorate, Inniscarra
County Cork, Ireland
Cigireacht Réigiúnach, Inis Cara
Contae Chorcaí, Éire
T: +353 21 487 5540
F: +353 21 487 5545
E: info@epa.ie
W: www.epa.ie
LoCall: 1890 33 55 99

15/12/2011 – Our Ref: P0088-03/gc06pos{Mine Closure Plan 2009-2011}.docx

Dear Mr. Wheston

I refer to your submission 'The Lisheen Mine Closure, Restoration & Aftercare Management Plan (CRAMP) Volumes A to H, received by the Agency as follows:

1. **Volume C TMF Rehabilitation Plan** received 2/06/2009
2. **Volume D TMF Restoration** received 11/11/2009
3. **Volume H Financial Provisions** received 11/11/2009
4. **Volume E Mine site Restoration** received 03/12/2009
5. **Volume F Interested and Affected Parties** received 03/12/2009
6. **Volume G Early Closure** received 17/02/2010
7. **Volume B Physical Decommissioning** received 17/02/2010
8. **Volume A Introduction and Terms of Reference** received 16/04/2010
9. **Volume A Introduction and Terms of Reference (revision 2)** received 24/06/2011

All of these reports were also received and evaluated by the Department of Communications, Energy and Natural Resources, and by North Tipperary County Council.

The information was reviewed, and the EPA engaged international mining consultants SLR Consulting Ltd to assess the Mine Closure Plan. The assessment carried out by SLR Consulting Ltd was forwarded to you for response on 20/08/2010. A response dated 24/09/2010 was received on 29/09/2010. In addition to the above, a progress report on the TMF Rehabilitation dated 31/08/2010 was received on 03/09/2010 and revision of Volume A, Introduction and Terms of Reference (revision 2), was received on 24/06/2011.

I am to advise you that, based on the information above, the plan is deemed to be in compliance with condition 10.2.1 of your IPPC Licence P0088-03 ('Mine Closure Plan' Condition) and is agreed in principle jointly by the Authorities, that is, the Agency, the Department of Communications, Energy and Natural Resources and North Tipperary County Council.



The Authorities endorse and approve the primary purpose of the Lisheen Mine CRAMP as stated by the licensee:

'To provide a transparent, defensible and rigorous basis for the key decisions concerning progressive closure of the mine ensuring sustainable long-term stewardship of mined land, protection of employee welfare and ensuring the highest standards of environmental protection.'

The Authorities approve the approach and methodology aimed at responsible decommissioning, restoration and reinstatement above and below ground.

In particular, the Authorities endorse the positive progress that has been achieved in relation to the substantial rehabilitation challenge posed by the TMF. The Authorities approve the current approach for rehabilitation of the TMF that manages pollution risk and provides final restoration objectives to enable conversion of the TMF to a range of viable long term after-uses. SLR Consulting Ltd stated in their report that 'The TMF rehabilitation proposals appear well thought out, practical and achievable, and represent responsible and good practice, suited to the particular characteristics of the site, available materials and operation. Based on this review, in general the proposals appear to be appropriate, and adequately address the key and significant elements of the management of water associated with the decommissioning of the TMF, insofar as these can be defined at this stage. The interpretation of available data and the conclusions reached also appear to be reasonable'.

Agreement by the Authorities of the CRAMP Mine Closure Plan, does not constitute an acceptance on the part of the Authorities that the ELRA/CRAMP costings constitute a description of all potential risks or liabilities, or costs that may arise or materialise in relation to the facility but, rather, constitute in the view of the Authorities as of a general assessment of risk and general estimate of costs to inform the overall environmental management and understanding of the licensed site and the putting in place of financial provision. The size and type of financial provision and the means of its release/recovery shall be as agreed with the Agency as per Condition 12.3.1.

Where additional costs arise relating to prevention or remediation of environmental pollution, these remain the responsibility of the Licensee. The Licensee is reminded that notwithstanding the estimated costings, the EPA will only accept a final validation report, as specified in Condition 10.2.7, from the Licensee once satisfied that all steps, including all necessary expenditures, have been taken to ensure that the site no longer poses a threat of environmental pollution.

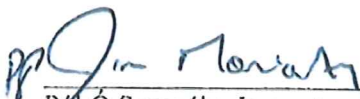
In accordance with condition 10.2.3, the Mine Closure Plan and detailed costings for implementation of the plan shall be reviewed every twelve months, and the Licensee shall make such amendments to the Mine Closure Plan as the Agency may direct until the Agency confirms its agreement of the amended Mine Closure Plan.

It is accepted by the Authorities that as the Mine approaches the end of the Life of Mine, the Mine Closure Plan will be refined, and tasks and schedules will have more detail. We acknowledge the statement in your letter of 24/09/2010 that the CRAMP 'is intended to provide a framework for directing these activities towards successful closure'. In general terms, the proposals appear to have considered all the relevant issues and be appropriate and address the key and significant elements of the management associated with the closure of the mine (insofar as these can be defined at this stage). The interpretation of available data, and the conclusions reached, also appears to be reasonable. However, it is clear that further analysis and reporting will be needed on certain matters, particularly in relation to recent developments such as the TMF Extension, and in relation to the production of a final, rather than preliminary, report on the groundwater model.

In addition the Agency requests that in future revisions, in accordance with 10.2.2, the Licensee focuses on refining the measurable criteria which define the successful completion of each task.

Finally, this letter does not relate to compliance with Condition 10.3 in relation to the Aftercare Plan.

Yours sincerely



Pól Ó Seasnáin, Inspector, EPA

Signed on behalf of the Environmental Protection Agency, The Department of Communications, Energy and Natural Resources and North Tipperary County Council

Appendix 1.3

Success Criteria

Progress as of Quarter 1 2016								
No.	Description	Objective	Target date for completion	Progress %	Monitoring (including location)	Specific Success Criteria to evaluate the success of the Closure Plan.	Quality Control Measurement Tools (Validation / Compliance)	Relevant CRAMP Chapter
1	Mine Site Decommissioning (Hunterdale Contract)	Full decommissioning and disassembly of the Tepee, Processing plant, Backfill plant and all associated elements. Follow control measures in place to prevent unwanted incidents. Return footprint to concrete base level.	Oct-16	30	Noise monitoring at boundary locations as per conditions of the Planning Permission, PLC/17663. VFL visits by Lisheen personnel of Hunterdale site.	Decommissioning works to be completed without any Safety and Health issues or Environmental pollution and within specified schedule.	Final sign off by External consultant and Lisheen	3

Progress as of Quarter 1 2016								
No.	Description	Objective	Target date for completion	Progress %	Monitoring (including location)	Specific Success Criteria to evaluate the success of the Closure Plan.	Quality Control Measurement Tools (Validation / Compliance)	Relevant CRAMP Chapter
2	Mine Site Decommissioning (all other areas)	Full decommissioning or demolition of unusable site structures and return footprint to suitable lands for provision for alternative industry.	2017	10	Within Mine Site Boundary	Successful decommissioning will only be complete when all buildings, equipment, materials, wastes or any other materials, which could result in environmental pollution, are removed from the site and recycled, recovered or disposed of in accordance with relevant procedures / regulations.	The site will be assessed and validated by a suitably qualified expert as not containing contaminants above the relevant criteria for the proposed final industrial land use.	3
		Follow control measures in place to prevent unwanted incidents. All holes / pits and other openings are to be securely capped, filled or otherwise made safe. Access to members of the public will be restricted as appropriate to site conditions. Buried services removed as required.						
3	Underground Decommissioning	Before an area is rendered inaccessible all hazardous material must be removed and the sign off sheet must be signed off in full and accepted by the Environmental Coordinator	2016	100	Underground	All items that could pose a risk to the environment are removed. Any plant, equipment, tanks, and fuel containers remaining underground are drained down of oil and fuel and stripped of rubber based components.	Areas inspected and signed off by the following personnel: 1 Shift boss 2 Mine Captain 3 Mine Superintendent / Manager 4 Finance Manager 5 Closure Engineer 6 SHE Manager 7 General Manager	3

Progress as of Quarter 1 2016								
No.	Description	Objective	Target date for completion	Progress %	Monitoring (including location)	Specific Success Criteria to evaluate the success of the Closure Plan.	Quality Control Measurement Tools (Validation / Compliance)	Relevant CRAMP Chapter
4	Plugging Vent Shafts	Plug / seal mine portal to prevent access to the Mine.	2016	100	N/A	All works to be carried out as per design specifications.	Installation of plug to be completed as per CQA plans and to be overseen by competent Lisheen personnel.	3
		Plug / seal all vertical shafts and rehabilitate to surrounding ground level.					Validation report to be produced	
5	Life of Mine Backfill	Complete all required backfill underground (including any surface top up), to minimise surface subsidence.	2015	100	N/A	CQA data including evidence of elevations to which rock and concrete were placed. QC on concrete (crush tests). Subsidence measurement (survey elevations) post completion.	Vent shaft filling to be completed as per CQA plans and to be overseen by competent person.	3
							Sign off of area drawings by Mine Manger. Submission of all data to DCENR. CQA data for backfill strength. Monitoring programme including surface levelling, measurement of extensometers and TDR's Final report by Geotechnical Engineer	
6	Dry Closure of TMF	Rehabilitate and restore entire TMF surface to agricultural grassland. Installation of a 700mm rock cap and 300mm growth medium layer.	2017	60	TMF	The ability to leave the TMF so that it can be managed for its selected use without any greater management inputs. Established growth with evidence of flowering or reproduction and second generation of sustainable growth.	External validation reports	4

Progress as of Quarter 1 2016								
No.	Description	Objective	Target date for completion	Progress %	Monitoring (including location)	Specific Success Criteria to evaluate the success of the Closure Plan.	Quality Control Measurement Tools (Validation / Compliance)	Relevant CRAMP Chapter
7	Management of TMF Water Treatment & discharge	Design and construct three spillways from the TMF	2016	0	N/A	Design and construction of the three spillways from the TMF	To be completed as per CQA plans and to be overseen by competent persons.	4
		Provision of Water Treatment System if required		80		Provision of Water Treatment System if required		
		Design and construction of stilling box and wetland	2017	0	N/A	Design and construction of stilling box and wetland	To be completed as per CQA plans and to be overseen by competent persons.	
8	TMF management into perpetuity	Form a strategy for the long term custodianship of the Site / TMF and associated IPCL.	Mar-20	0	N/A	The ability to leave the TMF so that it can be managed for its selected use without any greater management inputs.		4
9	Carrick Hill Restoration	Rehabilitate Carrick Hill Borrow Pit as per Planning conditions.	2016	50	Carrick Hill	Restoration to create an area of open water with associated wetland features that will provide an area of considerable wetland nature conservation interest	Ecological Surveys	3
10	Land Holdings	Demolition of existing structures on Lisheen Land Holdings		0		Comply with conditions set out in the Planning Permission	Engineer reports and Lisheen	3
		Remedial work to existing structures on Lisheen Land Holdings		20		Original buildings will be assessed for structural integrity and shown to be safe and stable, and be maintained in appropriate condition.	Engineer inspections and reports	3

Progress as of Quarter 1 2016								
No.	Description	Objective	Target date for completion	Progress %	Monitoring (including location)	Specific Success Criteria to evaluate the success of the Closure Plan.	Quality Control Measurement Tools (Validation / Compliance)	Relevant CRAMP Chapter
11	Restoration of Ground water	Restoration of water level to baseline conditions	2019	50	Water table	Pre mining water table levels indicate ground water levels at less than 10 metres, often less than 5, with annual fluctuations of 3 - 4 metres.	Measurement of water table recovery	2
		Transfer Group Water Scheme to full ownership / management by MGWS committee	2020	0	as above	N/A		
		Installation of Groundwater monitoring wells	2016	100	CW no. 1 and CW no. 2		To be drilled, installed and overseen by competent persons.	
12	Maintain an appropriate level in the Rossestown River	Augment river, if required Provision of clean ground water for blending, if required.	2020	50	Rossestown River	The flow in the Rossestown will be maintained at no lower than 0.04 m ³ /S. The flow rate will be monitored and should it fall below this level, the river water will be compensated for as long as is required and until full groundwater level recovery has been demonstrated. The rate may also be judged by an agreed river level (above Ordnance	Lisheen personnel will monitor the river level. Well to be drilled and installed, overseen by competent persons.	3
13	Port of Cork	Render safe or remove for disposal or recovery, any soil, subsoil, plant or equipment, or any waste, materials or substances that may result in environmental pollution. Follow control measures in place to prevent unwanted incidents	2016	5	Port of Cork	Successful decommissioning will only be complete when all buildings, equipment, materials, wastes or any other materials, which could result in environmental pollution, are removed from the site and recycled, recovered or disposed of in accordance with relevant procedures / regulations.	Assessment and validation by Independent Engineer and Lisheen.	3

Progress as of Quarter 1 2016								
No.	Description	Objective	Target date for completion	Progress %	Monitoring (including location)	Specific Success Criteria to evaluate the success of the Closure Plan.	Quality Control Measurement Tools (Validation / Compliance)	Relevant CRAMP Chapter
14	Completion of any required remediation on rivers	Develop plan with Inland Fisheries Ireland	2016	50	N/A			3
		Implement plan with Inland Fisheries Ireland	2016	0	Drish, including the Clogheen stream, and Rossestown			
		Complete risk assessment of sediment in Rivers and carry out appropriate works if required.	Sep-16	0	Drish, including the Clogheen stream, and Rossestown Rivers		Complete Risk Report	
		Complete drainage works on lands in consultation with local farmers (to prepare for return to baseline ground water levels in the region)	Sep-16	50	N/A	N/A	Lisheen	
15	Obtain mine closure completion certificate	Confirmation that the Regulatory Authorities are satisfied that the success criteria has been met and that there are no remaining environmental liabilities remaining on site.	Mar-20	20	N/A	Achievement of items numbered 1 to 14 along with obtaining a reduced footprint to cover just the TMF	Achievement of items numbered 1 to 14	N/A

Appendix 1.4

Mine Closure Risk Assessment

		Hazard Effect / Consequence (Where an event has more than one 'Loss Type', choose the 'Consequence' with the highest rating)			
		1	2	3	4
Loss Type (Additional 'Loss Types' may exist for an event; identify & rate accordingly)		Insignificant	Minor	Moderate	Major
(S/H)		First aid case / Exposure to minor health risk	Medical treatment case / Exposure to major health risk	Lost time injury / Reversible impact on health	Single fatality or loss of quality of life / Irreversible impact on health
(EI)		Minimal environmental harm - L1 incident	Material environmental harm - L2 incident remediable short term	Serious environmental harm - L2 incident remediable within LOM	Major environmental harm - L2 incident remediable post LOM
Environmental Impact					
(BI/MD)		No disruption to operation / US\$20k to US\$100k	Brief disruption to operation / US\$100k to US\$1.0M	Partial shutdown / US\$1.0M to US\$10.0M	Partial loss of operation /US\$10M to US\$75.0M
Business Interruption / Material Damage & Other Consequential Losses					
(L&R)		Low level legal issue	Minor legal issue; non compliance and breaches of the law	Serious breach of law; investigation/report to authority, prosecution and/or moderate penalty possible	Major breach of the law; considerable prosecution and penalties
Legal & Regulatory					
(R/S/C)		Slight impact - public awareness may exist but no public concern	Limited impact - local public concern	Considerable impact - regional public concern	National impact - national public concern
Impact on Reputation / Social / Community					
Likelihood	Risk Rating				
	Examples				
	Consider near-hits as well as actual events				
5	Almost Certain	The unwanted event has occurred frequently; occurs in order of one or more times per year & is likely to reoccur within 1 year	11 (M)	16 (H)	20 (H)
4	Likely	The unwanted event has occurred infrequently; occurs in order of less than once per year & is likely to reoccur within 5 years	7 (M)	12 (M)	17 (H)
3	Possible	The unwanted event has happened in the business at some time; or could happen within 10 years	4 (L)	8 (M)	13 (H)
2	Unlikely	The unwanted event has happened in the business at some time; or could happen within 20 years	2 (L)	5 (L)	9 (M)
1	Rare	The unwanted event has never been known to occur in the business; or it is highly unlikely that it will occur within 20 years	1 (L)	3 (L)	6 (M)
Risk Rating	Risk Level	Guidelines for Risk Matrix			
21 to 25	(Ex) - Extreme	Eliminate, avoid, implement specific action plans/procedures to manage & monitor			
13 to 20	(H) - High	Proactively manage			
6 to 12	(M) - Medium	Actively manage			
1 to 5	(L) - Low	Monitor & manage as appropriate			

Risk Assessment - Mine Re-watering							
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating	Possible New Controls
1	Final weeks of UG activity	Risk of loss of control re water management - i.e. poor segregation and significant	Monitoring / assessments and plans to be made at the time (TMF capacity).	4	3	18	
2	Insufficeinet augmentation water to make up for loss of springs in Rossestown river.	Loss of water on stretches of Rossestown resulting in fish kills.	Manage site water. Install groundwater well to supplement site water.	3	4	17	Source alternative water source (new well)
3	Recovery of water table	Social / environmental	Regular monitoring of recovery levels	3	1	6	
4	Assurance of water quality (risk to groundwater and surface water via springs)	Environmental / health / social	Regular monitoring	4	3	18	

Risk Assessment - Environment						
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating
						Possible New Controls
1	Emissions to atmosphere	Dust blow - TMF and site	Monitoring, maintenance and operating procedures, dust suppression as required	1	5	11
2	Emissions to groundwater	TMF / surface water	Regular monitoring, storm water system, management of TMF surface water	2	4	12
3	Emissions to surface water	Sulphate and metal in discharge waters exceeding IPCL limits	Compliance with IPC licence. Treatment of dirty water / dilution.	3	5	20
						A groundwater well is to be installed to supplement site water, (mostly TMF catchment water), for the purpose of augmenting the Rossestown River (a planning permission requirement). This groundwater will also have the potential to provide blending water for the site water discharge and ensure there is no impact on receiving environment. Review IPCL to justify more appropriate ELV's

4	Waste Management	Environmental	Compliance with IPCL conditions, monitoring, waste officer, waste management procedures, use of licensed contractors	2	2	5	
5	Loss of Biodiversity	Environmental / social	Biodiversity Management Plan in place	1	1	1	
6	Oxidation of tailings	Environmental	Limestone rock layer at the tailings surface	3	2	9	
7	Uptake of metals by vegetation that establishes on the cap	Uptake of metals by vegetation	Ongoing monitoring, rock cap, 700mm, acts as a capillary break	3	1	6	
8	Maintaining long term viable growth on the facility	Prevention of larger plants/trees establishing on the cap such that they would impact on the functionality of the design.	Horticultural maintenance programme, agri plan	3	1	6	
9	Sediment build up in rivers	Environmental	Monitoring plan. Potential sediment removal from rivers with agreement with the IFI.	2	5	16	
10	Moynagh Group Water Scheme	Failure to handover scheme. Long term running costs	Hand over agreement in place	3	2	9	

11	Regional Subsidence - specifically associated with mining activities.	Surface subsidence on lands owned by Lisheen or 3rd Party - resulting in impact on function of ground, inability or impact on ability to adequately 'work the land' or loss.	Effective Mine planning throughout mine life. Adequate support plan implemented - backfill plan was fully implemented. Additional 'top up' backfill completed from surface. Monitoring programme in place.	3	2	9	
12	Unexpected Subsidence (sinkhole) - specifically associated with mining activities.	Sinkhole on surface subsidence on lands owned by Lisheen or 3rd Party.	Effective Mine planning, ensuring adequate support is left in place.	4	2	14	

Risk Assessment - Phasing out to the Rivers						
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating
						Possible New Controls
1	Rossetown River	Environmental / social	Regular monitoring, maintain adequate river level with augmented flow if required.	3	2	9
2	Drish River	Environmental / social	Regular monitoring	1	3	4
3	Potential impact associated with chemistry of new ground water source vs. previous water discharge	Environmental - may impact on Q ratings	Regular monitoring	1	2	2

Risk Assessment - Capping works on the TMF						
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating
						Possible New Controls
1	Management of spigot systems	Inability to effectively distribute tailings / mill wash material over last couple of weeks of production / cleaning	System for effective management of spigot and precise placement of tailings is in place. Emergency spigot point also in place	3	2	9
2	Formation of beaches	Inability to effectively distribute tailings over last couple of weeks of production / cleaning	Demolition material will be used to assist with capping & formation of beaches beneath the geotextile.	3	1	6
3	Placement of geotextile	Risk of injury & QC on overlaps etc.	Qualified machine drivers, manual handling, risk assessments, method statement, CQA	3	2	9
4	Placement of rock fill	Risk of injury & QC on overlaps etc.	Qualified machine drivers, manual handling, risk assessments, method statement, CQA	4	2	14
						Management of water and time for strength gain on beaches is critical.

5	Construction of spill ways	Risk of injury & QC on placement	Properly designed and constructed spillways, manual handling, risk assessments, annual audit by Golder, breakout risk assessment, regular inspection visits, monitoring wells & piezometers for leak detection	4	2	14	
6	Structural failure of the facility	Dam wall failure	Annual audit by Golder, breakout risk assessment, regular inspection visits, monitoring wells & piezometers for leak detection	5	1	15	
7	Insufficient storage capacity for tailings and spoil	Settlement of peat, Settlement of tailings, designed capacity	All survey work to date indicates ample capacity.	3	1	6	
8	Water ponding on surface of TMF	Failure to adequately remove water from the TMF surface (rainfall). Settlement of TMF cap Blockage of channels and pipes	Appropriate design height of spillway	3	2	9	Installation of arterial drains (if required)

9	Filling of Perimeter channels	Injury	Qualified machine drivers, manual handling, risk assessments, method statement, CQA	3	2	9
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Risk Assessment - Decommissioning						
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating
Surface Decommissioning						
1	Cleaning of surface buildings	Injury / environmental release	Method statements, risk assessments, use of appropriately qualified staff	4	2	14
2	Collection and disposal of spoil contaminated by mineral processing	Injury / environmental release	Risk assessments, use of appropriately qualified staff	3	2	9
3	Collection of hydrocarbon residues / removal of bunds and tanks	Injury / environmental release	Removal and disposal by licensed contractors. Risk assessments, use of appropriately qualified staff	2	2	5
4	Demolition of surface buildings and structures (including residential)	Injury	Manual handling, method statements, risk assessments, use of appropriately qualified staff	4	3	18
5	Killoran House - Protected structure	Injury / legal / community interest	Manual handling, method statements, risk assessments, use of appropriately qualified staff. Budget in place to carryout necessary preservation works. Advice from architects has been received.	4	2	14
						Consider the option to sell building with some land - responsibility to preserve the building would fall to the purchaser.

6	Removal of electrical fittings	Injury	Manual handling, risk assessments, use of appropriately qualified staff	3	3	13	Confirmation of isolation prior to works commencing.
7	Removal of pipelines / buried services	Injury / environmental release	Manual handling, risk assessments, use of appropriately qualified staff	3	3	13	Scan area prior to the removal of services to ensure that they are de-energised
8	Removal / disposal of Hazardous substances	Injury / Health / environmental release	PPE, use of spillage and chemical safety procedures, MSDS, risk assessments, use of appropriately qualified staff and licensed contractors	3	3	13	
9	Decommissioning / sale of Radiation sources	Injury / Health / environmental release	Potential exposures are sealed sources controlled and labelled in line with regulations which are monitored regularly. Manual handling, method statements, risk assessments, use of appropriately qualified staff	4	2	14	Complete work on take back agreements if units are not sold / engage with RPII / EPA as required
10	Removal of air conditioning units & specific electrical gear	Environmental / legal	Regular inspections. Units identified with R22 and SF6 gases have been identified and will be removed by appropriate licensed contractors in line with regulations.	3	3	13	

Underground Decommissioning						
11	Removal of mobile plant	Injury / environmental release	Manual handling, risk assessments, use of appropriately qualified staff	3	2	9
12	Removal of fixed plant	Injury / environmental release	Manual handling, risk assessments, use of appropriately qualified staff	4	2	14
13	Removal of electrical fittings	Injury / environmental release	Manual handling, risk assessments, use of appropriately qualified staff	4	2	14
14	Removal or in situ cleaning of pipelines / services	Injury / environmental release	Manual handling, risk assessments, use of appropriately qualified staff	3	2	9
15	Removal and disposal of hydrocarbon based materials and any other potentially hazardous substances.	Injury / environmental release	Manual handling, risk assessments, use of appropriately qualified staff and licensed contractors. Sign off forms for each area to be completed and approved.	2	3	8
16	Plugging of vent raises including the preparation works (underground barricades)	Injury / environmental release	Method statement, risk assessments, use of appropriately qualified staff and contractors	5	2	19
						De-energise pipes prior to removal
						De-energise pipes prior to cutting

17	Construction of low pressure water barricade at K2 / K3	Injury	Method statement, risk assessments, use of appropriately qualified backfill staff and contractors	4	2	14	
18	Filling and plugging of portal	Injury	Method statement, risk assessments, use of appropriately qualified backfill staff	4	2	14	
19	Retrieval of last items UG at Pit Bottom	Risk is the management of water and ventilation	Method statement, risk assessments, use of appropriately qualified staff	4	3	18	
20	Removal of air conditioning units	Environmental / legal	Regular inspections. Units identified with R22 and SF6 gases have been identified and will be removed by appropriate licensed contractors in line with regulations.	3	3	13	

Risk Assessment - Port of Cork							
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating	Possible New Controls
1	Cleaning of buildings	Injury / environmental release	Method statements, risk assessments, use of appropriately qualified staff, contaminated water / sludge to be brought to the Lisheen TMF.	4	2	14	
2	Demolition of buildings and structures	Injury	Manual handling, method statements, risk assessments, use of appropriately qualified staff	4	3	18	
3	Disposal of contaminated material (filter bags, sediment truck wash) and demolition waste.	Environmental	Licensed contractors for haulage to dispose of in TMF, risk assessments, use of appropriately qualified staff	3	2	9	
4	Potential environmental risk associated with lead / zinc concentrations in sediment	Potential impact on environment	Monitoring / final environmental risk assessment	2	3	8	

Risk Assessment - Governance						
No.	Operation / Hazard	Potential Incident (Unwanted Event)	Current Controls	Consequence	Likelihood	Risk Rating
						Possible New Controls
1	Complaints from the Community	Poor media coverage, reputational risk for the Company & Management	Complaints procedure in place, all investigated and closed out.	2	5	16
2	Legal Claims	Costs of claims / Poor media coverage, reputational risk for the Company & Management	Investigations / reviews with legal team. Extensive and comprehensive monitoring records in place.	2	5	16
3	Non compliance with Regulations (significant)	Poor media coverage, reputational risk for the Company & Management	Retention of key Lisheen staff - Procedures in place	4	2	14
4	Non compliance with Vedanta Standards	Poor opinion of the Company & Management	Procedures in place	2	2	5
5	Failure to get completion cert	Failure to meet Success Criteria set out in the CRAMP	Success criteria plan in place	4	3	18
6	Loss of closure team with knowledge of the Closure project	Poor execution of the project, not all success criteria may be achieved	Contract of employment in place for all employees, which includes severance package which will be forfeited in the event of an unauthorised termination of employment	2	3	8

Appendix 1.5

Safety, Health and Environmental Policy

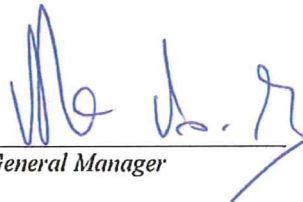
The Lisheen Mine

Safety, Health & Environment Policy

As of December 2015 underground mining ceased at Lisheen Mine with the production of lead and zinc concentrates ceasing in Jan 2016. The focus is to now implement the Mine Closure, Restoration and Aftercare Management Plan (CRAMP) and ensure a positive legacy.

The SHE Policy Principles are as follows:

1. Commitment:
Hold all managers and supervisors accountable for safety, occupational health and environmental issues. Allocate adequate financial and human resources to ensure that these issues are dealt with in a manner that reflects their high corporate priority. All employees are responsible for their own safety and must take account of the consequences of their actions and their obligation to integrate SHE Policy Principles in all activities.
2. Competence:
Ensure workforce competence at all levels through appropriate selection, retention, education, training and awareness in all aspects of safety, health and the environment.
3. Risk Assessment:
Identify and assess the hazards and risks associated with all our activities.
4. Prevention and Control:
Prevent or control risks, personal injury and illness, property and environmental damage, by implementing the principles of Zero Harm as well as through appropriate planning, design, investment, management and workplace procedures. Prepare and periodically test emergency response plans. Communicate, ensure understanding and enforce the Golden Rules throughout the operation. Where accidents or incidents do occur, take prompt corrective action, investigate root causes and take remedial action. Actively seek to prevent recurrences and disseminate experiences learned.
5. Performance:
Set appropriate goals, objectives, targets and performance indicators for all our operations. Comply with all conditions of the licence issued by the EPA and all applicable SHE laws and regulations as a minimum and, where appropriate, apply international best practice. Promote the health and wellbeing of our employees both at work and in the home.
6. Sustainable Development:
Lisheen will operate to the principles of Sustainable Development and Vedanta Sustainability Framework Requirements. Lisheen commits to responsible use of raw materials and resources, and where possible reduce energy usage and production of waste. The company will strive to enhance the biodiversity of the site. The Lisheen Mine Closure, Restoration and Aftercare Management Plan (CRAMP) provides a framework for effective and responsible mine closure. Lisheen is committed to progressively rehabilitating the site during the operating life of the Mine. It is Lisheen mine closure vision to leave a positive legacy and where possible attract alternative replacement industry to the site.
7. Evaluation:
Monitor, review and confirm the effectiveness of management and workplace performance against divisional and corporate standards, objectives, targets and applicable legal requirements. Key to this process is a system of appropriate audits and progress reports to Divisional Management coupled with regular reporting to the Board of Directors.
8. Stakeholder Engagement:
Promote and maintain open and constructive dialogue and good working relationships with employees, local communities, regulatory agencies, business organisations and other affected and interested parties, to increase knowledge and enhance mutual understanding in matters of common concern. Report, to relevant stakeholders, on progress towards the achievement of our objectives and targets.
9. Continual Improvement:
Foster creativity and innovation in the management and performance of our business and our approach to solving the challenges facing our operation. Support research and development in safety, health and environmental issues, and promote the implementation of international best practices and technologies where appropriate.
10. Operational Activities:
Operate in a manner, which minimises adverse impact on employees, local community and environment utilising energy and other resources responsibly and efficiently. Carry out regular occupational hygiene, health, safety and environmental monitoring.


General Manager

7/4/2016
Date

Appendix 1.6

Closure Policy

Closure Policy**The Lisheen Mine**

Responsible mine closure is the core focus for Lisheen and Vedanta Resources plc.

Vision for closure: *To ensure sustainable long-term management of mined land, protection of employee welfare and ensuring the highest standards of environmental protection.*

The Closure Policy principles are as follows:

Commitment: The Lisheen Mine is committed to a successful progressive mine closure and to leaving a positive legacy behind. International best practice will be used to ensure there is no risk to the environment post closure.

Compliance: As well as being compliant to the EU laws on the environment, we also comply with the Environment Protection Agency for regular monitoring of our environmental footprint. The Closure Restoration and Aftercare Management Plan (CRAMP) has been developed and approved by the Irish Regulatory Authorities. This CRAMP will facilitate mine closure and it will run continuously during operations, through active and passive closure and into aftercare.

Risk Assessment: Identify and assess the hazards and risks associated with all our mine closure activities.

C.R.A.M.P: Ensure the Closure Plan is updated periodically to reflect results and any new information and that updated plans are approved by the Regulatory Authorities. Provide and maintain funds to cover the costs associated with Closure.

Stakeholder Engagement: Promote and maintain open and constructive dialogue and a good working relationship with employees, the local community, Regulatory Agencies and other affected and interested parties. This will increase knowledge and enhance mutual understanding in matters of common concern in relation to Mine Closure. Lisheen's progress towards achieving successful closure will be reported to all relevant stakeholders on a regular basis. Specifically; Lisheen will maintain the Outplacement Programme for employees and the Community Engagement Forum (subcommittee on closure) with the local community.

Success Criteria: Success criteria have been laid out and implementing the action plan will minimise any risks to the company and the local community. Lisheen will monitor and review the effectiveness of closure performance against corporate standards, objectives and targets of the action plan and applicable legal requirements. Lisheen will produce progressive reports and undertake appropriate audits.

Sustainable Development: Lisheen will operate to the principles of the Vedanta Sustainability Framework Requirements. Lisheen also commits to the responsible use of raw materials and resources and where possible reduce energy usage and production of waste. The CRAMP provides a framework for effective and responsible mine closure and enhancing the biodiversity of the Mine site.

Continual improvement: Our priority is not just physical closure of the mine, but also aftercare of the mine site to ensure a safe and stable long term success. Lisheen will strive to build a sustaining economy around the region for the mine dependent communities to ensure that a positive legacy remains once our operations cease.

Lisheen commits to adhering to this policy.


Alan Buckley
General Manager

April 2016


Stephen Wheston
SHE Manager
April 2016

Appendix 1.7

Biodiversity Action Plan

LISHEEN MINE

BIODIVERSITY MANAGEMENT PLAN



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1.0 INTRODUCTION

- 1.0.1 Lisheen Mine entered its physical closure phase during the last quarter of 2015. Throughout the recent operational life of the mine a Biodiversity Action Plan (BAP) has been in place that identified opportunities for land management to benefit biodiversity conservation. As the mine moves into its closure phase this Biodiversity Management Plan document has been prepared to identify the key opportunities for mine closure to secure continued biodiversity conservation benefits.

1.1 Background

- 1.1.1 A BAP was adopted at Lisheen Mine during 2009. This identified a series of biodiversity conservation compartments within the Lisheen Mine estate, and described a programme of biodiversity conservation objectives and actions for each compartment. The 2009 BAP was prepared by Lisheen Mine to support a corporate commitment to action for biodiversity conservation. The Lisheen BAP initiative reflected a general attitude within the mining and mineral extraction industry of support for biodiversity conservation objectives through projects undertaken within land over which an individual mineral extraction or mining operation has control.
- 1.1.2 A number of valuable and important nature conservation sites are present within the countryside surrounding Lisheen Mine. However, the immediate landscape context of the mine has experienced substantial loss of biodiversity interest.
- 1.1.3 In particular, these losses are associated with industrial milling of bog peat, intensification of agricultural land management and a widespread replacement of natural and semi-natural woodland with commercial afforestation. These biodiversity losses have largely resulted from the peat extraction activities of Bord na Mona and from land improvement by local farmers and landowners.
- 1.1.4 The Lisheen Mine BAP had two strategic aims that contribute to the reinstatement of lost biodiversity interest features within the local landscape:
- To identify surviving remnants of biodiversity interest at Lisheen and to place them within a framework of sensitive land management;
 - To identify opportunities for the creation of new biodiversity interest at Lisheen and to help reinstate some of the biodiversity interest that has been lost from the locality during recent years.
- 1.1.5 These Lisheen BAP aims were developed to support the objectives of existing BAP frameworks for Ireland and Tipperary County Council. These are reviewed in later sections of this document. The current Biodiversity Management Plan has been prepared to ensure that opportunities for continued support of the Lisheen BAP objectives are taken through mine closure at Lisheen.

1.2 Biodiversity Frameworks at Lisheen Mine

- 1.2.1 With regard to corporate frameworks for biodiversity conservation at Lisheen Mine, these mainly comprise both local and company policies for biodiversity. Opportunities for biodiversity gain during mine closure at Lisheen will continue the support for these frameworks provided by the 2009 Lisheen BAP.
- 1.2.2 The current local policy for biodiversity at Lisheen Mine was adopted during April 2014. The full text of the Lisheen policy for biodiversity is provided in Appendix One to this document, emphasising the need for activities at the mine to avoid adverse impacts on features of biodiversity interest, and to result in a net gain in biodiversity interest wherever possible. Later sections of this document identify opportunities to support these local policy objectives during the closure phase at Lisheen. In particular, this Biodiversity Management Plan has sought to identify key opportunities for biodiversity enhancement during the closure phase at Lisheen
- 1.2.3 Corporate objectives for biodiversity conservation and management are described within the Vedanta Technical Standard on Biodiversity Management that forms part of the Vedanta Resources Plc Sustainability Governance System.
- 1.2.4 The Technical Standard on Biodiversity Management emphasises protection and enhancement of biodiversity as integral components of Vedanta's commitment to sustainable development. The Technical Standard requires the integration of biodiversity conservation and ecosystem services considerations into the entire lifecycle of the mine, including decommissioning and closure. Habitat restoration and rehabilitation are identified as important aspects of biodiversity management, emphasising the need for mechanisms to achieve no net loss of biodiversity and to improve biodiversity wherever possible.
- 1.2.5 Support for these corporate objectives on biodiversity management is required through the adoption of a Biodiversity Management Plan. To support this objective of the Vedanta Technical Standard this document provides a Biodiversity Management Plan for mine closure activities at Lisheen.

2.0 LISHEEN MINE BIODIVERSITY OVERVIEW

- 2.0.1 In general, the biodiversity context to Lisheen Mine is characterised by substantial areas of ecological degradation. Agricultural improvement of low fertility grassland and conversion of peatland to productive grassland has reduced the extent of ecologically valuable semi-natural grassland and wet heath vegetation. In addition to agricultural improvement, bog peat extraction both by hand and by industrial milling has significantly depleted the extent of valuable bogland habitat across extensive areas to the north of Lisheen Mine.
- 2.0.2 However, localised areas of wet heath and bog woodland habitats on bog peat have not been removed for peat extraction, retaining remnant pockets of bog habitat and wildlife interest. Many of these remnant biodiversity interest features are present within the Lisheen Mine estate. In addition, features of wildlife habitat interest have developed at Lisheen, in particular where borrow-pit excavations have taken place in the past.
- 2.0.3 Key locations of habitat interest and biodiversity value at Lisheen are shown on Figure One, and are reviewed below:

Remnant Bog Peat Habitats

- 2.0.4 A corridor of remnant bog peat with intact wet heath and bog woodland vegetation is present along the northern boundary of the mine site. This comprises a feature of local nature conservation interest as it contains remnants of formerly widespread wildlife habitats. Wet heath vegetation that has developed in this area comprises Heather and Cross-leaved Heath with Deer Sedge, Bog Asphodel and scattered Purple Moor-grass. There is a patchy carpet of *Cladonia* lichens, with shallow bogpools that contain Bog Cotton-grass and localised patches of *Sphagnum* moss species.
- 2.0.5 Bog woodland within this area comprises relatively even-aged Silver Birch, with Scots Pine Alder, Holly and Goat Willow. The woodland has a distinctive sub-shrub layer characterised by an abundance of Bilberry that is replaced by Heather in less heavily shaded areas of the woodland floor. In places the bog woodland encloses substantive wet heath vegetation patches.
- 2.0.6 Wet heath and bog woodland vegetation types combine within this area to create a locally valuable assemblage of bog peat habitat interest.
- 2.0.7 Plates One and Two illustrate the general character of remnant blanket bog wet heath vegetation that are present in this area. Plate Three and Plate Four provide examples of Lisheen bog woodland remnants.

Grassland and Wetland at Derryville Island

- 2.0.8 The Derryville Island area is a northern outlier of the Lisheen minesite at the location of a former borrow-pit. Principal habitats that have developed within this area following cessation of extraction activities comprise an extensive area of pasture grassland with low-lying land typically occupied either by pockets of marshy grassland or ponds and reedswamp.
- 2.0.9 Grassland vegetation at Derryville Island comprises several distinct types, including locally extensive areas of semi-natural mesotrophic grassland, typified by an increased abundance of tall herb wildflower species. These grassland areas have a wildflower meadow character. Localised calcareous grassland, acid grassland and dry heathland patches are also present.
- 2.0.10 Plate Five illustrates the general character of pasture grassland within the Derryville area.
- 2.0.11 Pond and wetland habitats at Derryville range from relatively small and shallow ponds with narrow zones of pond margin aquatic and semi-aquatic vegetation to more extensive ponds with a greater variety of water depth that is reflected in a more diverse assemblage of aquatic and semi-aquatic microhabitats. Wetland habitats at Derryville also include a substantive area of reedswamp vegetation.
- 2.0.12 Plate Six shows the main reedswamp area at Derryville, and Plate Seven provides an example of one of the Derryville ponds.

3.0 MINE CLOSURE BIODIVERSITY REVIEW

3.0.1 Physical closure at Lisheen Mine includes a series of plans for rehabilitation and restoration of the above ground minesite. These plans include opportunities to develop areas of biodiversity interest that will support national and local BAP targets following closure of the mine.

3.0.2 This Biodiversity Management Plan identifies the key areas of potential interest for post-closure biodiversity conservation benefits at Lisheen and outlines the anticipated benefits for specific biodiversity conservation targets. In particular, they comprise the following areas at Lisheen Mine:

- Lisheen Minesite;
- Lisheen Tailings Management Facility (TMF);
- TMF Wetland;
- Carrick Hill Borrow Pit.

3.0.3 An overview of the anticipated biodiversity conservation benefits of mine closure for these areas at Lisheen Mine is provided in the following sections of this document. This describes the potential for a variety of habitat types and wildlife opportunities to develop within each of these areas. The combined effect of these nature conservation features will be to create an area of considerable biodiversity interest following closure at Lisheen mine.

3.1 Lisheen Minesite

3.1.1 Following decommissioning and removal of above ground infrastructure the Lisheen minesite will be restored to a condition that could subsequently accommodate a variety of post-mining industrial/commercial after uses. Rehabilitation of the minesite will include opportunities to develop features of potentially substantial nature conservation interest:

- To the north of the Lisheen minesite is a corridor of land that has been used as a stockpile of peat and glacial till, originally excavated from the foot print of the Lisheen Tailings Management Facility (TMF). Since 2008 the peat and glacial till has been excavated to fabricate a soil forming substrate for final restoration of the TMF, and excavation will continue until final restoration of the TMF is complete. As described in Section 2.0 of this report, valuable remnant wet heath vegetation on blanket bog, and areas of bog woodland are present within land abutting the stockpile corridor to the north;
- Excavation of the peat and till stockpile will be expected to create a shallow basin that could help to develop suitable conditions colonisation by wet heath and bog woodland species. Impeded drainage within the stockpile basin will help to maintain wetland conditions within areas of saturated peat. This will create the potential for colonisation of these areas by wet heath vegetation and bog woodland vegetation from the adjacent habitat remnants. This would have the effect of consolidating the nature conservation value of existing wet heath and bog woodland habitat fragments, increasing the local extent of these valuable habitat and vegetation types.

- 3.1.2 A variety of grassland, woodland, scrub and wetland habitats have developed at a number of locations within the Lisheen minesite that provide features of nature conservation interest. These will be retained throughout mine closure where their biodiversity interest will be allowed to develop through natural regeneration and habitat development.
- 3.1.3 One exception concerns the derelict mansion at Killoran House where essential works will be undertaken to stabilise this structure. Opportunities may arise to incorporate features into these works that could provide opportunities for use of the mansion house or outbuildings by roosting bats. The feasibility of this proposal would be assessed when detailed plans for stabilisation of Killoran House are developed.

3.2 Lisheen Mine Tailings Management Facility (TMF)

- 3.2.1 The Lisheen TMF is undergoing progressive rehabilitation and restoration to create an extensive area of pasture and ley grassland. This will result in the creation of a field network that is defined by hedgerows and blocks of shelter woodland. These will provide features of habitat interest and nature conservation value:
- Creating new hedgerows across the TMF will increase the extent of linear wildlife habitats that are provided by existing hedgerows within the surrounding area, creating the opportunity for important wildlife groups such as foraging bats and nesting birds to disperse further through the landscape. The majority of hedgerows within the TMF will be established on field boundaries that may incorporate drainage ditches. These will combine with hedge planting to provide further habitat diversity;
 - The inclusion of broadleaved woodland blocks at locations throughout the TMF will consolidate the habitat value of the hedgerow network. In particular, this would be achieved through the creation of local concentrations of habitat interest at the woodlands that would benefit from ecological connectivity provided by the field boundary hedgerow network;
 - The TMF dam faces have developed an extensive vegetation cover that comprises uncultivated calcareous grassland. The grassland within these areas may be used for occasional sheep grazing. This would create conditions for the development of relatively species rich calcareous grassland that is extremely uncommon in the Lisheen Mine locality. In addition to the potential for development of substantial vegetation interest the proposed sheep grazing management on the dam faces could maintain short sward calcareous grassland of considerable invertebrate interest;
 - Throughout the operational life at Lisheen Mine a series of toe drains have been maintained along the base of the TMF dam walls. Closure phase proposals for the TMF include the placement of peat from the mine site stockpile into the toe drains. This will create a biodiversity gain with the potential for wet heath vegetation to develop on the peat, making a valuable contribution to the hedgerow, woodland and grassland habitats that are planned for final restoration of the TMF.

3.3 TMF Wetland (Retention Basin)

3.3.1 To the north west of the Lisheen TMF an artificial wetland is to be constructed. This feature will create a balancing area for surface water discharge from the TMF via a series of spillways, and provides an opportunity to develop an area of substantial wetland biodiversity interest.

3.3.2 The TMF wetland will have a number of specific features that will contribute to its nature conservation potential:

- Seasonal fluctuations in water level within the wetland are likely, creating temporary inundation conditions that can develop a distinctive and valuable wetland ecology and biodiversity interest;
- It is anticipated that the wetland will include areas of shallow water and the possibility of braided surface drainage channels forming. These will create a significant area of shallow water wetland conditions that typically supports a variety of wetland wildlife species. These could include wading birds, wildfowl and a diverse invertebrate assemblage;
- The combination of varied water levels and the likelihood of seasonal inundation would be reflected in a variety of wetland vegetation types. This would create distinctive wetland vegetation interest and would add to the diversity of wildlife species likely to colonise the area;
- Areas of vegetation interest around the margins of the TMF wetland will include stands of wet woodland. These would complement areas of remnant and developing bog woodland in the locality, helping to increase the extent of this important habitat type.

3.4 Carrick Hill Borrow Pit

3.4.1 During the final phase of physical mine closure the Carrick Hill borrow pit will undergo progressive restoration to create an area of open water with associated wetland features. The core restoration objectives at the borrow pit concern wildlife habitat creation. The Carrick Hill borrow pit occupies an extensive area, and its restoration has the potential to develop substantial wetland wildlife habitat and biodiversity interest.

3.4.2 As groundwater levels rise following post-closure cessation of groundwater pumping an area of considerable wetland nature conservation interest will be created at Carrick Hill as wetland conditions become established. A number of key wetland habitat features will be created:

- Excavation of borrow-pit material from Carrick Hill will create a varied edge profile to the resulting quarry void. This will comprise a number of enclosed bays and sections of gently shelving margin. When the borrow-pit is flooded by groundwater recharge the varied edge profile will create a diverse assemblage of lake margin wetland habitat and sub habitat features;

- Borrow pit excavation at Carrick Hill will retain areas of uncultivated rough pasture grassland enclosing the perimeter of the quarry void. In places the rough pasture is present on gently undulating land with impeded drainage. These areas will develop locally valuable wet and marshy grassland that will contribute to wetland habitat interest at Carrick Hill. This interest would further benefit from opportunities to develop wet woodland habitat at locations around the borrow pit margin.

4.0 EXISTING BAP TARGETS

- 4.0.1 The 2009 Lisheen BAP identified the potential for the mine to contribute towards biodiversity conservation targets identified within existing BAP frameworks. These comprise the Irish National BAP and the local BAP for Tipperary County Council. The potential biodiversity benefits of mine closure described in earlier sections of this document will continue to support the objectives of these BAP frameworks, as described below.

4.1 Irish National BAP

- 4.1.1 The national BAP for Ireland provides a list of broad-brush habitat categories as priorities for biodiversity action. Those of most relevance to the Lisheen Mine BAP are reviewed below.

Terrestrial Ecosystems: Agriculture and Hedgerows

- 4.1.2 The national BAP supports agricultural practice that benefits general biodiversity and the specific biodiversity value of hedgerows. Closure plans for the TMF at Lisheen involve the introduction of hedgerows and farm woodlands that provide important habitat features within agricultural landscapes. This will help to support Irish national BAP objectives for biodiversity in agricultural landscapes.

Terrestrial Ecosystems: Forests

- 4.1.3 New broadleaved woodland planting is proposed at a number of locations within the Lisheen closure plan. In addition, conditions that will favour bog woodland development by natural regeneration within disturbed peat areas will also be created. These situations will provide continued support for the Irish national BAP forest biodiversity conservation objectives.

Inland Waters and Wetlands

- 4.1.4 Substantial new wetland features will be created at Carrick Hill and the TMF wetland area. These will provide continuing support for the Irish National BAP conservation targets for inland waters and wetlands. Opportunities for wet heath and bog woodland restoration would also contribute towards Irish wetland BAP conservation targets.

4.2 Tipperary BAP

- 4.2.1 The Local BAP for Tipperary County Council identifies several general habitat categories as targets for biodiversity conservation. Mine closure at Lisheen creates the potential to support a number of habitat conservation objectives as reviewed below.

Freshwater Habitats

- 4.2.2 The Tipperary BAP identifies lakes and ponds, watercourses and swamps as key freshwater habitat conservation priorities. These would all benefit in particular from wetland habitat creation opportunities presented by plans for restoration of the Carrick Hill borrow pit and for development of the TMF wetland.

Grassland and Marsh Habitats

- 4.2.3 Grassland of specific nature conservation interest would be established in particular through final restoration of the Carrick Hill borrow pit. This area has the potential for development of wet grassland around the margins of the main wetland area that is proposed for the quarry void. In addition, there is the potential for occasional sheep grazing on the TMF dam faces to develop noteworthy dry calcareous grassland interest.

Peatland Habitats

- 4.2.4 A number of mine closure projects will create opportunities for the development of wet heath and bog woodland habitat at Lisheen. These include the development of conditions for the regeneration of bog vegetation within the peat and glacial till stockpile area to the north of the mine site. The Tipperary BAP recognises the considerable biodiversity importance of peatland habitats, identifying their conservation as a key BAP target. The development of conditions that are expected to encourage the regeneration of peatland vegetation and habitats at Lisheen will provide valuable support for this local BAP objective.

Woodland and Scrub Habitats

- 4.2.5 New broadleaved woodland planting is proposed at a number of locations within the Lisheen closure plan. The structure and composition of newly created woodland will be designed to closely resemble distinctive semi-natural woodland habitats in the locality. In addition, conditions that will favour bog woodland development by natural regeneration on disturbed peat and wet woodland by planting adjacent to newly created wetland areas will also be provided.
- 4.2.6 These initiatives will provide valuable support for local BAP targets concerning the conservation of woodland habitats of nature conservation interest. Patches of scrub habitat are also likely to develop within the mine site at Lisheen, including locations at Carrick Hill and within the peat and glacial till stockpile area. The development of these habitat types will also help to support local BAP conservation objectives.

FIGURES

Figure One
Lisheen Mine Biodiversity Management Plan
Mine Closure BMP Areas
March 2016

● Killoran House

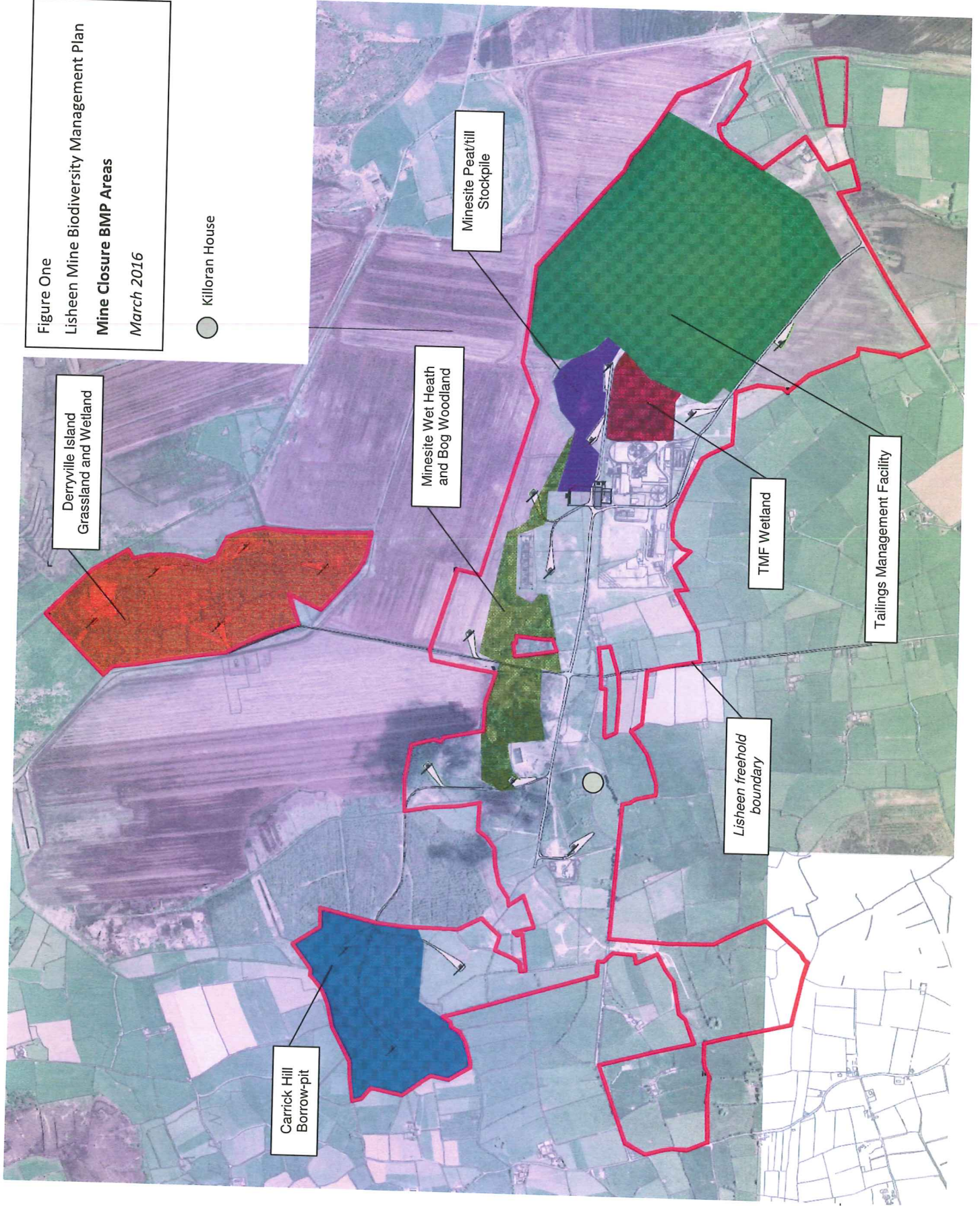




Plate One:

Heather dominated wet heath vegetation on bog remnant to north of minesite



Plate Two:

Mixed wet heath vegetation on bog remnant with shallow bogpools to north of minesite



Plate Three:
Bog woodland within bog peat remnant area to north of minesite



Plate Four:
Bog woodland enclosing wet heath vegetation patch to north of minesite



Plate Five:
General character of pasture grassland within Derryville area



Plate Six:
Reedbed vegetation within Derryville area



Plate Seven:
Pond with varied edge habitat within Derryville area

APPENDIX ONE – LISHEEN MINE BIODIVERSITY POLICY

Protecting and enhancing biodiversity is an integral part of Lisheen's commitment to sustainable development. We are conscious of the potential impacts and dependencies of our business on the environment in general and on biodiversity in particular. Integrating the need for biodiversity conservation into operational decision making processes and taking all necessary measures to minimize impacts, is a commitment across the company. We are conscious that biodiversity is a complex phenomenon that needs to be identified, understood and valued from a biological and societal (i.e. in terms of ecosystem services) perspective. A Biodiversity Action Plan is in place and maintained to manage our performance on biodiversity conservation, which will create long term value for our business.

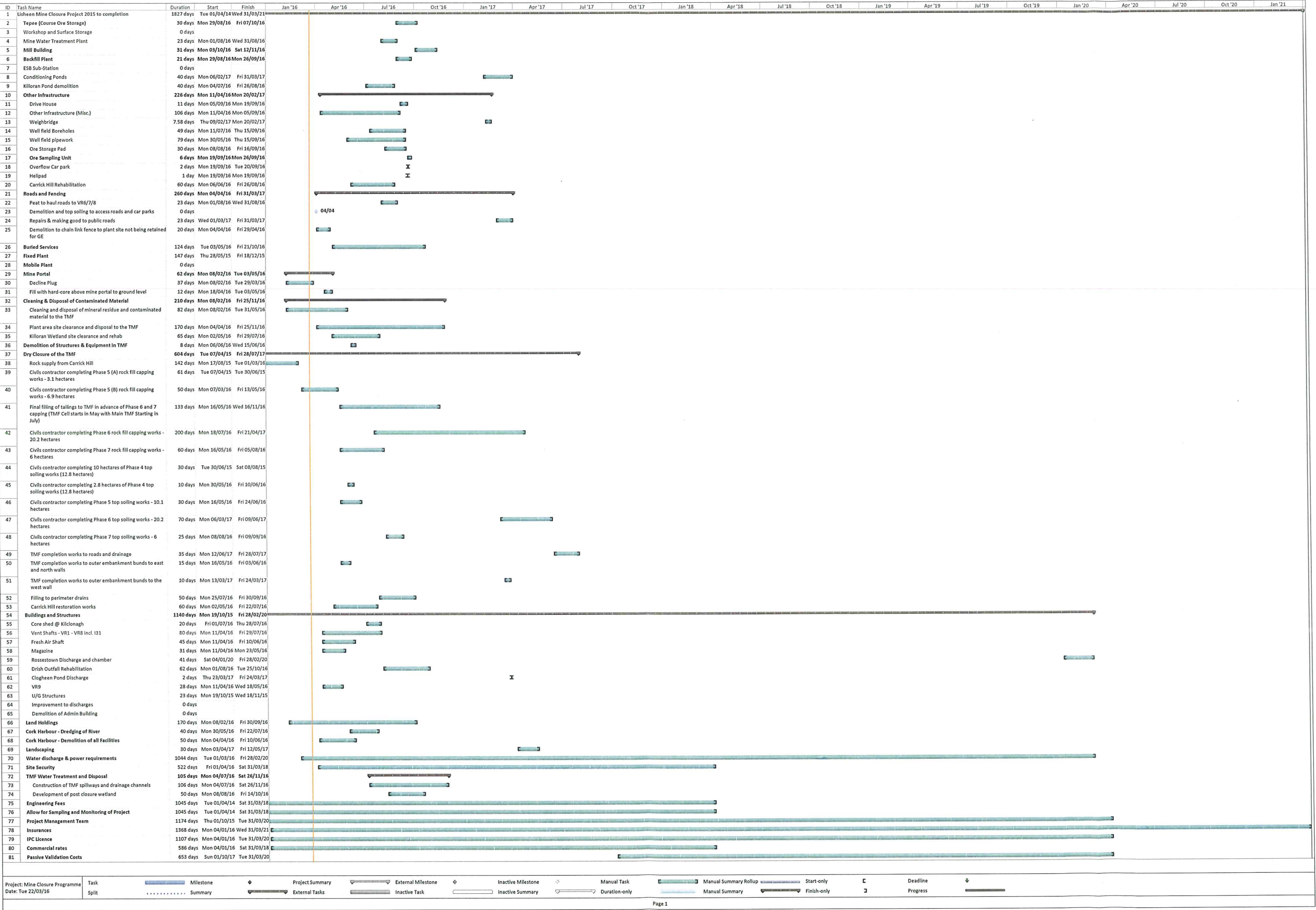
Lisheen strives to:

- prevent where possible, minimise and mitigate biodiversity risks throughout our businesses. We will manage and use land in our operations in a manner that allows biodiversity conservation needs to be integrated with business needs through the project lifecycle, including decommissioning, closure and rehabilitation;
- comply with, and exceed where possible, the local, regional and national legislative requirements on land management and biodiversity conservation and applicable international conventions where applicable in all jurisdictions in which it operates;
- identify and assess biodiversity status and value before the start of a new project and monitor impacts over the project lifecycle;
- we will consider the impacts on ecosystem services;
- work towards the conservation of threatened / rare and endemic species and high priority conservation areas, and support local, national and global conservation initiatives. We will provide information and raise awareness among our employees and other stakeholders to enhance knowledge and understanding of biodiversity and conservation issues, where applicable.

Lisheen commits to adhering to this policy.

Appendix 1.8

Schedule of Activities



Appendix 1.9

Mine Closure and Rehabilitation Agreement

2 December 2015

**(1) VEDANTA LISHEEN MINING LIMITED
KILLORAN LISHEEN MINING LIMITED
LISHEEN MILLING LIMITED**

(2) TIPPERARY COUNTY COUNCIL

(3) THE MINISTER FOR COMMUNICATIONS ENERGY AND NATURAL RESOURCES

(4) THE ENVIRONMENTAL PROTECTION AGENCY

MINE CLOSURE AND REHABILITATION AGREEMENT

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THIS AGREEMENT is made the 2nd day of December 2015

BETWEEN:

- (1) **VEDANTA LISHEEN MINING LIMITED** (registered number: 203494) (**VLML**); and
KILLORAN LISHEEN MINING LIMITED (formerly known as IVERNIA LISHEEN MINING LIMITED (registered number: 253648) (**KLML**); and
LISHEEN MILLING LIMITED (registered number 261670) (**LML**)
(together **Lisheen**) (each incorporated in Ireland and having its registered office at Lisheen Mine, Killoran, Moyne, Thurles, County Tipperary)
(which expression shall, where the context so admits or requires, include each of the above companies, jointly and severally, and their and each of their successors and assigns)
- (2) **TIPPERARY COUNTY COUNCIL** of Civic Offices, Limerick Road, Nenagh, County Tipperary (the **Local Authority**)
- (3) **THE MINISTER FOR COMMUNICATIONS ENERGY AND NATURAL RESOURCES** (as successor to the Minister for the Marine and Natural Resources) of Adelaide Road, Dublin 2 (the **Minister**);
- (4) **THE ENVIRONMENTAL PROTECTION AGENCY** of PO Box 3000, Johnstown Castle Estate, Wexford, County Wexford (the **EPA**)
(the Local Authority, the Minister and the EPA being together the **Statutory Authorities** and each a **Statutory Authority**)
(the expressions Statutory Authorities, Local Authority, Minister and EPA shall, where the context so admits or requires, include each of them, jointly and severally, and their and each of their successors and assigns)
- each of (1) to (4) a **Party** and together the **Parties**.

WHEREAS

- A. Lisheen owns and operates a zinc mine situated at Lisheen, Killoran, Moyne, Co. Tipperary (the **Mine**).
- B. Lisheen are the Lessees under a State Mining Lease granted by the Minister for the Marine and Natural Resources to the Lessees on 7 October 1997 (as amended from time to time including by supplemental indentures dated 22 December 1997, 27 August 2004, 21 March 2007 and 9 January 2008) (the **State Mining Lease**).
- C. Pursuant to the planning decision of An Bord Pleanála dated 30th May 1997 (planning register reference no PL 22.100093 PLC/17663 as extended by PL 22.212637 (04/51/1667)) (the **Planning Permission**), permission was granted to construct and operate the Mine. The Planning Permission is administered by the Local Authority.
- D. Pursuant to an Integrated Pollution Control licence (Licence Register No. P0088-04 issued by the EPA to VLML on 29 April 2014 (following revision of the Licence Register No. P0088-03 on 3 September 2010, Licence Register No. P0088-01 issued on 27 June 1997 and Licence Register No. P0088-02 issued on 15 March 2001), VLML is permitted to extract and process ore at the Mine, subject to the terms and conditions of the IPC Licence (**IPC Licence**).
- E. Pursuant to the Conditions (as defined in Clause 1.1) Lisheen (or VLML in the case of

the IPC Licence) is required to put in place certain financial security as security for Lisheen's mine closure and rehabilitation obligations under the State Mining Lease, the Planning Permission and the IPC Licence.

- F. This Agreement is entered into to detail the operation and maintenance of the financial security agreed between Lisheen and the Statutory Authorities to meet Lisheen's obligations under the State Mining Lease, the Planning Permission and the IPC Licence to provide such financial security in respect of mine closure and rehabilitation.

NOW THIS AGREEMENT WITNESSES and it is agreed and declared as follows:-

1. INTERPRETATION

1.1. In this Agreement the following Definitions apply:

- 1.1.1. **Account** means a bank account established in accordance with Clause 2 (as such Account may change from time to time in accordance with Clause 2.4).
- 1.1.2. **Account Bank** means the bank or financial institution with which the Account is established and maintained from time to time.
- 1.1.3. **Account Mandate** means the mandate for the Account to be entered into by the Parties and the Account Bank.
- 1.1.4. **Account Terms** means the terms and conditions attaching to the Account, including applicable interest rates and withdrawal rights.
- 1.1.5. **Annual Review Period** means the period from submission by Lisheen of a Draft Annual Review Statement to the date upon which the Annual Review Statement is approved or determined in accordance with Clause 7.
- 1.1.6. **Annual Review Procedure** means the procedure set out in Clauses 6 and 7 and Schedule 1.
- 1.1.7. **Annual Review Statement** means the Draft Annual Review Statement as updated if necessary in accordance with Clause 7.6 and approved by the Statutory Authorities in accordance with either the Annual Review Procedure, or Clause 6.3.
- 1.1.8. **Approval** means approval in writing.
- 1.1.9. **Authorisations** mean the State Mining Lease, the IPC Licence and the Planning Permission.
- 1.1.10. **Buffer Amount** means an amount equal to the Requested Amount proposed by Lisheen to be drawn down in respect of the then current Quarter in accordance with Clause 8.
- 1.1.11. **Conditions** means (i) the conditions contained in the Planning Permission as conditions 42 and 45, (ii) covenants 22 and 24 of the Sixth Schedule to the State Mining Lease and (iii) those conditions of the IPC Licence which relate to mine closure (conditions relating to aftercare in the IPC licence are not included in this definition).
- 1.1.12. **Coordinating Authority** means the EPA.
- 1.1.13. **Draft Annual Review Statement** means the document of that name submitted by Lisheen for approval by the Statutory Authorities in accordance with Clause 6.
- 1.1.14. **Final Mine Site Closure Completion Certificate** means a certificate to be

issued by the Statutory Authorities in accordance with Clause 11.

- 1.1.15. **Independent Certification** means certification by a suitably qualified person or persons appointed by Lisheen and approved in advance by the Statutory Authorities as part of the Annual Review Procedure that the relevant part of the Mine Closure Works have been satisfactorily completed and tested in accordance with a test programme approved under the Annual Review Procedure, and certifying the amount spent on carrying out those Mine Closure Works; Independently Certified shall be construed accordingly.
- 1.1.16. **Initial Deposit Amount** means no less than €21,734,428 (twenty one million, seven hundred and thirty four thousand, four hundred and twenty eight Euro).
- 1.1.17. **Insolvency Proceedings** mean the appointment of an examiner, liquidator, receiver, provisional liquidator or other similar official to Lisheen (but for the avoidance of doubt other than to the extent such appointment is part of a solvent reconstruction or amalgamation of Lisheen or any of the companies constituting Lisheen).
- 1.1.18. **IPC Licence** means the licence referred to in Recital D as reviewed from time to time.
- 1.1.19. **Mine** has the meaning in Recital A, and includes the site of the mine, all lands the subject of the Lease, the Planning Permission and / or the IPC Licence, and everything on, in, attached to or forming part of those lands.
- 1.1.20. **Mine Closure Committee** shall mean the committee consisting of representatives from Lisheen and each of the Statutory Authorities, the purpose of which committee is to function as a liaison and communication forum in respect of the matters in this Agreement and other ancillary matters.
- 1.1.21. **Mine Closure Costs** means the costs incurred or which are to be incurred to effect mine closure and rehabilitation (but excluding perpetual aftercare) in accordance with the Mine Closure Plan.
- 1.1.22. **Mine Closure Plan** means a plan for the orderly closure, monitoring, and rehabilitation of the mine in compliance with the Conditions (apart from those conditions of the IPC Licence which relate to perpetual aftercare) and refers initially to the 2011 Updated Mine Closure Plan, as modified and updated from time to time in accordance with the Annual Review Procedure.
- 1.1.23. **Mine Closure Rolling Estimate** means Lisheen's estimate at any point in time of the Mine Closure Costs from that point in time to the completion of mine closure and rehabilitation (but excluding perpetual aftercare) in accordance with the Mine Closure Plan, as set out in the Annual Review Statement [and Quarterly Reports].
- 1.1.24. **Mine Closure Works** means the works carried out or to be carried out under the Mine Closure Plan.
- 1.1.25. **Mine Closure Works Period** means each period of 12 months from 1 April to the following 31 March (starting on the next 1 April occurring after the date of this Agreement) and in respect of the year in which the Final Mine Site Completion Certificate is issued, the period from 1 April to the date upon which the Final Mine Site Completion Certificate is issued.
- 1.1.26. **Planning Bonds** mean the Planning Bond No. 1 (re: Closure Plan and rehabilitation) and the Planning Bond No. 2 (re: Closure Plan and rehabilitation) which were each created on or about the 27th of January 1998 and made between the ICC Bank plc, Lisheen, the Local Authority and the Minister.
- 1.1.27. **Planning Permission** has the meaning in Recital C.

- 1.1.28. **Programme of Works** means a detailed statement of the Mine Closure Works planned to be carried out in any Mine Closure Works Period in accordance with the Mine Closure Plan.
- 1.1.29. **Quarter** or **Quarterly** refers to each three month period ending on 31 March, 30 June, 30 September and 31 December.
- 1.1.30. **Quarterly Rolling Forecast Amount** means the sum identified to be drawn down in a given Quarter of the next Mine Closure Works Period as set out in the Annual Review Statement, such amount to be based on the **Mine Closure Rolling Estimate** and as such amount may be adjusted in the Quarterly Report in accordance with Clause 8 to calculate the appropriate Requested Amount for the said Quarter.
- 1.1.31. **Quarterly Drawdown** means the amount drawn down from the Account on foot of approval of the Quarterly Report in respect of a given Quarter.
- 1.1.32. **Quarterly Report** means the document of that name submitted by Lisheen for approval by the Statutory Authorities in accordance with Clause 8.2.
- 1.1.33. **Quarterly Works** means the combined set of Work Packages to be completed or progressed in a given Quarter.
- 1.1.34. **Requested Amount** means the amount proposed by Lisheen to be drawn down from the Account for the immediately upcoming Quarter in accordance with Clause 8; it is the sum of the Quarterly Rolling Forecast Amount for the upcoming Quarter, less any unspent monies (as determined under Clause 8.6) drawn down in respect of the present Quarter.
- 1.1.35. **Required Financial Security Amount** means as at the date hereof the Initial Deposit Amount and, following completion of the first and each subsequent Annual Review Statement, it shall mean an amount equal to the **Mine Closure Rolling Estimate**.
- 1.1.36. **Review Date** means 7th April in each year of this Agreement or such other date upon which the Annual Review Statement has been approved in accordance with this Agreement (including for the avoidance of doubt under Clause 6.3).
- 1.1.37. **State Mining Lease** has the meaning in Recital B.
- 1.1.38. **Supplemental Deeds** means the Supplemental Deed to Planning Bond No.1 (Re: Mine Closure and Rehabilitation) and the Supplemental Deed to Planning Bond No.2 (Re: Mine Closure and Rehabilitation) each dated 27th January, 1998 and made between Lisheen, the Local Authority and the Minister.
- 1.1.39. **2011 Updated Mine Closure Plan** means the CRAMP as submitted to the Statutory Authorities in 2009 and 2010 and approved by the Statutory Authorities on 15 December 2011.
- 1.1.40. **Work Package** means each and any element or component of Mine Closure Works identified in the Programme of Works.
- 1.2. Unless otherwise defined in this Agreement, expressions bear the same meaning in this Agreement as in the Planning Permission, the State Mining Licence or the IPC Licence as the context demands.
- 1.3. The purpose of this Agreement is to give effect to and ensure compliance by Lisheen with the Conditions. Each Party acknowledges that the entry into and performance of this Agreement in accordance with its terms satisfies Lisheen's obligations under the Conditions in respect of the provision of financial security for mine closure,

decommissioning and rehabilitation (but excluding aftercare).

- 1.4. The Parties agree that with effect from the date of this Agreement, the Planning Bonds and the Supplemental Deeds thereto shall be entirely superseded by this Agreement and the Supplemental Deeds shall have no further force and effect.
- 1.5. The Parties agree that this Agreement shall bind each of their successors, assigns and transferees.

2. ESTABLISHMENT AND MECHANICS OF THE ACCOUNT

- 2.1. On or before the date of this Agreement, Lisheen and the Statutory Authorities shall establish the Account with an Account Bank nominated by Lisheen and approved by the Statutory Authorities. The Account shall:
 - 2.1.1. be established with an Account Mandate which provides for compliance by the Account Bank and the Parties with the Account withdrawals and other matters referred to in this Agreement;
 - 2.1.2. be an interest bearing account;
 - 2.1.3. (subject to Clause 5.3) be held and maintained in the joint names of Lisheen and the Statutory Authorities in the manner specified in this Agreement and the Account Mandates.
- 2.2. Legal title to all funds lodged in the Account shall vest in Lisheen and the Statutory Authorities jointly, and those funds shall be held on trust for the purposes of the Mine Closure Works and shall be applied to fulfil the terms of the Conditions, and to comply with this Agreement. In the event that there are any funds to the credit of the Account after the Final Mine Site Closure Completion Certificate has issued, those remaining funds shall belong absolutely and unconditionally to Lisheen free of all trusts and charges. With effect from the time funds are withdrawn from this Account in accordance with this Agreement, legal title in those drawn funds shall vest in Lisheen, save in the case of withdrawals under and in accordance with Clause 5.2.
- 2.3. Subject to Clauses 5.2 and to Clause 5.3, all withdrawals from the Account shall require signatures from (1) the relevant Lisheen counterparty; and (2) each of the Statutory Authorities.
- 2.4. Subject to the prior approval of the Statutory Authorities (which shall not be unreasonably withheld or delayed) Lisheen may choose to change the Account Bank or the Account Terms from time to time in the event it is of the opinion it can achieve more favourable terms and conditions in respect of the Account. Lisheen shall give at least two weeks notice of such a proposed change to the Statutory Authorities and the Statutory Authorities shall do all such things as may be reasonably required to enable any change of Account or Account Bank or Account Terms.
- 2.5. The Statutory Authorities shall each designate at least three signatories (to be endorsed on the relevant Account Mandate), any one of whom may sign a withdrawal mandate on behalf of the Statutory Authority which designated him / her / them.
- 2.6. Lisheen and the Statutory Authorities shall have access directly (including by way of on-line banking) to information on the Account.
- 2.7. Lisheen warrants that it is at the date of this Agreement able to pay its debts as they fall due and that it has not entered into this Agreement for the purpose of defeating any claim by its creditors.
- 2.8. The Account shall be maintained and operated in the manner set out in this Agreement and the relevant Account Mandate, and all interest and other income accruing to the Account shall be added to and accumulated with the monies standing to the credit of the Account.

3. INITIAL FUNDING OF THE ACCOUNT

- 3.1. The Parties each acknowledge that as at the date of this Agreement Lisheen has deposited into the Account the Initial Deposit Amount and that the Initial Deposit Amount is standing to the credit of the Account. Accordingly the Parties agree that the Planning Bonds and Supplemental Deeds are, hereby terminated (the termination date under Clause 6.2(c) of the Planning Bonds having occurred to the extent such termination has not occurred prior to the date of this Agreement) and shall be of no further effect and no party shall have any liability or claim under the Planning Bonds or the Supplemental Deeds. To the extent such notifications have not been made prior to the date of this Agreement, the Local Authority and the Minister shall immediately make the notification to the Account Bank in accordance with Clause 6.2(c) of the Planning Bonds and Clause 3.2 of the Supplemental Deeds.

4. SUBSEQUENT FUNDING OF THE ACCOUNT

- 4.1. Subject to the terms of this Agreement (including permitted withdrawals), Lisheen shall ensure that on the date which is 10 days following each Review Date, there is standing to the credit of the Account an amount equal to or greater than the Required Financial Security Amount plus the Buffer Amount, shall make any relevant deposit in the Account for this purpose, and shall confirm to the Statutory Authorities in writing when such deposit has been made.
- 4.2. If following any Review Date there are monies standing to the credit of the Account in excess of the Required Financial Security Amount plus the Buffer Amount determined at that Review Date, Lisheen shall be entitled to withdraw and retain such excess amount from the Account and the Statutory Authorities shall do all things as are required to enable Lisheen to do so, including authorising and instructing such withdrawals.

5. WITHDRAWALS FROM THE ACCOUNT

- 5.1. Withdrawals from the Account shall be made only as provided for in this Agreement and the Account Mandate.
- 5.2. The Statutory Authorities may make withdrawals from the Account without Lisheen's consent only in the following circumstances:
- 5.2.1. upon or after the commencement of Insolvency Proceedings in respect of Lisheen (unless those proceedings have been discontinued); or
 - 5.2.2. where (1) Lisheen has failed to carry out the Mine Closure Works in accordance with the Mine Closure Plan (as updated from time to time) (insofar as is within its reasonable control) and (2) the Statutory Authorities have served a written notice on Lisheen specifying in detail the failure and requiring Lisheen to remedy the failure (or produce within 60 days a detailed programme for remedy where that was required) and Lisheen has failed to remedy the failure (or failed to produce within 60 days a detailed programme for remedy or failed to comply with the agreed remedy programme within the time agreed by the Statutory Authorities); or
 - 5.2.3. Lisheen having failed to submit a Draft Annual Review Statement within 60 days of this being due under the Annual Review Procedure.

Furthermore, such withdrawals may only be made to pay for the carrying out of the Mine Closure Works or of any unanticipated works which the Statutory Authorities may reasonably conclude are required to ensure compliance with the Conditions.

Lisheen may refer to dispute resolution such matters as they see fit in accordance with Clause 9

- 5.3. Where the Statutory Authorities seek to withdraw any money from the Account pursuant to Clause 5.2, they shall furnish the Account Bank with a certificate in the form set out in Schedule 2; and upon receipt of such certificate the Account Mandate shall provide that the Account Bank shall be entitled to make such payment as is requested without further inquiry as to the truth of any matter stated therein.
- 5.4. Where the Statutory Authorities are entitled to make withdrawals under this Clause, they may only make such withdrawals as shall, in the opinion of the Statutory Authorities, be sufficient to enable that authority to arrange for the carrying out of any Mine Closure Works, and shall give Lisheen notice that they have made the withdrawal.
- 5.5. The Parties agree that the Statutory Authorities shall have no rights, title or interest in the Buffer Amount (other than such amount of the Buffer Amount which equals amounts drawn down under Clause 8 which remain unspent on Mine Closure Works) or in any other monies standing to the credit of the Account in excess of the Required Financial Security Amount.
- 5.6. The Parties agree that the balance of any monies remaining in the Account after the issue of the Final Mine Site Closure Completion Certificate shall be paid to Lisheen within 10 days of issue of the Final Mine Site Closure Completion Certificate and the Statutory Authorities shall do all things as are required to enable Lisheen to do so, including authorising and instructing such withdrawals.

6. THE ANNUAL REVIEW PROCEDURE

- 6.1. The Mine Closure Plan shall be updated each year using the Annual Review Procedure set out below. The Annual Review Procedure shall consist of the submission by Lisheen of a Draft Annual Review Statement which shall form the basis for discussion between the parties, modification of the Draft Annual Review Statement by Lisheen in accordance with the Statutory Authorities' comments and determinations following any further information or interim review meeting, and ultimately approval by the Statutory Authorities of the Annual Review Statement.
- 6.2. Subject to Clause 6.3, by 14 January in each year or as soon as possible thereafter, Lisheen shall provide to the Statutory Authorities a Draft Annual Review Statement containing the following:
 - 6.2.1. identification of the mine manager and the environmental safety engineer;
 - 6.2.2. details of all mining operations completed in the preceding four Quarters and details of all mining operations which are ongoing and projected up to closure of the mine together with the Mine Closure Rolling Estimate;
 - 6.2.3. details of Mine Closure Works conducted at the Mine in the preceding four Quarters, Independent Certification thereof (where not previously provided), and analysis of the impact of such operations on:
 - (1) the environmental risks posed by the Mine; and
 - (2) the cost of preventing or mitigating such risk.
 - 6.2.4. details of any environmental risks which may arise from past or future Closure Works or from mining operations carried out at the Mine, proposals for action to eliminate those risks, and costing for those proposals;
 - 6.2.5. the proposed Programme of Works for the next Mine Closure Works Period. The Programme of Works shall also set out the Quarterly Works intended to be carried out or progressed within each Quarter and shall specify for each

Work Package:

- the particular works comprising the Work Package;
 - objectives and success criteria;
 - the methodology to be used;
 - a test programme for determining successful completion of the Works Package;
 - proposed contractors;
 - detailed costings; and
 - Independent Certification to be obtained.
- 6.2.6. the proposed budget for the next Mine Closure Works Period, including a breakdown of the budget into Quarterly Rolling Forecast Amounts; the Quarterly Rolling Forecast Amount shall be the starting point for calculating the Requested Amount for the next Quarter in accordance with Clause 8;
- 6.2.7. [Lisheen's estimate of] the Mine Closure Rolling Estimate at the start of the next Closure Works Period and explanations for any difference from the previous Mine Closure Rolling Estimate. The Mine Closure Rolling Estimate shall be calculated having regard to, *inter alia*, the following factors:
- the experience of the parties in relation to past expenditure on closure costs (including cost overruns),
 - the timing of planned and actual expenditure and works; and
 - changes in the wholesale price index and the anticipated trend of that index.
- 6.2.8. the Required Financial Security Amount based on the Mine Closure Rolling Estimate at Clause 6.2.7 above;
- 6.2.9. all information which may reasonably be required by the Statutory Authorities to enable them to approve the Annual Review Statement;
- 6.2.10. draft updates to the Mine Closure Plan to reflect the above matters; and
- 6.2.11. any other changes in condition of the Mine which may affect the Mine Closure Plan during the next three years.
- 6.3. At the request of any Party, an extraordinary review of the Mine Closure Plan and the then current Annual Review Statement may be undertaken to cater for circumstances that may arise from time to time.

7. CONSIDERATION AND APPROVAL OF THE DRAFT ANNUAL REVIEW STATEMENT

- 7.1. Upon receipt of the Draft Annual Review Statement from Lisheen, the Statutory Authorities shall review and consider it.
- 7.2. The Parties intend that the Annual Review Statement shall be approved or determined no later than 7th April in each year until the Final Mine Closure Completion Certificate has issued.
- 7.3. The Parties agree that the Annual Review Procedure shall be as set out in Schedule 1 and the Parties shall use reasonable endeavours to comply with the timetable set out in it.

- 7.4. In the event that Lisheen disagrees with any of the comments or determinations of any Statutory Authority during the Annual Review Procedure which cannot be resolved at the First Annual Review Meeting, Lisheen may request a further or interim meeting (or two or more such meetings if required) with the Statutory Authorities and may provide further information and representations which shall be considered by the Statutory Authorities in good faith.
- 7.5. As soon as reasonably practicable, but in any event before 14 March in each year or such other date as the Coordinating Authority and Lisheen may agree, the Mine Closure Committee shall meet (**Final Annual Review Meeting**) and the Statutory Authorities (having considered the matters raised and discussed in previous Mine Closure Committee meetings, Lisheen's presentations and written submissions and any interim meetings in accordance with Clause 7.4) shall present their final determinations in relation to the Draft Annual Review Statement.
- 7.6. Lisheen shall promptly update the Draft Annual Review Statement to reflect the determinations in Clause 7.5 and shall, by 28 March, submit the updated Annual Review Statement to the Statutory Authorities.
- 7.7. Lisheen may refer to dispute resolution such matters as they see fit in accordance with Clause 9.
- 7.8. In the event that the Annual Review Statement is not approved by 7 April in any year, the Annual Review Statement in respect of the previous year shall continue to be applicable until such time as the relevant Annual Review Statement is approved or determined to be approved in accordance with Clause 7.4 and Clause 7.5.

8. QUARTERLY PROVISIONS AND DRAWDOWN

- 8.1. Lisheen shall carry out the Quarterly Works for a given Quarter in accordance with and subject to Clause 6.
- 8.2. At the end of a given Quarter, Lisheen shall submit to the Statutory Authorities a Quarterly Report containing:
 - 8.2.1. Independent Certification of the Mine Closure Works completed in that Quarter,
 - 8.2.2. an Independently Certified reconciliation between anticipated and actual costs in respect of those Mine Closure Works completed in that Quarter,
 - 8.2.3. reasons for any delay in completion or increase or decrease in the cost of Mine Closure Works for which funds have been drawn down in respect of that Quarter;
 - 8.2.4. a request for approval to draw down from the Account the Requested Amount; this is the Quarterly Rolling Forecast Amount for the next Quarter as set out in the current Quarterly Report less any unspent monies (as determined under Clause 8.6) drawn down for the present Quarter.
 - 8.2.5. a statement of account, as of the date of the Quarterly Report, indicating separately the Mine Closure Rolling Estimate and hence the Required Financial Security Amount and the Buffer Amount.
- 8.3. As soon as reasonably practicable after (and in any event within 10 days of receipt of the Quarterly Report) the Statutory Authorities shall either :
 - 8.3.1. approve the Quarterly Report (such approval not to be unreasonably withheld or delayed) or
 - 8.3.2. request further information in relation to the contents of the Quarterly Report to enable the Statutory Authorities to approve the Quarterly Report, and may

request the submission of a revised Quarterly Report.

On receipt of any further information or a revised Quarterly Report referred to in Clause 8.3.2 and their approval thereof, the Statutory Authorities shall promptly approve the Quarterly Report, in the same manner as set out in this clause 8.3.

- 8.4. Lisheen may refer to dispute resolution such matters as they see fit in accordance with Clause 9.
- 8.5. Provided the Account contains the Required Financial Security Amount (as may be reduced by previous Quarterly Drawdowns) and the Buffer Amount less the previous Quarter underspend, the Statutory Authorities shall facilitate the transfer to Lisheen of the Requested Amount within 5 days of approval of the Quarterly Report in accordance with Clause 8.3. or the decision under Clause 9.
- 8.6. Monies drawn down under this Clause 8 shall be regarded as unspent until such time as Lisheen has provided the Quarterly Report in respect of the expenditure of such monies and the Statutory Authorities have confirmed their approval of same.

9. DISPUTE RESOLUTION

- 9.1. On execution of this Agreement, each of the Statutory Authorities shall nominate a Senior Person (and substitute) to conduct an internal review of any determination made by that Statutory Authority under this Agreement in the event that such a review is requested by Lisheen. It is agreed that such Senior Person shall not have been directly or indirectly involved in relation to any subject matter of this Agreement.
- 9.2. If Lisheen wishes to obtain a review of the decision or determination of a Statutory Authority, Lisheen shall write to the nominated Senior Person in the relevant Statutory Authority stating the issue on which it seeks a review.
- 9.3. The relevant Senior Person shall review the matter and shall have regard to the Draft Annual Review Statement, any current Annual Review Statement, the Programme of Works, the Quarterly Report and any associated documentation considered relevant to the matter.
- 9.4. The Senior Person may consult informally with such person(s) as he/she may consider appropriate, and may call a hearing of all Parties to consider the matter and any issues arising.
- 9.5. The Senior Person shall within 2 weeks of receipt of the request issue his/her decision or call the hearing as the case may be and, if a hearing is called, shall issue his/her decision within 2 weeks of the hearing or such longer period as may be agreed by the Parties. This decision shall be binding on the parties involved in the review and shall be implemented accordingly.
- 9.6. The provisions of this Clause are without prejudice to any judicial review proceeding entitlement which may subsist.

10. NOTICES AND APPOINTMENT OF COORDINATING AUTHORITY

- 10.1. Each Statutory Authority appoints the EPA as Co-ordinating Authority only for the purposes expressly set out in this Agreement. It is acknowledged that this is to facilitate the efficiency of the communications process between the Parties but that EPA is not empowered to perform any functions vested in other Statutory Authorities.
- 10.2. Any demand, notice or other communication to be given in connection with this Agreement will be given in writing and will be given by personal delivery, or by registered mail addressed to the recipient as follows:

10.2.1. To Lisheen:

2 December 2015

General Manager
The Lisheen Mine
Killoran
Moyne
Co. Tipperary
Facsimile No. 0505 45701

10.2.2. To the Environmental Protection Agency

Environmental Protection Agency
Regional Inspectorate
Inniscarra
Co Cork
Facsimile No. 021 487 5545

10.2.3. To the Local Authority

Director of Services, Planning Section
Tipperary County Council
Civic Offices
Limerick Road
Nenagh
Co Tipperary

10.2.4. To the Minister for Communications, Energy and Natural Resources

Principal Officer
Exploration & Mining Division
Minister for Communications, Energy and Natural Resources
19-31 Adelaide Road
Dublin 2
Facsimile No. 01 660 9627

- 10.2.5. or to such other addressees as may be designated by notice given by any Party to the other Parties. Any demand, notice or other communication given by personal delivery or by registered post will be conclusively deemed to have been given on the day of actual delivery thereof, even if given outside office hours and, if given on a Saturday, Sunday or Bank Holiday, to have been given on the next business day. If the Party giving any demand, notice or other communication knows or ought reasonably to know of any difficulties with the postal system that might affect the delivery of mail, any such demand, notice or other communication may not be mailed but must be given by personal delivery or by electronic communication or facsimile, followed in either case by telephone call from the sender to confirm receipt.

11. FINAL MINE SITE CLOSURE COMPLETION CERTIFICATE

- 11.1. As soon as reasonably practicable but in any event within 3 months of completion of all the Mine Closure Works specified in the Mine Closure Plan to the satisfaction of the Statutory Authorities and submission of the final validation report in accordance with Clause 10.2.7 of the IPC Licence, the Statutory Authorities shall issue to Lisheen a Final Mine Site Closure Completion Certificate certifying that all Mine Closure Works have been completed to the satisfaction of the Statutory Authorities for the purpose of the relevant Planning Permission, IPC Licence and/or State Mining Lease and that Lisheen has no further liability or obligations under the Planning Permission, IPC Licence and/or State Mining Lease in respect of the Mine Closure Plan or mine closure and rehabilitation (but excluding aftercare).
- 11.2. Nothing in this Agreement relates to or creates any obligations in relation to aftercare, without prejudice to the relevant conditions of the IPC Licence in force at the time of issue of the Final Mine Site Closure Completion Certificate.

12. INCONSISTENCY

- 12.1. If any inconsistency or incompatibility between this Agreement and the Conditions is found to exist, the Conditions shall prevail and this Agreement, shorn of those provisions which give rise to such incompatibility shall remain in force pending the conclusion of the process at Clause 12.2.
- 12.2. Without prejudice to Lisheen's obligations to comply with the Authorisations (as amended, reissued or revised from time to time) the Parties agree to enter into negotiations to amend or replace this Agreement to the extent required to enable Lisheen to comply with any amended Conditions or any decision of the EPA on any application for or issue of a new or revised IPC Licence.
- 12.3. To the extent that as a result of any amendment to Conditions after the date of this Agreement any such inconsistency or incompatibility arises, then Clauses 12.1 and 12.2 shall apply.
- 12.4. Lisheen acknowledges that this Agreement does not give rise to any legitimate expectation on its part that a Statutory Authority will determine any future licence review of an Authorisation in a particular manner.

13. LAW AND JURISDICTION

- 13.1. This Agreement shall be governed by and construed to take effect in all respects in accordance with the laws of Ireland and the parties submit to the jurisdiction of the Irish Courts in connection with any disputes or proceedings in connection with this Agreement.
- 13.2. This Agreement may be executed in counterparts and this has the same effect as if the signatures on the counterparts were on a single copy of this Agreement. The Agreement will not be effective until each Party has executed at least one counterpart.

14. AMENDMENTS AND WAIVERS

- 14.1. No amendment to this Agreement will be valid or binding unless set forth in writing and duly executed by all of the Parties hereto. No waiver of any breach of any provision of this Agreement will be effective or binding unless made in writing and signed by the party purporting to give the same and, unless otherwise provided, will be limited to the specific breach waived.
- 14.2. No delay, omission or forbearance by a Party in exercising any right, power, privilege or remedy under this Agreement shall operate to impair, or be construed as a waiver of, such right, power, privilege or remedy. Any single or partial exercise of any such right, power, privilege or remedy shall not preclude any further exercise thereof or other right, power, privilege or remedy.

15. ENTIRE AGREEMENT

- 15.1. Nothing in this agreement shall be construed as negating the parties' statutory obligations or requirements under any enactments or regulations.

SCHEDULE 1
ANNUAL REVIEW PROCEDURE

Action	Action completion date	Week No
Submission by Lisheen of Draft Annual Review Statement to Statutory Authorities (Clause 6.2 and 7.1)	14 January or as soon as possible thereafter	2
Statutory Authorities consider and review components within the Annual Review Statement	Between 14 January and First Annual Review Meeting	3 - 4
First Annual Review Meeting of Mine Closure Committee to discuss Draft Annual Review Statement – Lisheen given opportunity to make presentations and representations in respect of the Draft Annual Review Statement	28 January or as soon as possible thereafter	4
Clarifications/further information period/further interim review meetings	28 January – 21 February	4 – 7
Statutory Authorities submit their determinations to Coordinating Authority	28 February	8
Coordinating Authority forwards Statutory Authorities' Determinations to Lisheen	7 March	10
Final Annual Review Meeting to formally present Statutory Authorities' Determinations to the Mine Closure Committee	14 March	11
Lisheen updates Draft Annual Review Statement to reflect Determinations of Statutory Authorities, and submits revised Draft Annual Review Statement to Coordinating Authority	28 March	13
Confirmation of Formal Approval by Statutory Authorities	7 April	14

All steps apart from the first may take place earlier if the parties are ready.
Meetings may be replaced by correspondence if parties agree.
Deadlines may be extended by agreement.

SCHEDULE 2

CERTIFICATE OF FAILURE TO COMPLY

(Clause 5.3)

To: Account Bank:

cc. [Lessees]

Mine Closure and Rehabilitation Agreement dated [], 2013 between (i) Vedanta Lisheen Mining Limited, Killoran Lisheen Mining Limited and Lisheen Milling Limited (ii) Tipperary County Council (iii) The Minister for Communications, Marine and Natural Resources and (iv) the Environmental Protection Agency ("Agreement")

We refer to the Agreement and to the Account Bank mandate between the Account Bank and the Parties to the Agreement

1. In accordance with Clause 5.2.2 of the Agreement we hereby certify that:
 - 1.1. Lisheen has failed to carry out the Mine Closure Works in accordance with the current Mine Closure Plan (as updated from time to time) (insofar as is within its reasonable control); and
 - 1.2. The Statutory Authorities have served a written notice to Lisheen specifying in detail the failure and requiring Lisheen to remedy the failure (or produce within 60 days a detailed programme for remedy where that was required) and Lisheen has failed to remedy the failure (or failed to produce a detailed programme and plan for remedy) within 60 days of receipt of the written demand from all of the Statutory Authorities or failed to comply with the agreed remedy programme within the time agreed by the Statutory Authorities; or
 - 1.3. Insolvency proceedings have been commenced in relation to Lisheen, and not discontinued.

Accordingly Clause 5.2 of the Agreement is operative and the authorisation of Lisheen for withdrawals from the Account is not required.

2. Accordingly we hereby request withdrawal from the [Account] of an amount of €[] to be used by us to procure the proper carrying out of Mine Closure Works.
3. Please transfer the amount of €[] to [Bank], [account number []], [sort code].

For and on behalf of
Tipperary County Council
(Authorised Signatory)

For and on behalf of
Environmental Protection Agency
(Authorised Signatory)

2 December 2015

For and on behalf of
Minister for Communications, Energy and Natural Resources
(Authorised Signatory)

2 December 2015

IN WITNESS whereof the parties hereto have executed this Deed the day and year first above written.

PRESENT when the Common Seal
of **VEDANTA LISHEEN MINING LIMITED**
was affixed hereto:-

Kaim Nolan
[Signature]

Director:

Director/Secretary:



PRESENT when the Common Seal
of **KILLORAN LISHEEN MINING LIMITED**
was affixed hereto:-

Kaim Nolan
[Signature]

Director:

Director/Secretary:



PRESENT when the Common Seal
of **LISHEEN MILLING LIMITED**
was affixed hereto:-

Kaim Nolan
[Signature]

Director:

Director/Secretary:



PRESENT when the Official Seal
of **TIPPERARY COUNTY**
COUNCIL was affixed hereto:-

[Signature]
Chief Executive

[Signature]
Nominated Officer

[Signature]
Cathaoirleach / Nominated Member

2 December 2015

The Official Seal of
**THE MINISTER FOR COMMUNICATION, ENERGY AND NATURAL
RESOURCES**

Was affixed hereto and was

Authenticated by the

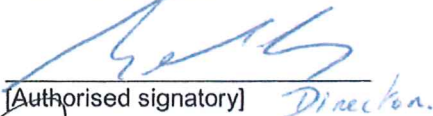
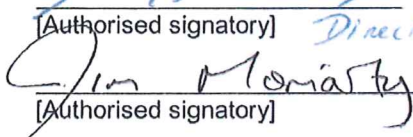
Signature of:-



A person authorised by Section 15 (1) of
The Ministers and Secretaries Act, 1924
To authenticate the seal of the said
Minister

PRESENT when the Seal of the
**ENVIRONMENTAL
PROTECTION AGENCY**

Was affixed hereto:


[Authorised signatory] *Director.*
[Authorised signatory]

2 December 2015

The Official Seal of
**THE MINISTER FOR COMMUNICATION, ENERGY AND NATURAL
RESOURCES**

Was affixed hereto and was

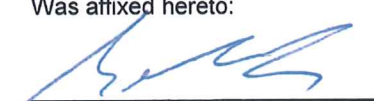
Authenticated by the

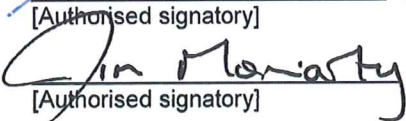
Signature of:-

A person authorised by Section 15 (1) of
The Ministers and Secretaries Act, 1924
To authenticate the seal of the said
Minister

PRESENT when the Seal of the
**ENVIRONMENTAL
PROTECTION AGENCY**

Was affixed hereto:


[Authorised signatory] Gerard O'Leary
Director


[Authorised signatory]

fn

Appendix 1.10

Vedanta Technical Standard – TS 17 Site Closure

Technical Standard – Site Closure

Vedanta Resources Plc

Sustainability Governance System


Technical Standard

Site Closure

Technical Standard – Site Closure

Standard Title:	Site Closure	Date of Revision	06/04/2012
Standard:	VED/CORP/SUST/TS 17	Revision:	v.1

Document Issue and Revision History		
DATE	REVISION NUMBER	CHANGE SUMMARY
06/04/2012	v.1	Initial issue.

Authorised by:	Tony Henshaw
Signature	
Position:	Chief Sustainability Officer

Confidentiality

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Technical Standard – Site Closure

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Technical Standard – Site Closure

1. INTRODUCTION

The purpose of this Technical Standard is for Vedanta to develop systems and processes which ensure operations consider sustainability issues before, during and after site closure. Site closure plans shall be developed as early as feasibly possible, ideally in the early development phase of a new site, to identify, minimise or mitigate and manage risks (environmental, socio-economic, reputational and health and safety) associated with site closure. Plans should be agreed with regulatory authorities prior to commencement of operations. Sites shall be left in a condition which minimises adverse impacts on the human and natural environment, and leaves behind a positive legacy that contributes to sustainable development.

2. SCOPE

This Technical Standard is mandatory and applies to all Vedanta subsidiaries, operations and managed sites, including new acquisitions, corporate offices and research facilities and to all new and existing employees. This Standard is applicable to the entire operation lifecycle (including exploration and planning, evaluation, operation and closure).

3. DEFINITIONS

Definitions of key terms used in this document are shown in the following table.

Term	Definition
Closure plan	A document that addresses mine closure planning and includes specific activities, roles and responsibilities, closure criteria and options, timeframes and resource requirements, including aftercare (post completion of closure work).
Competent Person	An individual who has the necessary and sufficient knowledge, skills and experience, as well as the necessary experience to complete their responsibilities safely, effectively and consistently.
Decommissioning	The shut-down and dismantling of a facility, including removal of equipment, buildings and other structures.
Environmental and Social Management System	The structured framework that provides the arrangements for managing the environmental, health, safety and social aspects through the lifetime of the project.
ESIA	Environmental Social Impact Assessment – a formalised process designed to identify, assess and document environmental and social impacts associated with a project, along with the mitigation measures and management arrangements for ensuring such measures are implemented.
Financial provision	Funds held separately from operational funds and reserved to ensure successful implementation of the site closure plan. They should be held within an appropriate financing mechanism, such as a trust fund or bank guarantees, where appropriate and where prior approval of funds by regulators is not required.

Technical Standard – Site Closure

Term	Definition
Grievance	A concern or complaint raised by any stakeholder either affected by or interested in company operations. Both concerns and complaints can result from either real or perceived impacts of a company's operations.
ICMM (International Council on Mining and Metals)	The International Council on Mining and Metals (ICMM) was established in 2001 and seeks to drive performance improvement through its members which comprise 20 mining and metals companies, as well as 30 national and regional mining associations and global commodity associations.
IFC (International Finance Corporation)	Member of the World Bank that finances and provides advice to private sector ventures and projects in developing countries.
Management of change	A systematic process to deal with changes that could impact sustainability risks. Changes can include, but are not limited to, personnel and other resources, plant, equipment, documents, legislation, systems and processes etc. In the context of this Standard, management of change is any change not considered to be a new project.
Operation(s)	A location or activity that is operated by a Vedanta Company and is part of the Vedanta Group. Locations could include mines, refineries, ports or transportation activities, wind farms, oil and gas development sites, offices including corporate head offices, and research and development facilities.
Site closure	The decommissioning, rehabilitation and on-going monitoring associated with an operation after its operational life has ended.
Stakeholder	Persons or groups that are directly or indirectly affected by a project as well as those that may have interests in a project and/or the ability to influence its outcome, either positively or negatively. This can refer to shareholders, lenders, employees, communities, industry, governments and international third parties.
Stakeholder Engagement	<p>An umbrella term encompassing a range of activities and interactions between Vedanta and its stakeholders over the life of a project that are designated to promote transparent, accountable, positive, and mutually-beneficial working relationships.</p> <p>Stakeholder engagement includes stakeholder identification and analysis, information disclosure, problem/conflict anticipation and prevention, ongoing consultation, formation of partnerships, construction of grievance resolution mechanisms, negotiated problem solving, employee involvement in project monitoring, regular reporting forums and procedures, and other related management activities.</p>

Technical Standard – Site Closure

Term	Definition
Sustainability issues	These are issues that Vedanta and its operations are required to manage on an on-going basis and which are part of the Vedanta sustainability model (responsible stewardship, stakeholder engagement and adding value). Issues include, but are not limited to, health, safety, environmental and social risk management, community relations, human rights, biodiversity, water management, HIV/Aids, product stewardship, stakeholder engagement, suppliers and contractor management etc.
Vedanta Company	A subsidiary of Vedanta Group either fully or majority owned that has its own management structure (e.g. Hindustan Zinc Limited, Vedanta Aluminium Limited, Sterlite Industries limited, etc.)
Vulnerable Groups	Individuals or groups within the project area of influence who could experience adverse impacts more severely than others based on their vulnerable or disadvantaged status. This vulnerability may be due to an individual's or group's race, sex, language, religion, political, or other opinion, national or social origin, property, birth or other status. In addition other factors should be considered such as gender, ethnicity, culture, sickness, physical or mental disability, poverty or economic disadvantage, and dependence on unique natural resources.

4. PROGRAMME REQUIREMENTS

All Vedanta subsidiary companies and operations are required to follow the requirements listed below with regards the mechanisms for decommissioning and site closure. All Vedanta subsidiary companies and operations are also required to ensure the mechanisms for undertaking decommissioning and site closure meet the requirements of international standards (e.g. IFC development/performance standards, IFC EHS Guidelines and ICMM principles) and impact assessment and consultation processes where these apply.

4.1. General Requirements

- a) Meet Vedanta Group sustainability policies and standards.
- b) Manage all their operations throughout their full lifecycle in a manner that ensures the optimisation of post closure outcomes across the environmental, social and economic needs of sustainable development.
- c) Protect and enhance the reputation of Vedanta as a responsible company and preserve shareholder value
- d) Comply with relevant regulatory requirements
- e) Identify and mitigate environmental and socio-economic impacts
- f) Protect the health, safety and welfare of employees and the general public

Technical Standard – Site Closure

- g) Return sites to a state comparable to conditions before operations commenced or otherwise to a state acceptable to society.
- h) Where possible promote a sustainable use for the site after closure, which leaves a positive legacy for both the local communities and the environment. This should be determined through comprehensive multi-stakeholder engagement.
- i) Where possible operations should implement progressive closure to demonstrate the approach being adopted. This has the benefit of availing of the skill sets available during the operational phase and to ensuring that the site risk is as low as possible prior to closure.

The Site Closure technical standard shall also meet the requirements of the *IFC Performance Standards and EHS guidelines*. These requirements are summarised as follows:

- *IFC Environmental, Health, and Safety Guidelines for Mining*. A Mine Reclamation and Closure Plan should be drafted prior to the start of operations, which should incorporate both physical rehabilitation and socio-economic considerations through the project lifecycle. The closure plan should promote a beneficial future land use and include appropriate after-care and monitoring. The closure plan for the site should be regularly updated and refined to reflect changes in conditions and circumstances. Funding should be made available to cover closure costs, including a provision for early or temporary closure, and it should be kept either by a cash accrual system or a financial guarantee. The site must be left in a stable state, with appropriate steps taken to ensure the physical, chemical and ecological integrity of the site.
- *General EHS Guidelines: Construction and Decommissioning*. Environmental impacts arising from decommissioning activities include those relating to noise and vibration, soil erosion, air quality, solid wastes, hazardous materials, wastewater discharges and contaminated land. Occupational Health and Safety considerations include over-exertion, slips and falls, working from heights, being struck by objects, moving machinery, dust and confined spaces and excavations. Community health and safety considerations include general site hazards, disease prevention and traffic safety.

The International Council on Mining and Metals (ICMM) also provides some useful guidance:

- *Planning for Integrated Mine Closure: Toolkit*. This document provides a toolkit intended to promote a more disciplined approach to closure planning, and to increase the uniformity of good practice across the sector. It consists of 13 separate tools covering different areas of the mine closure process, along with detailed guidance, and can act as a useful reference to mine closure activities.
- *Guidance Paper: Financial Assurance for Mine Closure and Reclamation*. This guidance paper sets out the increasing requirements for the financing of mine closure to be provided and guaranteed up front at the development stage. It provides guidance on how to establish financial resources for mine closure effectively, and the types of financial mechanisms through which this can be delivered.

4.2. Closure planning

Proactive closure planning and implementation is critical to minimise the need for major modifications near to closure and any post-closure liabilities that might otherwise arise.

Technical Standard – Site Closure

- a) Operations shall ensure that closure and post-closure activities are considered as early as possible in the planning and design stages, and before operational activities begin, so that sites are designed, constructed and operated with closure in mind.
- b) This process shall be underpinned by the development and maintenance of a closure plan specific to each site, a standalone document which should consist of, as a minimum, the following:
 - The closure planning steps and activities required.
 - Assignment of roles and responsibilities for each action.
 - Schedules and timeframes for each action.
 - Resources required and where these will come from.
 - List of 'success criteria' which will be used to demonstrate to stakeholders that the closure plan has been successful.
 - Communication plan for internal and external stakeholders.
- c) Operations must engage with regulators to ensure that there is agreement on the detail of the plan and that there is a mechanism for the operation to 'walk away' from the site following the successful implementation of the plan.
- d) In the case of an acquisition of an existing operation, the closure plan for the site shall be reviewed and updated as soon after the acquisition as possible and shall meet the requirements of the Vedanta Management Standard MS08 *Acquisitions, Divestment and Joint Ventures Due Diligence*.
- e) The operations shall consider fully the socio-economic impacts and make detailed plans to address them, including transitional plans and hand over strategies for company towns, infrastructure projects and social services developed from the operations, and minimising the impacts of job losses directly from the site and indirectly through ancillary services that have built up around the site.

4.3. Developing the closure plan

- a) The closure plan shall be developed based on the following:
 - A detailed knowledge base of the operating environment, including socio-economic, cultural and environmental information, as well as legal and regulatory requirements for closure.
 - An evaluation of alternative closure options against selection criteria (including environmental, reputational risk, socio-economic, community), with documentation of why the preferred option was selected.
 - An assessment of the key threats and opportunities of the preferred closure option, together with any uncertainties and the additional work required to resolve them.

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- The key risks associated with specific aspects of closure must be identified (e.g. the risk of acid mine drainage etc.). Site specific solutions must be developed to address these risks.
 - A comprehensive consultation process with both internal and external stakeholders and a detailed assessment made to ensure all relevant stakeholders have been identified and plans developed to address stakeholder needs, aspirations and concerns.
- b) The closure plan shall include objectives and targets for the closure which reflect corporate, regulatory and stakeholder requirements, and should be developed in line with the Vedanta Management Standard MS05 *Objectives, Targets and Performance Improvement*.
 - c) Contingency plans shall be made for premature closure of the site, where the site is closed in advance of the scheduled life of its operation due to unforeseen circumstances (such as a change in economic conditions).
 - d) The closure plan shall comply with all legal and regulatory requirements that apply to the business or site, along with sustainability-related international standards and any other requirements to which Vedanta subscribes.
 - e) The closure plan shall be designed by a multi-disciplinary team of competent persons, and approved by persons with appropriate seniority.
 - f) Training shall be provided where sufficient skills and experience are not available, and external consultants can be used where required.

4.4. Financing site closure

- a) A financial provision for closure costs shall be maintained that is sufficient to ensure the successful implementation of the closure plan, whether under a planned or premature closure.
- b) The provision shall cover the best estimates of all post closure costs, whether one-off or ongoing.
- c) It shall be held separately from operational funds, via an appropriate method. The *IFC EHS Guidelines for Mining* states that funding should be provided by either a cash accrual system (fully funded escrow accounts or sinking funds) or a financial guarantee provided by a reputable financial institution. The ICMM guidance paper *Financial Assurance for Mine Closure and Reclamation* reviews a number of different funding options, including third-party guarantee, cash deposit, letter of credit, trust fund and insurance policy.
- d) The provision shall be determined using best and most recent estimates of expected costs, and shall be fully auditable.
- e) The provision shall be reviewed on an annual basis, and updated in line with changes to the closure plan, so that the accuracy of the provision increases as the closure date approaches and the closure plan becomes more detailed.
- f) A financial contingency shall be provided to reflect any uncertainties existing within the current closure plan.

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4.5. Communicating the closure plan

- a) The site closure plan shall be communicated to all relevant stakeholders and authorities in a timely, consistent and transparent manner, and used in stakeholder engagement activities where appropriate.
- b) Agreement shall be reached with the relevant government agencies to ensure their approval of the preferred closure plan.
- c) Employees shall be consulted throughout the process, made clearly aware of the closure plans, and kept informed of any updates or amendments to the closure plan and timeframes.
- d) Engagement with local communities in closure plan development to ensure that:
 - The expectations of local communities are understood and managed effectively.
 - The dependency of local communities on the operation is managed and reduced through the life cycle of the operation.
 - Communities are made aware of any residual impacts that will arise from decommissioning and post closure.
 - Consider the possibility, where appropriate, to offer communities a role in the management of the aftercare of parts of the site, which can be of value.

4.6. Maintaining the closure plan

- a) The closure plan and associated financial cost estimating shall be refined and updated on a regular basis, to meet changing circumstances in mine development and operational planning, changes to the environmental and social conditions, changing stakeholder expectations, and to take account of new techniques / technologies made available.
- b) Reviews shall be carried out by a multidisciplinary team with appropriate skills and experience, and include input from key stakeholders.
- c) Responsibility for the ongoing management of the closure plan must be clearly allocated, and it must cover all aspects of the closure process.
- d) The closure plan shall become more detailed as the date for site closure draws nearer, with increasingly accurate scoping of all work required, and a fully detailed and costed closure plan shall be put in place at least five years prior to closure.

4.7. Decommissioning and closure implementation

- a) Closure activities should be implemented in line with the final closure plan, ensuring that all closure objectives and targets are met.
- b) Each Vedanta Company must ensure that adequate resources are made available to meet the objectives and targets within the agreed timeframe, including:
 - Personnel resources

Technical Standard – Site Closure

- Technical resources
- Financial resources
- c) Responsibility for the implementation of each part of the closure plan shall be clearly assigned, establishing a clear line of accountability and authority.
- d) Progress against the closure plan shall be communicated to all internal stakeholders and relevant external stakeholders on a regular and transparent basis.
- e) The health and safety and welfare of employees and contractors shall be considered and any risks addressed. In addition to addressing risks that arise directly from carrying out the site closure activities, consideration must also be given to the risk of the site's health and safety procedures becoming less robust during the period that the operations unwind, and any necessary actions taken to mitigate this risk.
- f) All staff involved in implementing the closure plan shall be provided with the training necessary to carry out their activities effectively and safely.
- g) Decommissioning and closure shall comply with all legal and regulatory requirements that apply to the business or site, along with sustainability-related international standards and any other requirements to which Vedanta subscribes.
- h) The implementation of the closure plan shall be monitored closely to ensure that it is progressing effectively and in line with the overall plan, and that the objectives and targets for successful closure are being met.

4.8. Post-closure considerations

- a) Every effort shall be made to return the site to a state comparable to conditions before operations commenced or otherwise to a state acceptable to society.
- b) A positive and lasting legacy should be sought from the site after closure, with the promotion of a sustainable use for the land that will benefit both local communities and the surrounding environment.
- c) Community involvement and ownership of the post operational outcomes shall be promoted.
- d) Future public health and safety shall be considered, and any potential risks addressed, e.g. unguarded shafts and other openings permanently blocked to the public, drains and diversion ditches maintained after closure, and ongoing protection of drinking water supplies from chemical leaching.
- e) Adequate support and training shall be provided to staff, and every effort made to assist in finding them alternative employment.
- f) Post-closure activities shall comply with all legal and regulatory requirements that apply to the business or site, along with sustainability-related international standards and any other requirements to which Vedanta subscribes.
- g) Post closure activities, after decommissioning, demolition and rehabilitation has been completed, shall include a period of monitoring, care and maintenance. The duration of

Technical Standard – Site Closure

post-closure monitoring should be defined on a risk-based approach, although the *IFC Environmental, Health, and Safety Guidelines for Mining* suggests that a minimum of five years after closure is usually required.

5. ROLES AND RESPONSIBILITIES

Vedanta Resources, subsidiaries, businesses, operations and sites shall ensure that roles and responsibilities for implementing and complying with this Standard are allocated. Key responsibilities shall be included in job descriptions, procedures and/or other appropriate documentation.

6. COMPLIANCE AND PERFORMANCE

Each Vedanta operation shall ensure it complies with the requirements of this standard. Performance against meeting the requirements of this Standard shall be assessed periodically, documented and, where required, reported to Vedanta Group.

The assessment of performance shall include setting and reporting on key performance indicators (KPIs) where these have been established at Vedanta Group, Company or local level. The evaluation of performance shall include, as a minimum, confirmation that:

- Closure and post-closure activities are considered as early as possible in the planning and design stages for each site.
- Each site within the Group has developed and is maintaining a site specific closure plan.
- A financial provision for closure costs has been established and is being reviewed on a regular basis.
- The closure plan has been communicated to all relevant stakeholders and authorities in a timely, consistent and transparent manner.
- The closure plan is being reviewed and updated on a frequency that is appropriate for the nature of the operation (previously defined), and responsibility for the ongoing management of the closure plan shall be clearly allocated.
- For closing sites, that closure activities are being implemented in line with the final closure plan, ensuring that all objectives and targets for successful site closure are being met.
- Every effort is being made to return the site to a state comparable to conditions before operations commenced or otherwise to a state acceptable to society.
- A positive and lasting legacy is being sought for the site after closure, with the promotion of a sustainable use for the land that will benefit both local communities and the surrounding environment.
- Post closure monitoring, care and maintenance activities have been clearly set and as appropriate being undertaken in line with the defined plans.

Technical Standard – Site Closure

7. SUPPORTING INFORMATION

Reference	Description
ICMM (International Council of Mining and Metals)	<p>The ICMM has produced and published good practice guidance on a range of health, safety, environment and community issues relating to mining.</p> <p>http://www.icmm.com/library</p> <p>Of particular relevance are the following two guides:</p> <p>http://www.icmm.com/page/1232/guidance-paper-financial-assurance-for-mine-closure-and-reclamation</p> <p>http://www.icmm.com/page/9568/planning-for-integrated-mine-closure-toolkit</p>
International Finance Corporation EHS Guidelines	<p>The <i>IFC Environmental, Health, and Safety Guidelines for Mining</i> provide useful information on site closure:</p> <p>http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_Mining/\$FILE/Final+-+Mining.pdf</p> <p>The <i>General EHS Guidelines: Construction and Decommissioning</i> also provide some more general information:</p> <p>http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS_4/\$FILE/4+Construction+and+Decommissioning.pdf</p>

8. REVIEW

This Technical Standard shall be periodically audited and reviewed to determine its accuracy and relevance with regard to legislation, education, training and technological changes. In all other circumstances, it shall be reviewed no later than 12 months since the previous review.

9. RELATED DOCUMENTATION

A summary of the references and supporting documents relevant to this document is provided in the following table.

Doc. Ref.	Document name
MS 03	New Projects, Planning Processes and Site Closure
MS 05	Objectives, Targets and Performance Improvement

Technical Standard – Site Closure

Doc. Ref.	Document name
MS 07	Management of Change
MS 08	Acquisitions, Divestment and Joint Venture Due Diligence
TS 05	Stakeholder Engagement