LYDIAN ARMENIA

Amulsar Gold Project

# Environmental and Social Management Plan (ESMP)

## Footprint Management Plan

Version 3
March 2018

**Revision History**

| Revision | Date | Details | Prepared |
|---|---|---|---|
| V1 | February 2016 | Draft for v10 ESIA | AJB |
| V2 | June 2016 | Update, based on consultations and review | WAI |
| V3 | March 2018 | Re-formatted and revised | AJB |

**Approvals**

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**Glossary**

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|---|---|
| AQNVMP | Air Quality, Noise and Vibration Management Plan |
| ARDMP | Acid Rock Drainage Management Plan |
| BMP | Biodiversity Management Plan |
| BRSF | Barren Rock Storage Facility |
| CHMP | Cultural Heritage Management Plan |
| EMP | Environmental Monitoring Plan |
| ESIA | Environmental and Social Impact Assessment |
| ESMP | Environmental and Social Management Plan |
| ESMS | Environmental and Social Management System |
| HLF | Heap Leach Facility |
| Lydian | Lydian Armenia CJSC |
| MP | Management Plan |
| RA | Republic of Armenia |
| SOP | Standard Operating Procedure |
| SWMP | Surface Water Management Plan |
| TMP | Transport Management Plan |

# 1 INTRODUCTION

This Footprint Management Plan (FMP) is a component of the Environmental and Social Management Plan (ESMP) of the Amulsar Gold Project (the Project) being developed by Lydian Armenia CJSC (hereafter Lydian Armenia), a subsidiary of Lydian International Ltd. The ESMP is being implemented via the Project Environmental and Social Management System (ESMS) which has been put in place to manage the environmental and social (E&S) aspects of the Project.

For an introduction to the Project, the E&S standards it is committed to, and the background to, and operation of, the ESMS, please refer to the **0-00-MAN-ENV-82043 ESMS Manual**.

## 1.1 OBJECTIVES

The FMP defines how the physical footprint of the Project will be managed during construction and operation of the mine. The FMP applies to all aspects of the Project, including temporary and permanent land take. It addresses management procedures and application of relevant mitigation measures identified in both the Project Environmental Impact Assessment (EIA) undertaken for Republic of Armenia state approvals, and the Environmental and Social Impact Assessment (ESIA) undertaken to comply with good international industry practice.

## 1.2 ROLES AND RESPONSIBILTIES

All Project workers have a responsibility to control the Project footprint. For details of specific roles and responsibilities please refer to the **0-00-MAN-ENV-82043 ESMS Manual**.

# 2 SCOPE, BACKGROUND AND CONTEXT

Footprint management requirements apply to all activities undertaken during construction, operation and closure of the Project. 'Footprint' as defined in this FMP refers to the physical area occupied by Project facilities and infrastructure, and the operations that occur within and around them. It relates to impacts not only on the land itself, but also to other media including air and water. There is therefore a degree of overlap with other management plans including:

- Air Quality, Noise and Vibration Management Plan (AQNVMP);
- Cultural Heritage Management Plan (CHMP);
- Biodiversity Management Plan (BMP);
- Surface Water Management Plan (SWMP);
- Transport Management Plan (TMP); and
- Mine Reclamation, Closure and Rehabilitation Plan (MRCRP).

(For reference numbers of the latest versions of the above documents, please refer to the **0-00-MAN-ENV-82043 ESMS Manual**.)

This FMP is focused on requirements to minimise and control ground disturbance and the occupation of land; to manage facility and equipment siting, and vehicle movements; to manage and handle soil; and to manage run-off and control erosion. It also addresses dust, noise, visual and biodiversity impacts related directly to footprint issues.

The FMP does not address the Project's carbon footprint (see the Carbon and Energy Management Plan (CEMP) for this aspect).

# 3 REQUIREMENTS

The Project ESIA addresses a fixed Project footprint including the mine pit outlines, process areas, infrastructure corridors, and haul and access roads. This footprint will be clearly identified on Project site drawings, and will be marked out on site as appropriate. No access will be permitted to areas outside the Project footprint except as authorised according to the procedures set out in this FMP.

The primary instrument for implementing the FMP is the **0-00-PRO-ENV-82011 Standard Operating Procedure (SOP) for Land Clearance Authorisation**. No work on, or clearance of, land is permitted without this procedure having been completed.

Several subsidiary procedures are crucial for the implementation of the FMP, including:

- SOP for Vegetation and Topsoil Strip (0-00-PRO-ENV-82080);
- SOP for Erosion & Sedimentation Control (0-00-PRO-ENV-82137);
- SOP for Preventative Maintenance (0-00-PRO-ENV-82079);
- SOP for Air Quality Management (0-00-PRO-ENV-82132);
- SOP for Noise Management (0-00-PRO-ENV-82133);
- Environmental Requirements for Hazardous Substance Handling (0-00-PRO-ENV-82013);
- SOP for Waste Management (0-00-PRO-ENV-82081);
- SOP for Hydrocarbon Spillages (0-00-PRO-ENV-82072).

The Land Clearance Authorisation procedure applies to work within the Project's Build Permit Area. For Project-related work which must take place outside the Build Permit Area, there is a separate authorisation process, the **0-00-PRO-ENV-82075 SOP for Environmental Controlled Access,** which is designed to ensure that the Project's commitments are fulfilled even for work outside the permitted footprint.

Specific requirements for footprint management have been extracted from the Project ESIA via the Commitments Register, and are listed in Table 1 grouped into the following categories:

- Ground disturbance;
- Occupation of land;
- Facility and equipment siting, and vehicle movements;

- Soil management and handling;
- Dust and noise control;
- Run-off management and erosion control;
- Visual considerations; and
- Habitat and biodiversity considerations.

The commitments and arrangements listed in Table 1 apply to the occupation of land that has been described in the Project EIA and ESIA. Any additional land requirements that arise during Project execution must be identified at least three months prior to the proposed start date for use of the proposed area(s). The notification must include a preliminary environmental and social assessment, as per **0-00-PRO-ENV-82140 SOP for Environmental and Social Impact Screening**, which is designed to determine whether the work can continue subject to the SOP for Land Clearance Authorisation, or whether formal assessment for national permitting (EIA) or financier requirements (ESIA) is necessary.

Progress towards fulfilling the commitments listed in Table 1 is recorded in the **0-00-OTH-ENV-82158 ESIA Commitments Register Tracker**.

**Table 1: ESIA commitments relevant to footprint management**

| CR ID | Commitment / Action | Additional detail | Project phase | Documentation | Cross-reference to other MPs | Frequency of action | Responsibility | Verification indicator |
|---|---|---|---|---|---|---|---|---|
| ***Ground disturbance*** | | | | | | | | |
| CH01<br>CH04 | Un-surveyed footprint areas may contain as-yet undiscovered archaeological sites. Surface reconnaissance surveys will be conducted in these areas. If additional sites are found the mitigation measures of avoidance or excavation will be implemented at these sites to mitigate and manage the potential impacts. The Project will take a staged approach to evaluating which sites will require full excavation and the extent of those excavations. Potential sites within the footprint and 50m of proposed Project components will be subject to an archaeological field evaluation through a programme of limited and targeted excavation. | Any area to be disturbed must be "cleared" by the cultural heritage consultant. Clearance may involve archaeological excavation. This exercise must therefore be undertaken well in advance (weeks or months) of planned construction activities. Consultation with the cultural heritage consultant should be undertaken to ensure that adequate time is allowed for the clearance work. | P<br>Const | Formal sign-off from CH consultant | CHMP | As required | Environmental Manager | |
| BIO05 | Pre-construction checks (surveys) will be carried out immediately prior to ground disturbance to check for important biodiversity and confirm that the baseline as reported in the ESIA has not changed significantly. | "Immediately prior" means one or two days; these surveys should therefore be undertaken as part of the pre-construction land clearance permitting process. | Const | Land Clearance Authorisation | BMP | As required | Environmental Manager | |
| BIO73 | Caucasian endemic plant species including *Fritillaria armena*, *Phelypaea tournefortii* and *Juniperus polycarpu*, will be translocated if to be affected by earthworks. | This is an informal action; permits from the RA government are not required. | Const | | BMP | As required | Biodiversity Officer | |
| SL02<br>SL09<br>BIO17<br>LV10 | Areas to be disturbed during construction and operation (including soil storage areas) will be clearly delineated and marked out in advance, and encroachment outside these areas will not be permitted. Haul routes between soil strip and stockpile areas will be clearly defined. Vehicular and foot traffic will be restricted to existing roads and paths, and planned access and haul roads, to avoid disturbance of natural vegetation and soils outside the Project footprint. | This is the fundamental rule for footprint management: there will be no encroachment outside the footprint defined in the ESIA. | P, Const, Ops | Construction phase site layout drawings;<br>Land Clearance Authorisation | BMP | Continuous monitoring | Environmental Manager | |
| CH05<br>CH06 | The Chance Finds Procedure will be implemented throughout the construction period, including training of relevant staff and contractors in the recognition, handling and response to archaeological chance finds. Archaeologists will monitor construction sites to guide the recognition of and response to archaeological finds made during ground disturbance. | The cultural heritage consultant must be involved in ground disturbance planning in order to determine if and when a presence on site is required. | Const | | CHMP | As required | Environmental Manager | |

| CR ID | Commitment / Action | Additional detail | Project phase | Documentation | Cross-reference to other MPs | Frequency of action | Responsibility | Verification indicator |
|---|---|---|---|---|---|---|---|---|
| LV52 | Lydian will ensure that a qualified landscape architect visits the Project site at suitable regular intervals in accordance with an agreed schedule and the environmental clerk of works will attend the site whilst the following works are being carried out: identification of vegetation to be protected or removed; topsoil stripping; earthworks and grading of landform; breaking out redundant surfaces; subsoil ripping; spreading of soil; cultivation; preparation for seeding and planting; and seeding and planting. | This requires advance planning and the involvement of a landscape architect and/or clerk of works. The construction team should be fully aware of this requirement. | Cost, Ops, Clo | | | As required | Environmental Manager | |
| ***Occupation of land*** | | | | | | | | |
| BIO08<br>LDUS01<br>LV48 | As a fundamental design principle, the footprint of Project infrastructure and the areas of land to be cleared will be minimised. Opportunities for further footprint reduction will be sought during the design process. Each of the proposed Project components will be subject to detailed engineering design iterations in consultation with the relevant specialist consultants in an attempt to reduce impacts. In particular, it is considered that a number of identified landscape and visual impacts can be mitigated further in this way. | This is a design-stage commitment, but it reinforces the importance that the ESIA authors have placed on the need to minimise the Project footprint - and reinforces the need to ensure there is no encroachment outside the footprint. | P | | | Continuous monitoring | Environmental Manager | |
| LDUS02<br>LDUS03<br>LDUS08<br>CHSS36<br>CHSS82<br>BIO63<br>ES02<br>ES05 | Access to land adjacent to the Project-affected area will be maintained where it is safe to do so. Land will only be fenced off when necessary and crossings will be put in place to maintain access over linear features. Monitoring of land users will be undertaken to assess any impacts caused by restricted access to hay meadows, pasture and grazing land, with identification of additional mitigations as necessary. Access to good quality grazing and hay meadows, hay production and hay prices will be monitored for Gndevaz producers. | Related to the above, this reinforces the need to limit disruption to local people's movements and activities as much as possible. This applies particularly to herders and foragers. There is a responsibility to monitor the situation and to take action if local people are impacted (this need may arise via the grievance mechanism). | P, Const, Ops | | LALRP<br>BMP | Continuous monitoring | Social Manager | |
| SL07 | To a practical extent the footprint of temporary facilities, such as construction access roads and laydown areas, will be designed to coincide with longer term project requirements to reduce disturbance and long term impacts to soils. | This is a design-phase commitment, to be verified during construction. | P, Const | Construction phase site layout drawings | | | | |
| BIO09 | Any new access roads required will be designed to minimise habitat fragmentation, barrier effects and induced access to previously undisturbed areas. | In the event that new access roads are needed, formal assessment will be required (the land clearance procedure is not appropriate for any ground disturbance that has not been subjected to EIA/ESIA). | P, Const, Ops | | BMP | | Environmental Manager | |
| BIO02<br>BIO03<br>BIO12 | No Project activities will take place in the Arshak set-aside. | The set-aside is a key element of the biodiversity mitigation hierarchy, which will be undermined if Project activities take place therein. This requirement must be actively policed, with awareness training given to all staff to ensure that there is no excuse for anyone straying into the area. | P, Const | | BAP | Continuous monitoring | Environmental Manager | |
| BIO50 | Locations of *Potentilla porphyrantha* plants are marked and recorded. Regular inspection and monitoring will be undertaken to ensure that the markings remain visible and that personnel are aware of the need to safeguard marked rocks. | Prohibited areas should be designated. | P. Const, Ops | | BMP | Continuous monitoring | Environmental Manager | |

| CR ID | Commitment / Action | Additional detail | Project phase | Documentation | Cross-reference to other MPs | Frequency of action | Responsibility | Verification indicator |
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| BIO69 | Reptile diversity (including Red-List species) is greatest on the stony slopes and rocky outcrops to the north and west edge of the proposed HLF. This habitat will be safeguarded as much as possible by controlling incidental damage outside the footprint. Awareness-raising about conservation importance will be employed to combat the deliberate killing of snakes. | Prohibited areas should be designated. | Const, Ops | | BMP | Continuous monitoring | Environmental Manager | |
| CH02 | Known cultural heritage sites will be marked (with high visibility) and avoided when possible. Appropriate buffer zones and no-go areas will be established around known archaeological sites and high-potential areas. | Marking of sites should be undertaken in consultation with the cultural heritage consultant. | P, Const, Ops | | CHMP | | Environmental Manager | |
| NV33 | A 500m restricted area will be established around the pits during blasting events. | This will require careful consideration and planning. Fencing off the 500m zone is impractical (and undesirable from a public access viewpoint). The 500m zone overlaps partially with the Arshak set-aside, in which vehicular access will not be permissible (unless on existing roads). It is therefore likely that foot patrols will be required to ensure no one is within the safety zone. | P, Ops | | AQNVMP | As required | Environmental Manager | |
| ***Facility and equipment siting, and vehicle movements*** | | | | | | | | |
| LV12<br>LV14 | The construction camp, contractors' compounds and laydown/storage areas will be located away from sensitive receptors and visible areas as far as possible. Siting will be designed at the detailed design stage to take account of natural screening provided by topography and existing landforms. | This is a design phase commitment. Monitoring should take place during the construction phase to determine whether any additional (artificial) screening is necessary. | P | | | Continuous monitoring | Environmental Manager | |
| BIO11<br>LV25<br>AQ08<br>GHG2<br>SL04<br>TR07 | Vehicular access to the Project-affected area will be minimised. The majority of workers will arrive on site via bus and limited car parking will be available for employees. Operations will be optimized to limit the number of vehicle movements, minimise equipment idling and vehicle travel distances, and avoid double handling where practical. | This is an important commitment, but is not specific. Monitoring should be employed to look for opportunities for improvement. | P, Const, Ops | | TMP | | Environmental Manager | |
| BIO20 | Vehicles considered to have the potential to introduce invasive plant species or to spread existing invasive plants to areas where they do not currently occur will be washed before entering site or current weed-free locations (wash water to be contained). | This requires advice on invasive weeds control from a biodiversity specialist. | Const, Ops | | BMP | Continuous monitoring | Environmental Manager | |
| ***Soil management and handling*** | | | | | | | | |
| SL01 | Soil will be removed and handled only when sufficiently dry; this generally limits soil operations to between May and October, although the period may be extended if there is no snow cover. | This requirement reflects the sensitivity of the mountain soils. It will require planning and consultation with a soil specialist to ensure that the construction schedule is not disrupted; the construction team must be fully aware. | P, Const, Ops | Land Clearance Authorisation | | | Environmental Manager | |

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| SL03<br>SL05<br>SL06<br>BIO44<br>LV15 | As a general practice and where it is technically feasible, the top 10cm of topsoil will be stripped and stored separately from other soil that is removed. However, there are areas where the abundance of rocks will make soil-stripping impossible. A detailed map will be created in association with engineers to illustrate the areas that can be stripped of soil and those that cannot. Because many alpine plants rarely produce seed and spread vegetatively, turves of species-rich vegetation will be removed prior to excavation and stored for use as 'plugs' in amongst seeded areas during restoration. Loose soil/rock from the open pits footprint will be stockpiled separately for use in *Potentilla porphyrantha* habitat restoration. | This is an important element for restoration planning. It requires advance planning, with a soil/botany specialist visiting site to map important areas for soil stripping. The construction team must be fully aware of this requirement in advance (it applies mainly to the top of the mountain, i.e. open pits footprint). | P, Const | Land clearance permit | BMP | During topsoil stripping | Environmental Manager | |
| BIO46 | Topsoil storage locations will be chosen to avoid “good” examples of natural vegetation types as well as rocks supporting *Potentilla porphyrantha*. | Consultation required. | Const | | BMP | As required | Biodiversity Officer | |
| SL19<br>SL21 | Where short-term disturbance is required for infrastructure development, soils will be stockpiled on a temporary basis with soil returned and revegetated following completion of construction. | | Const | | | As required | Environmental Manager | |
| BIO21<br>SL22<br>SL27 | Where disturbance will be long term, soil will be stored in mounds, where appropriate separating topsoil from subsoil. Topsoil storage piles will be graded to shed run-off to the extent practical, stabilized as necessary to reduce wind-blown dust emissions, and sown with a grass seed mixture appropriate to the location to maintain soil fertility, and maintained for the duration of the operational phase. | | Const, Ops | | | As required | Environmental Manager | |
| SL26 | Topsoil will be stored in stockpiles no higher than 3m (or 5m if necessary specifically for visual screening) to reduce the potential for compaction and physical and biological changes to the soil during storage. Subsoil will be stored in mounds no greater than 5m in height. | | P, Const, Ops | | | As required | Environmental Manager | |
| SL35 | A soil volume survey will be undertaken when stockpiling is complete. Surveyed mounds will be identified on all mine plans, together with protection measures and routes of cut-off drainage ditching. The volume of soil together with the physical characteristics will be recorded for use in developing the MRCRP. | | Const, Ops, Clo | Stockpile survey report | MRCRP | As required | Environmental Manager | |
| ***Dust and noise control*** | | | | | | | | |
| AQ06<br>AQ10<br>NV13<br>NV29 | The primary access junctions (A and B) will be surfaced with tarmac to mitigate the spread of dust onto the public highway. The gravel/laterite layer on unpaved roads and traffic areas will be maintained in good condition and a suitable speed limit imposed to reduce tyre noise and dust generation. | | P, Const | | TMP<br>AQNVMP | Continuous monitoring | Environmental Manager | |

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| AQ07<br>BIO18<br>NV28 | On access and haul roads, speed limits will be posted and enforced (15 km/h on unpaved roads) to minimise dust emissions and the risk of mortality of animals. Instruction on driving safety and observation of speed limits will be included in the new employee orientation, annual refresher training, and task training for specific job assignments. | | Const, Ops | Employee training records | TMP | Continuous monitoring | Environmental Manager | |
| AQ12 | To supplement dust suppression measures, indigenous (or as otherwise approved by biodiversity specialists) shrubs may be planted in appropriate locations between potential Project source areas and Gndevaz. Vegetative barriers will only be used in circumstances where public consultation has indicated that such additional measures are needed and are acceptable to stakeholders. | | Const, Ops | | AQNVMP | As required | Social Manager | |
| AQ21 | A SOP will be developed for routine visual monitoring to be employed to identify sources of dust emission; inspection positions will be determined to demonstrate coverage of identified sources of dust, including open pits, haul roads, crushing plant, BRSF and conveyor load out points. | Training of staff is required. SOP to be incorporated in EMP. | P, Const, Ops | | EMP | Continuous monitoring | Environmental Manager | |
| ***Visual considerations*** | | | | | | | | |
| LV53 | Where project components are located in prominent positions which break distinguishable skylines or ridges, detailed design will seek to mitigate these impacts through their reconfiguration or alterations in their form (i.e. reduction in vertical height), to ensure best fit with surrounding landscape and in order to minimise more widespread visual effects wherever possible. | This is a design-phase commitment, to be verified prior to start of construction. | P | | | As required | Environmental Manager | |
| LV01<br>LV06<br>LV07 | Measures such as 'hold points' for inspection or agreement will be utilised in order that tests and samples (e.g. specific materials, colours and finishes to componentry) can be used to validate measures before being rolled out across the Project as a whole. Muted colours appropriate to the natural landscape will be considered for external building and component surfaces, and non-reflective surfaces will be used where feasible. | Adequate planning and consultation during the design process could negate the need for this. | P, Const | | | | Environmental Manager | |
| LV02 | Wider landscape and habitat enhancement, to be implemented in the early years of the Project, will be developed and agreed in consultation with Lydian, landowners and statutory consultees before construction commences on site. | | P | | | | Environmental Manager | |
| LV04<br>LV05<br>LV11<br>LV26<br>BIO14 | The Project site will be maintained in a clean and uncluttered state. External clutter will be reduced by enclosing Project components and containing them within simple buildings which fit and respond to the localised topography, as far as practicably possible. Low level clutter around the Project components, including the ADR plant, offices, and accommodation buildings, will be screened by vegetated topsoil bunds, as far as practicably possible. Materials and machinery will not be left in place for longer than required. | | P, Const, Ops | | | Continuous monitoring | Environmental Manager | |

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| LV27<br>LV35<br>NV06 | Mounds of topsoil will be established on the periphery of working areas and where feasible at the outer edges of haul roads, access roads and other components, and will be seeded and grassed to reduce visual impacts from receptors west and north of the Project site, including to reduce the perceptibility of artificial lighting sources such as flood lighting on buildings and vehicle movements along access and haul roads. Topsoil mounds will be monitored to ensure they remain suitable for restoration post-mining. | | P, Ops | | | Continuous monitoring | Environmental Manager | |
| LV54 | Berms and mounds will be incorporated along site access and haul roads to reduce light spill from the headlights of vehicles, particularly during the extended hours of darkness of winter months, and specifically to avoid or reduce direct impacts from headlights on receptors in Jermuk and Kechut when travelling northwards along the on-site haul road around the western flanks of the mountain. | | P, Const | | | Continuous monitoring | Environmental Manager | |
| LV08<br>BIO39<br>BIO40 | Windows in buildings will, where possible, be shuttered to prevent light spill and glare to the sky at night. There will be minimal security lighting in external areas (sensors will be used to ensure it does not get left on). | | P, Const, Ops | | | Continuous monitoring | Environmental Manager | |
| BIO37<br>BIO41<br>LV31 | Only the minimum artificial lighting necessary to ensure safety will be employed and it will be restricted to agreed working hours. Downward-directed lighting will be employed to minimise light pollution for sensitive receptors including communities and nocturnal species. | | P, Const, Ops | | | Continuous monitoring | Environmental Manager | |
| BIO38<br>LV30 | Contractors will be requested to use lowest emission lighting that will still provide sufficient light for safety purposes. Low visibility spectrum lights and appliances (full cut-off fixtures that emit no light above the light's horizontal line) will be preferred on mine components, with lighting mounted at the minimum necessary safe height and shrouded where appropriate. | | P, Const, Ops | | | As required | Environmental Manager | |
| LV13<br>LV19 | Reclamation of exploration works (drilling pads, access roads) will be ongoing during the construction phase to restore and revegetate previously disturbed areas which will not be affected by the operations phase of the Project. Seeding will be undertaken using locally native species or culturally appropriate plants, and to tie in with adjacent vegetation types, where considered appropriate and essential to prevent erosion. | | Const | | MCRCP | Continuous monitoring | Environmental Manager | |
| LV17<br>LV18 | Wherever possible, slopes will be designed and engineered so that long-term, visible, man-made rock-slope reinforcement measures are not required or can be entirely covered with turves and revegetated. Any reinforcement that is required will endeavour to use appropriate geotextiles, preferably of natural material. Localised grading of selected sections of track cuttings, embankments and sides will be undertaken. Scarred track sides, slopes and tie-ins will be rounded to concave or convex profiles, and where available, topsoil/turves will be placed upon them, to encourage regeneration of vegetation. | | P, Const | | | Continuous monitoring | Environmental Manager | |

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| LV20<br>LV21 | On completion of the construction phase, all equipment and temporary installations and buildings not required for future operational use will be dismantled and removed. All construction waste will be disposed of in an appropriate manner. Pits, hollows and excavation trenches will be filled with the appropriate stockpiled materials and compacted as appropriate. | | Const | | MRCRP | | Environmental Manager | |
| LV49<br>LV50 | Lydian will develop method statements and SOPs in conjunction with appointed contractors, which will explicitly describe the role of the qualified landscape architect and the landscape/environmental clerk of works for all phases of the project. The method statements will include protection of species protected by statute; management and protection of existing vegetation; construction of protective fencing, for vegetation and wildlife; clearance of vegetation; ground preparation and turf/soil stripping; earthworks and landform grading; preparation and cultivation of soils for planting and seeding; seeding (including of trees and shrubs), and promotion of natural regeneration; planting, including of trees and shrubs; and monitoring, management and maintenance of restored areas. | This requires advance planning and the involvement of a landscape architect and/or clerk of works. The construction team should be fully aware of this requirement. | P | | | As required | Environmental Manager | |
| LV51 | Regular site inspections to ensure compliance with committed mitigation, rehabilitation and restoration plans in accordance with an agreed schedule will be required throughout the construction, operation and closure phases of the Project, and also include regular inspection during the post-closure monitoring phase, to ensure any remedial treatment for unsuccessful mitigation and restoration measures is devised and implemented. Any deviations from agreed mitigation and restoration measures will be highlighted, and remedial actions implemented. | This requires advance planning and the involvement of a landscape architect and/or clerk of works. The construction team should be fully aware of this requirement. | P, Cost, Ops, Clo | | | Continuous monitoring | Environmental Manager | |
| ***Run-off management and erosion control*** | | | | | | | | |
| BIO29<br>SL14 | Working areas will be graded to channel surface flows into ditches to reduce flow velocities and decrease the potential for erosion. | | Const, Ops | | | Continuous monitoring | Environmental Manager | |
| ES08 | The Project will implement strategies to manage soil erosion and risks of land-slips for specific beneficiaries. | The "specific beneficiaries" are local people, particularly herders, using the area surrounding the Project site. | P, Const, Ops, Clo | | | Continuous monitoring | Environmental Manager | |
| SW01<br>BIO32<br>SL11<br>SL16 | During construction, potentially impacted surface water will be routed to sediment ponds, via in-channel sediment management structures (check dams) prior to discharge to surface water. Additional best management practices, such as silt fences, straw wattles and erosion control mats will also be put in place to minimize erosion, reducing the sources of erosion and sediment generation. | | P, Const | | SWMP | Continuous monitoring | Environmental Manager | |

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| SW02 | During operations, runoff from facilities areas, including haul roads, ore conveyor and crushers will be routed to sediment ponds, prior to discharge to surface water. | | P, Ops | | SWMP | Continuous monitoring | Environmental Manager | |
| GW05<br>SW12 | Design mitigation measures for surface water and groundwater impacts include management of run-off and leakage during construction; minimum 110% tank capacity bunds for storage of fuel/oils; use of sediment/grease traps; provision of spill kits and training of employees and contractors in spill prevention measures; no discharge to the water environment of effluent from facilities and wheel washes; and capture of sewage effluent in sealed tanks and appropriate disposal. Vehicles and equipment will be inspected regularly for leaks. | | P | | EPRP | Continuous monitoring | Environmental Manager | |
| BIO30 | Roadside berms will be installed and surface water run-off managed to reduce footprint of gravel wash-out, particularly where natural vegetation could be affected. | | P, Const | | SWMP | Continuous monitoring | Environmental Manager | |
| BIO31 | Culverts will be installed at all road/track stream-crossings to minimise sedimentation downstream. | | P, Const | | SWMP | Continuous monitoring | Environmental Manager | |
| ***Habitat and biodiversity considerations*** | | | | | | | | |
| BIO06 | Small mammals, reptiles and amphibians will be excluded from working areas. Any individuals that become trapped within working areas will be removed by a suitably qualified ecologist. | This is particularly important in the case of protected species. | Const, Ops | | BMP | As required | Environmental Manager | |
| BIO07 | Fauna, including birds, will be prevented from accessing ponds containing potentially harmful solutions. Monitoring will determine whether measures additional to standard practices (fencing, use of bird balls, etc.) are required. | | P, Const, Ops | | BMP | Continuous monitoring | Environmental Manager | |
| BIO15 | Litter will be removed from water bodies and areas within the restricted access zone. | This is to remove hazards to wildlife from litter that may have originated (or may be perceived to have originated) from the Project site. | Const, Ops | | BMP | Continuous monitoring | Environmental Manager | |