



Oyu Tolgoi LLC

Health, Safety and Environment

Biodiversity Management Plan (BMP)



Biodiversity Management Plan		
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List of Acronyms and Abbreviations

Aol	Area of Influence
BAP	Biodiversity Action Plan
BFD	Bird Flight Diverter
BMEP	Biodiversity Monitoring and Evaluation Plan
BMP	Biodiversity Management Plan
CBMP	Core Biodiversity Monitoring Program
DEIA	Detailed Environmental Impact Assessment
EBRD	European Bank for Restoration and Development
EPP	Environmental Protection Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
HSESC	Health Safety, Environment and Communities
IESC	Independent Environmental and Social Consultants
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
KPI	Key Performance Indicator
NNL	No Net Loss
OMP	Offset Management Plan
OT	Oyu Tolgoi
PR	Performance Requirement
PS	Performance Standard
SGSPA	Small Gobi Strictly Protected Area

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1 INTRODUCTION

1.1 Purpose

The purpose of the Biodiversity Management Plan (BMP) is to specify the actions that will be taken to meet OT's goals and objectives for biodiversity in line with applicable Project Standards. The BMP includes:

- the scope of the BMP and outlines applicable management interfaces;
- roles and responsibilities;
- outline the applicable Project Standards relevant to this Management Plan;
- Project commitments, operational procedures and guidance relevant to this Management Plan;
- monitoring and reporting procedures, including Key Performance Indicators (KPIs);
- training requirements; and
- references to supporting materials and information.

1.2 Application

The requirements set out in this Management Plan apply to all Oyu Tolgoi (OT) related activities on and off the mine lease area. The BMP applies to OT and contractor staff.

1.3 Approach to Biodiversity Management

1.3.1 Plan Development

This Management Plan is developed in accordance with the requirements of the Rio Tinto Biodiversity Strategy, published in 2008 and revised in 2017, and OT's Biodiversity Strategy, 2012. Oyu Tolgoi's biodiversity goal as stated in its Biodiversity Strategy is:

"Oyu Tolgoi seeks to ensure that the biodiversity of the southern Gobi region ultimately benefits from the project's presence in the region. In keeping with the Rio Tinto corporate Biodiversity Strategy, Oyu Tolgoi's goal is to have a net positive impact¹ on biodiversity of the southern Gobi region. Oyu Tolgoi aims to reach this goal by mine closure but will seek opportunities to achieve net positive impact as early as practicable in the project life."

To achieve its goal of net gain of biodiversity OT's Biodiversity Strategy commits to:

- Identify important biodiversity features (Priority Biodiversity Features) of relevance to the operation and the project-related threats to these biodiversity features.
- Apply the mitigation hierarchy to avoid, minimise and rehabilitate project-related impacts to biodiversity.
- Develop a Biodiversity Offsets Plan and identify additional conservation actions that will, over time, compensate for the residual impacts of the project on biodiversity of the southern Gobi region.
- Develop a Monitoring and Evaluation program which is capable of tracking Oyu Tolgoi's journey towards net gain by quantifying the residual impacts (pressures) on biodiversity features, the state of biodiversity features and the adequacy of management responses.

¹ Note that the wording in the original OT documents was "net positive impact," this was changed to net gain in the 2018 revisions of the Biodiversity Management Plan to make the terminology constituent with current international standards.

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- Facilitate the development, testing and implementation of tools to track and verify the project's journey towards net gain.
- Ensure that mitigation and offset objectives, actions and targets are clearly defined and integrated into the Oyu Tolgoi HSEC Management System.
- Seek to capitalise on its position as a regional industry leader in order to minimise the cumulative impacts of mining developments on biodiversity of the southern Gobi region (e.g., study tour of best practices, training on ecosystem services, briefings on Oyu Tolgoi biodiversity monitoring methodologies and results).
- Engage and consult with biodiversity stakeholders at all stages of the project and build cross-sector partnerships with local communities, various levels of Mongolian government, non-government organisations, and academic institutions.
- Ensure that the Oyu Tolgoi Biodiversity Strategy is communicated to and aligned with all other Oyu Tolgoi environmental and social/community strategies.

Any subsequent changes to the Rio Tinto Biodiversity Strategy or the OT Biodiversity Strategy may result in changes to this OT Management Plan.

The BMP was originally developed following Rio Tinto's approach to biodiversity action planning using the Rio Tinto Biodiversity Action Planning Guidance Note², and in accordance with Oyu Tolgoi's Biodiversity Strategy and the Rio Tinto Biodiversity Strategy (2008). A holistic and inclusive approach was adopted during a workshop led by OT Environment personnel, facilitated by Global Biodiversity Conservation (and with Wildlife Conservation Society participation) in March 2013. The workshop first identified priority biodiversity features before evaluating biodiversity risks and OT's projected impact. Mitigation measures were then identified to address all critical and high risks and to deliver a Net Positive Impact on priority biodiversity features.

Workshop participants compiled information on OT's Area of Influence (AoI), priority biodiversity features, risks and impacts into a workbook that also captures the biodiversity mitigation actions to be implemented during the project's operations phase. The workbook follows the thought process used to develop this Biodiversity Management Plan (and as outlined in the Rio Tinto Biodiversity Action Planning Guidance Note³). It provides a complete inventory of all of the biodiversity-related mitigations that OT committed to in the Environmental and Social Impact Assessment (ESIA) as well as additional commitments made in Detailed Environmental Impact Assessments (DEIAs), captured in the Biodiversity Action Plan⁴ (BAP) (OT-10-E14-PLN-0004-E) or highlighted as important by OT Environment Department staff and external stakeholders. Annex 1 includes a register of all ESIA commitments that indicates where in OT's Environmental Management System commitments can be found (which Plan, Policy, Procedure within the management system and the ID #) and detailing any commitments from the ESIA that have subsequently been removed and

² Rio Tinto (2012) Staged Approach to Biodiversity Action Planning – Guidance Note Version 5. Rio Tinto, PLC, Melbourne, Australia.

³ Rio Tinto (2012) Staged Approach to Biodiversity Action Planning – Guidance Note Version 5. Rio Tinto, PLC, Melbourne, Australia

⁴ Oyu Tolgoi (2015) Oyu Tolgoi Biodiversity Action Plan - Revised December 02, 2015. – Referred to here as the 'Lender's BAP' this document captures the most important, high-level commitments the project has made to deliver a Net Positive Impact on Critical Habitat qualifying biodiversity, as well as high-level offset, monitoring, process, resource and stakeholder engagement commitments. That document has a broader thematic scope but provides less detail than this Management Plan which has been developed following Rio Tinto's Biodiversity Action Planning process and covers all of OT's biodiversity-related commitments and best-practice.

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why. The biodiversity specific objectives, targets, actions and accountabilities have been integrated into the Oyu Tolgoi HSEC Management System through this Biodiversity Management Plan.

This plan contains the necessary detail to be actionable. Specific management responsibilities have been assigned to Environment personnel, and by presenting all commitments in one place the plan circumvents the need for the persons responsible for overseeing and executing the BMP measures to reference multiple plans.

1.3.2 Updates to the Biodiversity Approach

In 2017, Rio Tinto issued an update to its Biodiversity Strategy, with the development of the new environment standard E16 – Biodiversity Protection and Natural Resource Management. The revision builds on the experience gained from the application of the previous standard. The significant change is that it emphasizes the need to mitigate impacts on biodiversity features, priority ecosystem services and related natural resources to the greatest extent possible by the early application of the mitigation hierarchy (i.e., avoid, minimize and rehabilitate). When residual impacts are or are predicted to be significant following application of the earlier stages of the mitigation hierarchy, implement offsets as necessary to meet regulatory or lender requirements.

When the new standard was released, there were concerns that Rio Tinto and OT were stepping back from its commitment to have a net gain on the environment. The new Environment Standard is intended to focus efforts on project planning and implementing the mitigation hierarchy more effectively so that residual impacts are as small as possible. When offsets are required, this means they are suitably scaled to address the residual impacts and meet both regulatory and lender requirements. OT's plans and procedures were already structured around rigorous application of the mitigation hierarchy and there has therefore been no change in the Project's commitments to achievement of no net loss (NNL) in natural habitat and associated priority species, or net gain outcomes in critical habitat according to the standards and requirements of lenders and its goal of net gain for biodiversity and ecosystem services in the South Gobi Aol.

1.4 Commencement

This Management Plan applies from 1 January 2013.

1.5 Authority and Management

The OT Executive Committee approved this Management Plan on [15 February 2013] and it will be reviewed on a two-year period to determine whether any changes or updates are required to the plan unless a more frequent update is required to reflect changing Project design or procedures.

The OT General Manager Health, Safety, Environment, Security and Communities (HSESC) is the custodian of this Management Plan while the Superintendent Biodiversity and Environment and Biodiversity team have key responsibility for implementation of the Plan. Any requests for changes to this Management Plan must be addressed to Superintendent Biodiversity and will be subjected to the appropriate review and approval processes.

2 SCOPE

2.1 Scope of this Management Plan

This Management Plan covers all OT biodiversity management initiatives, commitments and obligations for the operations phase and includes contractor activities. It applies to all operational activities as well as on-going works that involve expansion of infrastructure and the disturbance footprint for the project. The BMP is also applicable to project related activities off the mine lease area (e.g., off-site infrastructure, transportation).

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This management plan is developed to guide implementation of OT's biodiversity commitments (including the specific requirements in regards to identified Critical Habitat) in accordance with the International Finance Corporation's (IFC) 2006 version of Performance Standard 6 (PS6) and the European Bank for Reconstruction and Development's (EBRD's) Performance Requirement 6 (PR6). In addition, implementation of this Plan will ensure Oyu Tolgoi's compliance with Mongolia's biodiversity obligations as stated in Section 4 below. This plan brings together OT's biodiversity management initiatives, commitments and obligations as they arise under PS6, PR6 and Mongolian Law.

In addition to the management controls outlined in this management plan, OT has committed to a number of biodiversity management activities specifically required to meet the Applicable Lender Standards. These are outlined in the BAP (OT-10-E14-PLN-0004-E) and have subsequently been incorporated in to OT plans and procedures, including the BMEP

This Management Plan encompasses OT's Aol, which include the largest Unit of Analysis used for critical habitat determination, and covers the areas of: Khanbogd, Bayan Ovoo and Manlai soums of Omnogovi aimag, and sectors A and B of the Small Gobi Strictly Protected Area (SGSPA). Project biodiversity management activities described in the BMP include direct impact areas associated with OT project activities and infrastructure and activities that impact biodiversity within the wider Aol.

The management plan covers mitigation measures for priority biodiversity features that may be impacted by the project including: natural habitats, species of conservation priority, priority ecosystem services, sites of conservation importance, and critical habitat.

Biodiversity management planning is established for all OT operations including:

- activities associated with mining and mineral processing and associated activities at OT;
- transportation of mineral product and supplies;
- operation of airports to support the Project;
- water supplies;
- power generation and transmission; and
- worker housing and support infrastructure.

Some activities listed in the plan are ongoing, some are planned in the short- and medium-term, and some will be required at mine closure. The plan may require updating if, for example, new infrastructure is proposed, new risks to biodiversity are identified or additional mitigation actions are required.

Specific actions designed to achieve NNL or net gain outcomes were originally described in the BAP and subsequently incorporated into OT plans and procedures. Because of their scale, biodiversity offsets have been developed through a separate but complimentary process with specific offset actions integrated into the Offsets Management Plan (OMP). The Biodiversity Monitoring and Evaluation Program (BMEP) is used to track progress towards delivering a NNL or net gain. and

2.2 Overlaps with other management plans

This Management Plan is part of the overall suite of Operations Management Plans developed for the OT Project and as described in the Environmental and Social Management Plan (ESMP) Framework (OT-10-PLN-0003).

This Management Plan has overlaps and cross-linkages to a number of other Management Plans, including:

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- The Land Disturbance Control and Rehabilitation Plan (OT-10-E14-PLN-0005), particularly in relation minimising land disturbance and to land rehabilitation;
- The Pastureland and Livelihood Improvement Strategy (OT-10-E2-PLN-0001) , in relation to pastureland management;
- The Water Resources Management Plan (OT-10-E11-PLN-0001), particularly in relation to management of water resources for the protection of biodiversity values and ecosystem services;
- The Transport Management Plan (OT-10-C3-PLN-0001) in relation to animal strikes, landscape fragmentation effects, deposition of vehicle induced dust and use of unapproved roads/tracks;
- The Hazardous Materials and Non-Mineral Waste Management Plan (OT-10-E15-PLN-0001) in relation to prevention of placing waste along roadsides where it may attract wildlife; and
- The Offsets Management Plan (OT-10-E16-PLN-0003), in relation to activities designed to offset residual impacts on biodiversity and deliver the project’s commitment to net gain;
- Biodiversity Monitoring and Evaluation Plan (OT-10-E16-PLN-0004), which outlines the monitoring programs to assess mitigation and offsets.
- The Atmospheric Emissions Management Plan (OT-10-E12-PLN-0001) particularly in relation to dust suppression;
- The Contractor Management Framework (OT-07-PLN-9001);
- The Noise and Vibration Management Plan (OT-10-E6-PLN-0001); and
- The Mine Closure Plan (OT-10-E14-PLN-0002).

3 ROLES AND RESPONSIBILITIES

3.1 Key Roles and Responsibilities for Management Plan Implementation

Principal roles and responsibilities for the implementation of this plan are outlined below.

Table 3-1 Key roles and responsibilities

Role	Responsibilities
General Manager HSESC	<ul style="list-style-type: none"> • Overall responsibility for the implementation of this Management Plan.
Superintendent Biodiversity OT Manager Environment and Biodiversity Environment and Biodiversity team members (with specific role focus)	<ul style="list-style-type: none"> • Make the plan available to all OT employees and contractors. • Provide technical and strategic advice on biodiversity matters to OT leadership. • Provide leadership on biodiversity matters within the HSES team. • Develop and communicate to relevant department managers, targets related to compliance with biodiversity requirements. • Provide technical and strategic support to Departmental Managers relative to the requirements of the Biodiversity Management Plan. • Prepare quarterly and annual environmental reports including details on biodiversity monitoring and evaluation. • Implement and manage programmes to meet the requirements of this plan. • Monitor and report on compliance with OT’s biodiversity commitments and legal obligations. • Liaise with and coordinate activities for biodiversity conservation and offset implementation with relevant government, non –government and community stakeholders. • Engage with Biodiversity Partners to obtain specialist advice and implement programmes in relation to the achievement of this plan. • Provide requisite data to Biodiversity Partners to enable evaluation of the effectiveness of programmes in achieving OT’s biodiversity objectives. • Implement the biodiversity management actions in accordance with this Plan.

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	<ul style="list-style-type: none"> Provide training and guidance to OT staff and contractors on the requirements of this management plan.
All employees and contractors	<ul style="list-style-type: none"> Comply with requirements of the plan relevant to the specific job requirements.

3.2 Key Interfaces

Key interfaces in the implementation of this Management Plan (i.e., roles with responsibility for delivering elements of this Management Plan) include:

- Communities Department;
- Transportation and Logistics teams;
- HSESC Department;
- Operations;
- Site Infrastructure and Services teams;
- External Affairs and Communication Department; and
- Supporting biodiversity partners and consultants.
- .

4 PROJECT STANDARDS

Applicable Standards must be complied with for all Project activities (the “Project Standards”). Project Standards comprise:

- applicable Mongolian Legislation;
- applicable Mongolian National Standards;
- DEIA requirements;
- other commitments to and requirements of Mongolian Government authorities;
- applicable Lender standards; and
- applicable Rio Tinto standards.

The project standards are summarized in the following sections; however, a full list of relevant legislations, guidelines and standards can be found in the OT Legal Register.

4.1 Applicable Mongolian Legislation

Examples of applicable Mongolian legislation related to biodiversity conservation includes the following:

- *The Law of Mongolia on Fauna 2000* was superseded by the Law of Mongolia on Animal of 17 May 2012. The purpose of this law is to regulate the protection, breeding, and proper use of animals. It includes provisions addressing limits on animal use; the recording of rare and endangered species listed in the International Union for Conservation of Nature (IUCN) Red List; the protection of natural habitats and migration routes; the establishment of game reserves; and stock enhancement and repopulation.
- *Law of Mongolia on Natural Plants* (In force 11 April 1995, amended 04 December 2015). The purpose of this law is to regulate the proper use, protection, and restoration of natural plants other than forests. There is a corresponding Law on Natural Resource Use Fees 2012 that sets the fees for the use of very rare, rare, and abundant plants. Fees are payable to the soum and district upon the issuance of a licence. The project is situated in an area populated by species of flora protected by the Law on Natural Plants.
- *Law of Mongolia on Special Protected Areas* (In force 15 November 1994, amended last on 13 November 2019). This law regulates the use and procurement of land for special protection,

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and the preservation and conservation of its original conditions in order to preserve, among other things, rare and endangered animals. The Law establishes four types of protected area designations: Strictly Protected Areas; National Conservation Parks; Nature Reserves; and Monuments. The road from the project to the Gashuun Sukhait border crossing passes through the SGSPA; use and management of the road will therefore be subject to the provisions of the *Law of Mongolia on Special Protected Areas*.

- *Law of Mongolia on Buffer Zones* (In force 23 October 1997). This law requires buffer zones to be established around Strictly Protected Areas and National Conservation Parks in order to minimise, prevent, or eliminate adverse impacts on those areas and to establish requirements for the proper use of natural resources. The law specifies the criteria used to establish Buffer Zones and their boundaries, and provides for the establishment of a Buffer Zone Council and for its composition and responsibilities. A Buffer Zone Fund is also established for the development of Buffer Zones and to provide support for local peoples' livelihoods. The law also provides for the development of Buffer Zone Management Plans and imposes liabilities for the violation of Buffer Zone legislation. There is a buffer zone surrounding Areas A and B of the SGSPA. The road from the project to the Gashuun Sukhait border crossing passes through the SGSPA; use and management of the road will therefore be subject to the provisions of the *Law of Mongolia on Buffer Zones*. By way of example, the provisions of the Law prohibit:
 - the expansion of a village or construction of building facilities that are not consistent with an approved general plan, project and drawings;
 - changing the state of the buffer zone by digging, exploring for minerals, mining, or making roads; and
 - the use of any method, technique or substance harmful to the environment in the fight against insects, rodents and fire prevention.
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4.2 Applicable Mongolian National Standards

Mongolian National Standards are developed by the Mongolian Agency for Standardisation and Metrology. These standards include biodiversity related issues in regards to land reclamation and mine rehabilitation including re-vegetation as provided below:

- MNS 0017-5-1-19:1992 *General requirements for rehabilitation of disturbed lands*;
- MNS 4915:2000 *Technical Requirements for the reclamation and re-vegetation of disturbed lands from geological exploration works*;
- MNS 4915:2000 *Technical Requirements for determination of the fertile soil layer standard while performing earth work*;
- MNS 4919:2000 Environment. *Covering soil for destroyed land. Technical requirements*;
- MNS 4920: 2000 Environment. *Slope of destroyed land. Technical requirements*;
- MNS 5914:2008 Environment. *Land reclamation. Terms and definitions*;
- MNS 5915:2008 Environment. *Classification of land destroyed due to mining activities*;
- MNS 5916:2008 Environment. *Requirements for fertile soil removing and its temporary storage during the earth excavation*;
- MNS 5917:2008 Environment. *General technical requirements for reclamation of land disturbed by mining activities*; and
- MNS 5918: 2008 Environment. *Re-vegetation of disturbed land. Technical requirements*.

4.3 DEIAs

The OT statutory commitments relevant to biodiversity are provided in the DEIA reports which have been prepared in accordance with the Law on Environmental Impact Assessment and the Minerals Law of Mongolia. The DEIAs applicable to biodiversity during the operations phase are given below:

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- OT to Gashuun Sukhait Infrastructure Corridor DEIA;
- Gunni Hooloi Water Supply Pipeline DEIA;
- OT Permanent Airport DEIA;
- Water Resource DEIA; and
- Mine and Processing DEIA.

Section 7.3.3 provides details of the key biodiversity monitoring measures required by the various DEIA reports. DEIA commitments have been brought in to Tab 7b of the BMP workbook, which details all biodiversity related general actions that the project needs to implement.

4.4 Other Commitments to and Requirements of Mongolian Government Authorities

The Government of Mongolia is signatory to a range of international conventions related to biodiversity conservation. While these conventions are not directly applicable to OT, they provide useful context information regarding Government policy. Conventions related to biodiversity to which the Government of Mongolia is a signatory include:

- The Convention on the Conservation of Migratory Species of Wild Animals (In force November 1, 1983);
- Memorandum of Understanding concerning the Conservation of Migratory Birds of Prey in Africa and Eurasia (In force November 1, 2008);
- Memorandum of Understanding concerning the conservation of the Saiga Antelope (In force September 24, 2006);
- International Convention to Combat Desertification (In force December 26, 1996);
- Convention on Biological Diversity (In force December 29, 1993);
- Convention on International Trade in Endangered Species (March 1973); and
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1979 came into force on June 1, 1982.

4.5 The Investment Agreement

Paragraphs 6.4, 6.9, 6.10 and 6.11 of the Investment Agreement apply:

- The Investor shall meet all costs for each year of implementing an environmental protection plan (EPP) and environmental monitoring and analysis programme, in connection with implementation of the OT Project and shall provide to the State central administrative authority in charge of environment a report, prepared by a certified, independent, professional firm, on addressing the Investor's implementation of the measures specified in the EPP every 3 (three) years.
- The Investor shall submit annually a report detailing its comprehensive environmental monitoring and analysis programme associated with Core Operations to the State central administrative authority in charge of environment.
- If any material adverse impact on air, water, soil, animals, plants and/or subsoil is found by the environmental monitoring and analysis programme, the Investor shall take necessary measures to eliminate such material adverse impact at the Investor's expense. The Investor shall pay compensation for unanticipated and irreversible ecological damage directly caused by the operations of the OT Project based on the ecological and economic value for the permanently damaged natural resources, to the extent prescribed by the Law on Environmental Protection and other relevant laws and regulations.

4.6 Applicable International Standards and Guidelines

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IFC 2006 Performance Standard 6 reflects the objectives of the Convention on Biological Diversity to conserve biological diversity and promote the use of renewable natural resources in a sustainable manner.

Specific objectives of this Performance Standard are to:

- protect and conserve biodiversity; and
- promote the sustainable management and use of natural resources through the adoption of practices that integrate conservation needs and development priorities.

EBRD Performance Requirement 6 addresses biodiversity and has as its objective: the avoidance, minimisation and mitigation of impacts on biodiversity and the offsetting of significant residual impacts, where appropriate, with the aim of achieving NNL of biodiversity.

The OT development is subject to the requirements of Paragraph 10 of IFC Performance Standard 6 and Paragraph 14 of EBRD Performance Requirement 6.

The loan agreement for the underground development makes reference to the 2006 version of the IFC Performance Standards and the 2008 version of the EBRD Performance Requirements. These documents were used to set the initial framework of the BMP and related documents. Since the loan agreement was prepared the IFC Performance Standards were updated in 2012 and the EBRD Performance Requirements were updated in 2014. While reference to the standards has not been changed due to the structure of the loan agreement, the OT BMP and other biodiversity documents have been keeping pace with the changing standards, through the activities outlined in the BAP, which resulted in changes to plans procedures that form the basis of the overall OT biodiversity program.

4.7 Applicable Rio Tinto Standards

Rio Tinto's commitment to the conservation of biodiversity is expressed in Environment Standard E16 Biodiversity Protection and Natural Resource Management (2017). All Rio Tinto operations comply with all International Conservation Conventions. OT developed its own Biodiversity Strategy⁵ for the Project that is consistent with Rio Tinto's Strategy. The Strategy presents OT's goal to achieve net gain on the biodiversity of the South Gobi region by "mine closure but will seek opportunities to achieve net positive impact [*sic* net gain] as early as practicable in the project life."

5 MANAGEMENT CONTROLS

The key operational biodiversity management controls described in Table 5-1 below are developed to mitigate the critical and high risk potential impacts, as assessed in the OT ESIA, to priority biodiversity features and to priority and critical ecosystem services (as identified in Table 6.9 of Chapter C6 of the ESIA). OT has committed to a number of biodiversity management commitments to meet the applicable Lender standards. The actions needed to develop these measures were detailed in the BAP. The commitments arising from the BAP have been incorporated in the BMP, including some ongoing actions towards NNL/net gain in natural and critical habitat, respectively. OT is committed to a program of monitoring and evaluation of these key operational biodiversity management controls to ensure that the controls are efficient and effective. This monitoring is outlined in the BMEP.

⁵Oyu Tolgoi LLC (2011). Oyu Tolgoi LL Biodiversity Strategy. *In* Oyu Tolgoi Project Environmental and Social Impact Assessment. Oyu Tolgoi LLC, Ulaanbaatar, Mongolia. Appendix 1 p. 1-14.

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Additional management controls for medium and low risk potential impacts (as provided in ESIA Chapter C6 6.5) to biodiversity features are provided in other management plans including (see Section 2.2 above).

The key management controls provided in Table 5-1 include actions relevant to construction activity in recognition that OT will continue to undertake construction activities over the life of the mine. Ongoing construction activity will be assessed to identify appropriate biodiversity management and mitigation actions through the Management of Change Process (HSE Element 11) and the Land Disturbance Permit Procedure (OT-10-E14-PRC-0003). It is through these processes (and other related procedures) that the mitigation hierarchy will continue to be applied to minimize impacts. Some biodiversity commitments featured in other operational plans and procedures (not included in Table 5-1, should be consulted for more detail on specific operational day-to-day activities undertaken by OT personnel and contractors for biodiversity management. These include, but are not limited to:

- Inspection and Identification of Illegal Wildlife, Wildlife Products, and Plant Procedure (OT-10-E14-PLC-1001);
- Road and Powerline Inspection Procedure (OT-10-E14-PRC-0004);
- OT Site Wide Traffic Management Plan (OT-10-C3-PRC-0005);
- Pastureland and Livelihood Improvement Management Plan (OT-10-PLN-0013);
- Technical Rehabilitation Procedure (OT-10-E14-PRC-0002);
- Topsoil Handling Procedure (OT-10-E14-PRC-0001);
- Land Disturbance Permit Procedure (OT-10-E14-PRC-0003);
- Land Disturbance Control and Rehabilitation Plan (OT-E14-PLN-005); and
- Camp Standard and Code of Behaviour (HR-ST-01).



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Table 5-1 Key management controls

ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency	
					Implementer	Supervisor		
B01	Indirect habitat loss due to avoidance of infrastructure	Potential increased illegal hunting	Prohibit illegal hunting and collecting by OT personnel and contractors when at work through implementation of the Illegal Wildlife, Wildlife Products, and Plant Procedure (OT-10-E14-PRC-0005) which includes a no-hunting Policy to be communicated through induction and training to all personnel (employees and contractors).	Training records checked to ensure complete	Training department	Specialist Research, Fauna	Fauna Officer	Annual
B02	Indirect habitat loss due to avoidance of infrastructure; Mortality from hunting and collecting	Potential increased illegal hunting	Enforce the Illegal Wildlife, Wildlife Products, and Plant Procedure (OT-10-E14-PRC-0005) through periodic inspections of aircraft and vehicles.	Security Department incident report records of OT personnel or contractors breaching OT's Illegal Wildlife, Wildlife Products, and Plant Procedure (e.g., records of vehicle and aircraft inspections for wildlife products; incident reports from illegal hunting and/or collection) checked to ensure regular inspections and appropriate reporting	Security department	Specialist Research	Fauna	Annual

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ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
B03	Indirect habitat loss due to avoidance of infrastructure; Mortality from hunting and collecting	Potential increased illegal hunting	Publicise and apply suitable penalties to offenders who are Oyu Tolgoi personnel found trafficking illegal wild animal products.	Any incidents detected through regular inspection are documented in the security incident register, penalties are applied and the incidents are communicated as appropriate	Security and Environment team	Specialist Fauna Research	As required
B04	Mortality from hunting and collecting; Ecosystem services	Potential increased illegal hunting	Provide identified personnel with alternative fuel for ger stoves to reduce the need for collection of local timber (i.e., saxaul).	Records of alternative fuel provision to OT personnel and contractors checked	Waste Management Center	Communities Department	Quarterly
B05	Indirect habitat loss due to avoidance of infrastructure; Mortality from hunting and collecting	Potential increased illegal hunting	Communicate as part of the Stakeholder Engagement Plan the biodiversity-related topic of illegal hunting with an aim to reduce illegal hunting in the OT Aol (as defined in the ESIA) and more broadly within Khanbogd soum.	Completion of a pilot study by external contractors that identifies the scale of illegal hunting/collecting, and the gains possible from addressing illegal hunting/collecting.	Officer Fauna	Specialist Fauna Research	Complete
				Hunting control program implemented	Officer Fauna	Specialist Fauna Research	Complete (pilot)
				Include communication as part of stakeholder engagement in the Anti-poaching offset	Biodiversity Superintendent and implementing consultant	Biodiversity Superintendent	Annually

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ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
B06	Direct habitat loss; Indirect habitat loss due to avoidance of infrastructure	Increased access by off-road vehicles	Develop and distribute communication materials on the impacts of off-road driving and its implications for livelihoods and wildlife conservation as part of an information and education campaign linked to ongoing stakeholder engagement efforts.	Records of SEP implementation checked	Officer Fauna	Specialist Fauna Research	On-going
			Incorporate requirements related to off-road driving into its contractor management program and induction training for all new staff and contractors.	Records of induction training checked	Training department	Specialist Fauna Research	Annual
B07	Direct mortality	Any incident related to OT activities	Take appropriate actions for each specific incident to prevent from such incident in the future (driver awareness training, fencing OT related open waters and installing reflectors on fences, etc.).	Number of incident after implementing corrective action.	Fauna officer	Specialist Fauna Research	Annual
B08	Direct mortality	Collision with and electrocution by power transmission lines	Add bird flight diverters (BFD) to all power lines (install alternating flapper-type flight diverters and large spirals, alternating contrasting colours, at a frequency of at least one of each every 10 - 20 m (i.e., one device every 5 - 10 m)	Check of BFD installation complete	Officer Fauna	Specialist Fauna Research	Completed

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ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
B09	Direct mortality	Collision with and electrocution by power transmission lines	Insulate medium-voltage power line poles, dead-ends and substations, and on pylons on OT controlled powerlines where necessary (as determined by monitoring results)	Check of insulators installation complete	Officer Fauna	Specialist Fauna Research	Completed.
B10	Direct mortality	Collision with and electrocution by power transmission lines	Maintain diverters and insulation as necessary to minimise wildlife mortality throughout operations	Bird flight diverter and insulator maintenance checked to ensure up to date	Officer Fauna	Specialist Fauna Research	Quarterly
B11	Direct mortality	Collision with and electrocution by power transmission lines	Document and (acting in accordance with OT's Health & Safety requirements) remove collision carcasses from OT power lines and roads. (see Road and Powerline Inspection Procedure OT-16-PRC-0006)	Wildlife Incident report from monthly powerline and road inspection and ad hoc sightings	Officer Fauna	Specialist Fauna Research	Monthly
				Check that all collision carcasses identified by litter inspection teams and/or vehicles travelling along roads are reported to site environmental officers and inspected by trained site biodiversity specialists.	Officer Fauna	Officer Fauna	Monthly
B12	Indirect mortality	Increased predation rates	Remove nests of birds, which predate Bustards, except where known to be Saker Falcon nests, where made on project-related infrastructure (acting in accordance with OT's Health & Safety requirements).	Quarterly Environmental Report details inspections and nests removed	Officer Fauna	Specialist Fauna Research	Annually

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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
			Implemented through the Road and Powerline Inspection Procedure (OT-16-PRC-0006).				
B13	Indirect mortality	Increased predation rates	Inspect and remove litter and other anthropogenic waste from along all OT roads during routine road maintenance inspections and as part of the herder livelihoods programme implemented under the Resettlement Action Plan	Check that HSE work program records complete	Officer Fauna	Specialist Fauna Research	Completed
B14	Indirect mortality	Increased predation rates	Enforce no unauthorised waste disposal/littering from Oyu Tolgoi vehicles or around workplace	Workplace inspections	Officer Fauna	Officer Fauna	Ongoing
B15	Direct habitat loss	Habitat lost through dust along roadsides	Dust suppression activities will be undertaken on-site and in strategic areas off-site as per <i>Atmospheric Emissions Management Plan</i> .	Annual Environmental Report details dust effects in vegetation monitoring plots	Officer Rehabilitation	Specialist Rehabilitation	Annually
				Wildlife Incident reports indicating dust impacts on wildlife	Fauna Officer	Specialist Fauna Research	Annually
B16	Indirect Habitat Loss and Fragmentation of Populations	Due to reduced connectivity of landscape posed by	Develop and implement an OT-GSK road mitigation strategy that explores but will not necessarily be limited to, the following elements: a) road closures, restrictions on vehicle movements; b) formal	As required per Road Mitigation strategy	Superintendent Biodiversity	Manager Environment & Biodiversity	Per OT-GSK Road Mitigation strategy

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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
		transport activities	engagement with regional bodies and institutions involved with regional-scale sustainable development on the implementation of certain mitigation measures that have relevance to regional-scale sustainable development; and c) traffic monitoring of the OT – GSK road as well as non-OT roads and monitoring of its impact on animal behaviour.				
B17	Direct habitat loss; ecosystem services	Under infrastructure	OT will rehabilitate land in accordance with the methods and processes described in the and the Mine Closure Plan (OT-10-E14-PLN-0002)	Rehabilitation Management Plan result (excel file)	Rehabilitation Officer	Specialist Rehabilitation	Annually
				Annual Rehabilitation report shows only native local plant seeds used for rehabilitation	Officer Rehabilitation	Specialist Rehabilitation	Annually
				Annual Rehabilitation report shows that where appropriate and rehabilitation of disturbed vegetation included Priority Biodiversity Features such as Mongolian Chesney, Riverine Elm Trees and saxaul growing in sandy soil habitat.	Officer Rehabilitation	Specialist Rehabilitation	Annually

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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
				Annual Rehabilitation report specifies that, where appropriate, use culturally useful/significant plant species as part of the rehabilitation of disturbed areas.	Officer Rehabilitation	Specialist Rehabilitation	Annually
				Rehabilitated tracks and roads appropriately sign-posted to prevent future use by vehicles	Officer Rehabilitation	Specialist Rehabilitation	Annually
				Annual rehabilitation report documents any invasive weeds found during monitoring and that they are removed in accordance with the requirements for pesticide use and management of paragraphs 12-15 of the 2006 version of IFC Performance Standard 3: Pollution Control and Abatement.	Officer Rehabilitation	Specialist Rehabilitation	Annually

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ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
				Ensure that suitable plant species for use in rehabilitation, seed species mix, application rates, etc. are determined by rehabilitation trials conducted by the Environment Team, and that vegetation of natural analogy sites is used to guide the ratio of annual to perennial plants used in rehabilitation seeding mixes.	Officer Plant Nursery	Specialist Rehabilitation	Annually
B18	Monitoring	Relevant to meet net gain	OT will develop a Biodiversity Monitoring and Evaluation Program (BMEP) for critical habitat species sufficient to determine project compliance, over the long-term, with respect to para. 10 of Performance Standard 6 and para. 8 of Performance Requirement 6. The BMEP will reflect OT's stakeholder engagement and will include other identified priority biodiversity species in the BMEP in a manner that is sufficient to determine project compliance with para. 9 of Performance Standard 6 and para. 8 of Performance Requirement 6. For critical habitat species, and	Annual Environmental and Social Report	Specialist Rehabilitation; Specialist Fauna Research	Manager Environment & Biodiversity	Development of the BMEP completed and being reviewed bi-annually. The BMEP monitoring is being implement.

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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
			non-critical priority biodiversity values, the monitoring program will include relevant metrics and threshold values adequate to determine compliance over the long-term and its design will be statistically relevant.				
B19	Indirect habitat loss	Potential increased disturbance	OT will avoid construction and scheduled maintenance activities in the Galbyn Gobi IBA during the lekking season of the Houbara Bustard (15 April - 30 June), with the exception of emergency and other time-sensitive maintenance activities and taking into consideration any identified sensitive areas.	Land Disturbance Checklist completed by Biodiversity Team, before any disturbance (including scheduled maintenance, but with the exception of emergency and other time-sensitive maintenance activities) inside Galbyn Gobi IBA during the lekking season of Houbara Bustard with recommendations of refusal of permission for disturbances likely to impact bustards	Officer Fauna	Specialist Fauna Research	As required
B20	Training	Relevant to meet net gain to biodiversity and ecosystem services	OT will (i) develop a training module for personnel on a suite of biodiversity related topics (including driver awareness and rules, waste disposal and litter, hunting policy); (ii) mainstream biodiversity-related topics as part of toolbox talks; (iii) review their current induction program to ensure that any updated	Training module submitted to Lenders and activities under (ii) and (iii) implemented.	Training department	General Manager HSESC	On-going

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					Implementer	Supervisor	
			commitments are included, as appropriate/relevant.				
B21	External support	Relevant to meet net gain to biodiversity and ecosystem services	OT will enter into a formal engagement with reputable, qualified and internationally recognised independent organization(s) to design and where appropriate implement OT's biodiversity management programmes, including the following tasks: <ul style="list-style-type: none"> Long term biodiversity monitoring and evaluation, Design, implementation and where appropriate management of the Biodiversity Offsets Strategy and Management Program, Support in the development and implementation of Operations Phase Biodiversity Management Plans. 	Internationally recognised independent organizations contracted to support OT in: <ul style="list-style-type: none"> Long term biodiversity monitoring and evaluation, Design, implementation and where appropriate management of the Biodiversity Offsets Strategy and Management Program, Support in the development and implementation of Operations Phase Biodiversity Management Plans. 	Manager Environment & Biodiversity	General HSESC Manager	On-going
B22	Monitoring	Relevant to meet net gain to biodiversity and ecosystem services	Oyu Tolgoi will update its net gain accounting and report to the Lenders on the results of the update	Net gain accounting updated and results reported to the Lenders.	Manager Environment & Biodiversity	General HSESC Manager	Q2 2016 and thereafter at five year intervals or at timeframes agreed to by OT and the Lenders

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ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
B23	Offsets	Relevant to meet net gain to biodiversity and ecosystem services	OT will develop and implement an offsets management program that draws on existing strategy documents, the OT Biodiversity Management Plan, including the OT BAP workbook, and Lender requirements. The Program will include an Offsets Management Plan (OMP) that will: (a) present OT's preferred sustainable offset financing mechanism to support the offsets program, (b) include a multi-year budget plan consistent with OT's planning cycle (i.e., annual, 2 and 5 year forecasting), using as a basis the OT Offset Strategy disclosed in 2012. An update to estimated total program cost will also be included and updated periodically thereafter, (c) be based on corresponding net gain accounting, and (d) identify annual and long term milestones to be achieved to mitigate the residual impacts of project activities in critical habitats which are sufficient to	(i) Identification and evaluation of existing programs for offset pilots and update provided to Lenders.	Manager Environment & Biodiversity	General Manager HSESC	Complete
				(ii) Biodiversity offset funding strategy drafted and shared with the Lenders	Manager Environment & Biodiversity	General Manager HSESC	Completed
				iii) Draft OMP submitted for Lender and Independent Environmental and Social Consultants (IESC) review, with preferred offsets financing option identified	Manager Environment & Biodiversity	General Manager HSESC	Completed
				(iv) Final draft OMP submitted for IESC and Lender review, and Lender approval; final draft OMP will be in a form that addresses the agreed topics set out in OMP Table of Contents and meets the requirements of the BAP commitments and IFC's Performance Standard 6 and EBRD's Performance Requirement 6	Manager Environment & Biodiversity	General Manager HSESC	Completed

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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
			obtain net gains of high biodiversity values through conservation actions, which in each case will ensure long term compliance with IFC's Performance Standard 6, EBRD's Performance Requirement 6 and the objective of Net Gain over the life of the mine.	(v) Final OMP publicly disclosed, in a form agreed by OT and the Lenders.	Manager Environment & Biodiversity	General HSESC Manager	Completed
B24	Monitoring	Relevant to meet positive gain to biodiversity and ecosystem services	OT, through the Ecosystem Services Working Group, will develop and implement a multi-disciplinary Monitoring and Evaluation Program for critical ecosystem services and water-related impacts on vegetation and pasture quality. This Program will build upon and integrate components of the ongoing water monitoring program and include the monitoring of critical ecosystem services and the Bor Ovoo replacement spring. It should be designed in a collaborative manner with environmental and social specialists and integrated with social monitoring. The Monitoring and Evaluation Program will include relevant metrics and thresholds values adequate to determine	Gap analysis completed of existing mitigation strategy for vegetation, pasture quality and ecosystem services	Manager Environment & Biodiversity	General HSESC Manager	Completed
				Draft design for Monitoring and Evaluation Program (and as applicable, specific plan or plans) submitted to Lenders for review	Manager Environment & Biodiversity	General HSESC Manager	Completed
				Monitoring and Evaluation Program (and as applicable, specific plan or plans) finalized and implementation has begun	Manager Environment & Biodiversity	General HSESC Manager	Completed



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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
			compliance over the long-term, integrating adaptive management strategies. Its design will be statistically relevant.				
B25	External support	Relevant to meet positive gain to biodiversity and ecosystem services	OT will appoint/designate the Ecosystem Services Working Group to be responsible for the management of ecosystem services in accordance with Applicable Lender Requirements and the delivery of commitments in the BAP. This Group will serve as the primary point of contact for the Lenders with regards to ecosystem services. This group will be supported by international biodiversity organizations (as established in item B21) and other experts on best and emerging practices in ecosystem services.	Group nominated and advised to Lenders	Manager Environment & Biodiversity	General Manager HSESC	Completed
B26	Stakeholder Engagement	Relevant to meet positive gain to biodiversity and ecosystem services	OT will develop a targeted Stakeholder Engagement Plan covering (i) implementation of on-site biodiversity mitigation; (ii) implementation of offsets management program and plan; and (iii) engagement related to regional/landscape level planning.	Stakeholder Engagement Plan updated	Manager Environment & Biodiversity	General Manager HSESC	Completed

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ID	Topic/aspect	Applicability/activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
B27	Stakeholder Engagement	Relevant to meet positive gain to biodiversity and ecosystem services	OT will carry out a sustained stakeholder engagement and consultation to help ensure that its biodiversity offset program reflects regional level planning considerations, is consistent with national conservation priorities and stakeholders' interests, and that is both technically and politically feasible over the long term. This will include engaging the Government of Mongolia, regional bodies, other mining companies, project affected communities, and interested stakeholders (e.g., Tripartite Council: local herders, regional government, and OT).	OT's on-going engagement documented in reports communicated to Lenders (e.g., such as annual monitoring reports, independent environmental and social monitoring reports, etc.), with dates and minutes of meetings submitted to Lenders	Manager Environment & Biodiversity	General Manager HSESC	As documented in annual monitoring reports and IESC reports
B28	Regional Planning	Relevant to meet positive gain to biodiversity and ecosystem services	As part of the development of the offset program, OT will undertake formal engagement with regional bodies and institutions involved with regional-scale sustainable development on the implementation of certain on-site and offset mitigation measures that may have relevance to regional-scale sustainable development. As a component of OT's wider regional engagement, it will consult with companies and other users of regional infrastructure, including the coal	Stakeholder Engagement Plan developed	Manager Environment & Biodiversity	General Manager HSESC	Completed
				Options plan developed	Superintendent Biodiversity	Manager Environment & Biodiversity	On-going
				OT's on-going engagement and participation documented in reports communicated to Lenders (e.g., such as annual monitoring reports, independent environmental	Manager Environment & Biodiversity	General Manager HSESC	On-going



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ID	Topic/aspect	Applicability/ activity	Control Description	Means of Verification	Responsible Parties		Frequency
					Implementer	Supervisor	
			road, in order to develop an options paper evaluating different schedules for vehicle movements and restrictions on vehicle movement.	and social monitoring reports, etc.).			

Note: Contractor requirements related to biodiversity protection are defined during the contractor engagement process via a risk assessment process that is undertaken as part of the development of the scope of work for individual contracts or work packages. Any requirements related to biodiversity-related issues (as with any other issues identified) are set out in the scope of work for each contract. Any necessary training identified will be provided to contractors and contractor performance will be subject to monitoring, audit and inspection by OT. Further details can be found in the Contractor Engagement Framework.



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6 IMPLEMENTATION SCHEDULE

6.1.1 Review and Revision of this Management Plan

This Management Plan will be reviewed on a two-year period and any necessary revisions made to reflect the changing circumstances or operational needs of OT. Review and revision of this Management Plan and workbook will be the responsibility of the OT General Manager HSESC who is custodian of this Plan.

If material changes to operating procedures are required (as identified through the OT Management of Change procedure), this Management Plan may be updated on an “as required” basis.

Any revisions to this Management Plan will be uploaded to the OT Portal and OT page to ensure access to OT personnel and other parties.

7 MONITORING

7.1 Overview of Monitoring Requirements

The monitoring measures that are to be implemented during the operations phase to assess compliance with Project Standards (Section 4) are described in this section.

In the event that monitoring identifies non-conformance with Project Standards, these will be investigated and appropriate corrective actions identified (see Element 14 Non-conformance incident and action management of the OT HSEC MS). A preliminary approach agreed by OT, the project Lenders and biodiversity advisors / contractors identifies Key Performance Indicators (KPI) for priority biodiversity features and monitoring thresholds that, if exceeded, trigger an adaptive management review and response if appropriate (refer to threshold indicators in the BMEP).

7.2 Key Performance Indicators

Key performance indicators (KPIs) that will track implementation of ongoing on-site biodiversity mitigation are outlined in Table 7-1. Additional indicators of the state of, pressures on, and project responses for specific priority biodiversity features have been developed or are under development. These are documented in the BMEP.

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Table 7-1 Key performance indicators

	KPI	Target	Monitoring measure	Corresponding Control Description
B-KPI-1	Percentage of workers undertaking environmental awareness training via an approved and up-to-date training module/toolbox talks	100% of those identified have been trained within 6 months of employment	Training records checked	B01, B07, B20
B-KPI-2	Security department incident report records of OT personnel or contractors breaching biodiversity relevant OT regulations checked to ensure regular inspections and good reporting (e.g. waste disposal/littering; Illegal Wildlife, Wildlife Products, and Plant Procedure [records of vehicle and aircraft inspections for wildlife products; incident reports from illegal hunting and/or collection etc.])	with a minimum of 50 vehicles entering or leaving the Oyu Tolgoi site inspected/month, adequate reporting, and zero breaches of OT regulations occurring	Security department records and reports checked	B02, B14
B-KPI-3	Number of incidents documented in the security incident register, records of penalties applied and communication of incidents and penalties to all OT staff	Zero incidents	Security department records and reports checked	B03
B-KPI-4	Records of alternative fuel provision to OT personnel and contractors checked	Alternative fuel provision for all operations staff and contractors	Fuel provision records checked	B04
B-KPI-5	Develop and implement the Stakeholder Engagement Plan	Implementation of the Stakeholder Engagement Plan – plan completed and is being implemented	Reporting on the Stakeholder Engagement Plan checked	B05, B06, B26, B27, B28
B-KPI-6	Bird flight diverter installation checked to ensure complete	Installation completed	Length of powerline versus length of powerline with BFDs installed	B08
B-KPI-7	Insulator installation checked to ensure complete	Installation completed	Electrocution hotspots with insulation installed	B09
B-KPI-8	Bird flight diverters and insulators maintained and functioning effectively	Diverters and insulators effectively reducing mortality	Proportion of BFDs and insulation functioning effectively, and mortality rate	B10

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	KPI	Target	Monitoring measure	Corresponding Control Description
B-KPI-9	Monthly powerline and road inspections ongoing with results from them and ad hoc sightings documented in Wildlife Incident Reports	Collision carcasses fully documented in Wildlife Incident Reports	Annual Environmental Report documents powerline inspections and results	B11
B-KPI-10	Quarterly Environmental Report details powerline nest inspections and nest removal	All predatory species' nests removed	Annual Environmental Report documents powerline inspections and results	B12
B-KPI-11	HSE work program records checked to ensure litter inspections and removal are ongoing	Inspections and removal are ongoing	Annual Environmental Report documents litter inspections and results	B13
B-KPI-12	Annual Environmental Report details dust suppression activities undertaken	Dust suppression activities fully implemented as per the <i>Atmospheric Emissions Management Plan</i>	Annual Environmental Report documents dust suppression activities	B15
B-KPI-13	Development and implementation of Road mitigation strategy	Per Road Mitigation strategy	Per Road Mitigation strategy	B16
B-KPI-14	Progress towards a documented rehabilitation target	The documented target is met	Annual rehabilitation reporting	B17
B-KPI-15	A Biodiversity Monitoring and Evaluation Programme is ongoing with progress reporting against relevant thresholds for pressure, state and response indicators for priority biodiversity values	Monitoring is underway for all pressure, state and response indicators with regular reporting	Annual Biodiversity Monitoring and Evaluation reporting	B18
B-KPI-16	The Land Disturbance and Rehabilitation Procedure (LDRP) is followed by the Biodiversity Team, before any disturbance (including scheduled maintenance, but with the exception of emergency and other time-sensitive maintenance activities) occurs inside Galbyn Gobi IBA during the lekking season of Houbara Bustard with recommendations of refusal of permission for disturbances likely to impact bustards	All proposed activities that may cause disturbance are subject to the LDRP and no unapproved disturbances occur	LDRP is reported on in the Annual Environmental Report	B19

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7.3 Key Monitoring Activities

7.3.1 Core Biodiversity Monitoring Programme

Biodiversity monitoring activities during the operational phase will be managed via the BMEP. The objective of the monitoring and evaluation programme is to:

- assess, as much as possible, impacts (positive and negative) of development (i.e., have the predicted impacts occurred or have unanticipated impacts occurred) and assess the effectiveness of mitigation, rehabilitation, and offset actions in order to allow for adaptive management and to minimise biodiversity impacts; and
- demonstrate that the project results in a net gain in-line with Project Strategy and Lender requirements.

In the period from 2013 – 2014 OT undertook core biodiversity monitoring to fill urgent gaps in biodiversity baseline information. The Core Biodiversity Monitoring Programme (CBMP) has since evolved into a regularly planned monitoring program that has been establishing a baseline of understanding in regards to the magnitude of impacts (positive and negative) and of natural variation in biodiversity features, which will inform the development of threshold indicators in the BMEP. The CBMP has been integrated into the BMEP and the results are reported regularly in the CBMP annual report.

7.3.2 Monitoring to Account for Hydrological Uncertainty

The OT ESIA assumed, on the basis of existing data, that the project will have a negligible impact on surface hydrology and shallow groundwater resources of the Project Aol (including the Undai River and water related ecosystem services). This assumption does not include the impact to the Bor Owoo spring, which is a significant direct impact from mine disturbance.

Monitoring to account for hydrological uncertainty is considered important in verifying the risks to biodiversity and ecosystem services and will allow these risks to be amended should the likelihood of impacts increase. This monitoring is considered critical to determine future potential mitigation actions should the project be found to have a negative impact on surface water and shallow groundwater. For this reason, OT has committed undertaking a groundwater monitoring programme, as described in the Water Resources Management Plan (OT-10-E11-PLN-0001), which is sufficient to detect:

- project-related impacts of mine dewatering on surficial and alluvial aquifers;
- project-related impacts on groundwater levels and surface hydrology in the Undai downstream of the mine;
- impacts on surficial and alluvial groundwater levels related to abstraction from the Gunii Hooloi deep cretaceous aquifer;
- any change in groundwater level of the deep Galbyn Gobi aquifer arising from abstraction from the Gunii Hooloi deep cretaceous aquifer; and
- impacts on surficial and alluvial groundwater levels related to abstraction from the deep Durulj Mount Southern aquifer.

7.3.3 Monitoring Associated With key Operational Biodiversity Mitigation Actions and DEIA Approved Construction Phase Flora and Fauna Monitoring Programmes

Core monitoring activities are detailed in full in the BMEP and so not repeated here. Additional monitoring activities initiated as DEIA commitments are summarized in Table 7-2.

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Table 7-2 DEIA monitoring measures

ID	Topic/Aspects	Methods	Frequency	Location
Infrastructure DEIA	Population and migration of fauna	Study within 20 km of infrastructure corridor. Register numbers with the aim of comparing to use and value of the area before disturbance took place.	During migration in Oct-Nov and April-May	
Infrastructure DEIA	Vegetation cover	Monitor cover of, and note, Red Book listed species, endemic and relict plants. Methodology as per Appendix 8 of DEIA.	Annually - July	Borrow pit restoration areas, post construction areas
Water supply DEIA	Re-establishing of vegetation cover	Monitor species density and diversity within 25 m ² plots along the pipeline route. Compare with areas within 2 km of pipeline route with less anthropological disturbance.	Annually - July	5 locations
Water Supply DEIA	Population and migration of fauna	Study within 20 km of infrastructure corridor. Register numbers with the aim of comparing to use and value of the area before disturbance took place.	Annually - July	
Ground water Resource DEIA	Effects on vegetation	<p>Assess and monitor the hydrogeology and vegetation response to water abstraction.</p> <p>Within 12 months of the start of abstraction further research must be undertaken on</p> <ul style="list-style-type: none"> a) the relationship between deep rooted perennial species and soil moisture within the water resource area with specific emphasis on stream and playa sediments and other shallow perched aquifer systems and vegetation dependent on phreatic water within those systems; b) the monitoring of vegetation water balance under various soil moisture conditions and the response to soil moisture availability; c) the potential for changes to vegetation dependent soil moisture as a result of regional aquifer draw down and the likely vegetation response to such changes; and 	Annually – review at 5 years	Gunii Hooloi

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		d) the continuous monitoring of vegetation condition, diversity and biomass as established by the Mongolian Institute of Biological Science throughout the water resource.		
Ground water resource DEIA	Effects on fauna	Monitor surface water depths/area.		Umdain gol, Saglagariin Sair, Butiin nuur, Bulan Sukhait, Sevkhul us, Bulag bayangiin zadgai, Amtgain toirom, Bayangiin toirom and Ukhaa zagiin gol
Ground water resource DEIA	Effects on fauna	Develop a long-term regional fauna monitoring programme to gain a greater understanding of species populations, diversity and ecology, in conjunction with academic institutes and government agencies.	Implement throughout project life.	
Groundwater resource DEIA	Vegetation	Monitor plant density, distribution and condition in 25 m ² plots.	Annually - July	Eastern and western terrace at the end of Undai gol, Bulan Sukhai, Daichingiin zag and Khongor ovoo within Galbyn Gobi, central valley Alag Bayan, western valley of Amtgai, Bor oovonii tal within Gunii Hooloi
Ground water resource DEIA	Vegetation	Monitor the number of: <ul style="list-style-type: none"> • elm trees throughout Undai gol, (near Alag bayan, Artsavchir wells); • saxaul groves in Daichingiin (4 points in central valley of Gunii Hooloi and 4 points in eastern area of Gunii Hooloi/western area of Amtgain toirom); and • tamarix in Bulan sukhai (near khemgiin khuda). 	Annually	Undai gol Daichingiin Bulan sukhai
Mining and processing DEIA	Vegetation	Monitor plant species, coverage (%), quantity of species and quantity of individuals, average height of plants (cm), biomass of plants available as fodder (kg/ha) per monitoring site 25 m x 25 m.	Annually July/August	– 1. In front of construction camp at 648165/4467018

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ID	Topic/Aspects	Methods	Frequency	Location
		Compare with baseline. Survey as per Institute of Botany 1992.		2. East of Hugo North at 654014/4768002 3. SE of Hugo North at 653602/4767396 4. SE of waste water disposal site at 655983/4758952 5. SW of Undai River at 647500/4759625 6. Near Khers well at 647415/4767468
Mining and processing DEIA	Vegetation re-establishment	Monitor re-establishment of vegetation on disturbed areas such as waste rock dumps, tailing dam embankments and areas restored from roads.	Annually	
Mining and processing DEIA	Fauna	Monitor local migratory species.	Annually for first 5 years then review	Ulaan Tolgoi, Ulaan Tolgoi spring, Khukh Khad spring, Maanit (Burkhant) well and Big ger
Mining and processing DEIA	Fauna	Monitor reptiles and rodents as per Institute of Biology (1992) questionnaire for field records.	Annually for first 5 years then review	Project area, Dugat well and surrounds
Mining and processing DEIA	Invertebrates	Monitor and record observations as per Institute of Biology (1992) questionnaire for field records.	Annually for first 5 years then review	Throughout the project site
Mining and processing DEIA	Avifauna	Monitor and record observations as per Institute of Biology (1992) questionnaire for field records.	Annually for first 5 years then review	Throughout the site and regionally

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8 TRAINING

8.1 Overview

The training associated with the implementation of the BMP is included within general and visitor induction training; driver training and job specific training for specific roles including power line inspections, road inspection and maintenance, and security personnel involved in vehicle and aircraft inspections.

8.2 Induction and Refresher Training

Biodiversity awareness training is included in:

- visitors' induction training;
- general site induction for OT personnel and contractors; and
- "new starter orientation pack" for OT personnel and contractors.

The Illegal Wildlife, Wildlife Products, and Plant Procedure (OT-10-E16-PRC-0005) is included in the orientation pack for OT personnel and contractors. These topics are periodically refreshed through refresher training and 'toolbox' talks.

8.3 Job-Specific Training

Biodiversity management requirements associated with OT and contractor drivers are included in the minimum requirements established in the OT Site Wide Traffic Management Plan (OT-10-C3-PRC-0005), the Light Vehicle Operating Procedure (OT-10-C3-PRC-0003) and the Heavy Vehicle Operating procedure (OT-10-C3-PRC-0002).

Additional job specific training is required for visual inspections of power lines for collision carcasses and nest removal; and the collation and reporting of data from these inspections.

Land rehabilitation will be undertaken by OT's employees and contractors in accordance with the minimum requirements of the Land Disturbance Control and Rehabilitation Procedure, and Mine Closure Plan (OT-10-E14-PLN-0002). OT will seek to provide learning opportunities to field supervisors to build capacity within OT to address ongoing rehabilitation, tree planting and translocation in accordance with the needs of the company.

Relevant OT HSESC Department personnel will receive job specific training on the application of the Land Disturbance Permit process in accordance with the Land Disturbance Permit Procedure (OT-10-E14-PRC-0003).

9 AUDITING AND REPORTING

9.1 Internal Auditing

Regular inspections will be carried out by operational area superintendents / supervisors covering a broad range of health, safety and environmental aspects. Routine inspections will additionally be carried out by the HSESC Department using an inspection checklist.

Any incidents identified during these inspections will be reported to the Incident Management Procedure (OT-14-PRC-0001).

Conformance will be monitored via annual internal audit program in accordance with Performance Assessment and Auditing Procedure (OT-16-PRC-0001). This will be undertaken to assess broad compliance with requirements of HSE management system (including ESIA and management plans).

All incidents and non-conformances identified during these inspections are reported as per the requirements of the OTHSEC Management System.

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9.2 External Auditing

Conformance with this plan will be subject to periodic assessment as part of the Rio Tinto HSE Business Conformance Audit programme and by Project Lenders through the planned annual assessments conducted by the IESC.

9.3 Record keeping

Records of audits, inspections and incidents will be managed in accordance with Documentation and Document Control Procedure (OT-08-PRC-0001-E) and Data and Records Management Procedure (OT-15-PRC-0001-E).

Rio Tinto Business Solution shall be used to record Internal and External Audit findings and related actions and Incidents and related investigation and actions.

10 PRIORITY BIODIVERSITY AND RISK REVIEW AND DOCUMENT UPDATING

A series of biodiversity features were identified during the ESIA process, which were used in the subsequent impact assessment. It is necessary to periodically review the risk and sensitivity/priority of the biodiversity features and incorporate new information and understanding of the significance risk. This review process facilitates an adaptive approach to the Project’s mitigation strategy. The following sections outline the approach used by OT to undertake a regular review.

10.1 Priority Biodiversity Features

The ESIA identified a suite of “priority biodiversity features” within two discrete management units in the southern Gobi that encompass the project’s Aol were identified in the OT ESIA. Subsequently, during the completion of the OT BMP, this list of priority biodiversity features was updated through the application of Rio Tinto’s biodiversity guidelines. Priority biodiversity features comprise all natural habitats, all biodiversity features for which the OT project Aol qualifies as Critical Habitat (as defined by IFC Performance Standard 6 [2012] and the EBRD Performance Requirement 6 [2014]) as well as all biodiversity features that are considered significant under Rio Tinto biodiversity guidelines. This revised list of priorities now forms the basis for OT’s management of biodiversity risks—risks to these priority biodiversity features have been re-assessed (Annex 2), with critical and high risk impacts interpreted as potentially ‘significant’. This plan outlines mitigation to address all significant impacts, and the project’s OMP addresses significant residual impacts (after the measures outlined by this plan. This annex documents the changes that have taken place.

Management of biodiversity requires an understanding of the conservation status of the biodiversity features, which can change over time. For example, the OT priority plant species changed as a result of updates to the Mongolian red list. Therefore, to keep the BMP and associated objectives current, periodic review of the conservation status of the key biodiversity indicators should be undertaken and as the BMP revised accordingly.

Potential reasons for changing the conservation status include:

- Knowledge of a species’ distributions changed as a result of new information (developed by OT or in the scientific literature);
- New species recorded in the area or confirmation that some of the species originally thought to be in the Aol have not been detected;
- Changes in the international conservation status as published in the IUCN Red List; and
- The Mongolian Red List of Plants was published, providing a new reference for the conservation status of plants within the area.

The following provides a brief overview of the screening process used in evaluating new information.

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10.1.1 Reviewing Conservation Priorities

Building on the OT ESIA and Rio Tinto biodiversity guidelines, biodiversity data should be screened to identify the following features:

All natural habitats - In most cases, natural habitats are surrogates for the species they support, and the ecosystem services they generate.

Species of conservation priority – Those that:

- a. are nationally or globally threatened (Critically Endangered or Endangered);
- b. have restricted ranges;
- c. are migratory/congregatory and use the site; or
- d. are stakeholder conservation priorities (those not conservation priorities, but with high local use value fall under priority ecosystem services).

Priority ecosystem services - The approach used to identify ecosystem services as documented in the OT ESIA.

Sites of conservation importance - Sites with recognized conservation values that have either:

- a. legal designation (e.g., national and sub-national protected areas, Ramsar sites, Natural World Heritage Sites); or
- b. national or international recognition as conservation priorities, but no legal designation (e.g., Key Biodiversity Areas, Important Bird Areas, etc.).

10.1.2 Review Priority Plants

Priority plants are a significant part of the biodiversity strategy and rehabilitation program. The list of priority plants needs to be updated periodically as new information becomes available or legislation is updated. Criteria used to evaluate priority plant species includes:

- Listed as Critically Endangered or Endangered on the national Red List;
- Not assessed in the national Red List but listed either as Very Rare or Rare in the IUCN Red List and considered genuinely localised or rare based upon OT project data and other distribution data (e.g., notably eFloras 2008; University of Greifswald 2010);
- Not assessed in the national Red List or Red Book, but listed as Very Rare or Rare in Mongolian legislation and considered genuinely localised or rare based upon OT project data and other distribution data (notably eFloras 2008; University of Greifswald 2010-).

The full species-by-species analysis of priority plants is in Table 12-2 and Table 12-3

10.1.3 Review Critical Habitat-Qualifying Biodiversity

Critical habitats are areas with high biodiversity value. OT is committed to delivering net gains of those biodiversity values its Aol that qualify as critical habitat. The approach to identifying Critical Habitat-qualifying biodiversity remains the same as that followed in the ESIA. Screening of newly-identified priority biodiversity features as critical habitat qualifying should be done as part of the review of new information.

10.2 Biodiversity Risk Assessment Review

During the preparation of the ESIA, OT commissioned the Biodiversity Management Plan options papers for project infrastructure, including: airport, borefield-pipeline corridor, coal link road, Guni-Hooloi borefield, high-voltage transmission line, Khanbogd town, mine license area, OT-Gashuun-Sukhait road, OT-Khanbogd transmission line, and the Undai river diversion. These identified six potentially significant impacts on priority biodiversity that OT might cause before mitigation (Table 12-4 column headers).

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A qualitative risk-based approach was used to identify potentially significant impacts. The options papers assessed the risk to each priority biodiversity feature from each of these impacts using Rio Tinto’s likelihood-consequence qualitative risk matrix. When an impact was assessed as posing a critical or high risk to biodiversity, this impact was deemed ‘significant.’ To achieve the goal of delivering a net gain on biodiversity in the South Gobi, OT identified mitigation and offset measures to address all significant impacts. Since the ESIA, the assessment of risks to biodiversity have been updated during the revisions to the BMP. The revised assessment forms the basis for identifying significant impacts that require offsets, which are subsequently managed through the OT OMP. The following sections outline the process for reviewing and updating the risk assessments. The current risk assessment is found in Table 12-4.

10.2.1 Review Significant Impacts

The BMP was completed several years after the project ESIA. There are several reasons to update the assessment of risks and significant impacts:

- OT’s list of priority biodiversity features has changed (Annex 2); newly added species require risk assessments and identification of significant impacts;
- Information on biodiversity in the southern Gobi was poor when the ESIA was prepared, so a precautionary approach was taken to assessing risks. Through the implementation of its Biodiversity Monitoring and Evaluation Programme, OT has improved the level of information on biodiversity and impacts – e.g., on species’ distribution and the effectiveness of mitigation. More accurate assessments of project risks and significant impacts are now possible.

10.2.2 A3.3.2 How Were Significant Impacts Identified?

Risks were re-assessed following the same likelihood-consequence approach outlined in the ESIA (TBC & FFI 2012). When an impact was assessed as posing a critical or high risk to biodiversity, this impact was deemed ‘significant’. OT will further update these risk assessments whenever significant new information becomes available. Table 1 presents the current risk assessments for priority biodiversity.

10.3 Review Frequency

Reviewing and updating the status of the priority biodiversity features and critical habitat qualifying areas should be done:

- As part of the biannual document review (see Section 11), when new IUCN or national red lists are available; and
- During net gain review that is done on a five-year cycle.

11 DOCUMENT CONTROL

File Name	OT-10-E16-PLN-0002- E-Biodiversity Management Plan
Description	Biodiversity Management Plan.
Original Author(s)	Biodiversity Team
Creation Date	2013.09.01
Approved by	Mark Slater, GM HSE
Approval Date	2013.09.01

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Change Number	Record	###

Risk Ranking	Assessment Date	Risk Assessor	Review Schedule	Next Review Date
Moderate	2013.09.01	Biodiversity Team	2 Yearly	2022.10.01

Version	Revision Date	Author(s)	Approved By	Revision Notes
1.0	2013.09.01	Biodiversity Team	Mark Slater, GM HSE	Approved version
2.0	2016.04.31	Mahoney D'Alterio Dennis Hosack	Kerrie Edwards, GM HSE	NOC 2016-02 BMP and BAP were separated as independent documents Incorporate 2015 BAP updates into document.
2.1	2018.04.30	Various authors	Erdenebayar Naran, Manager Environment and Biodiversity	NOC 2018-004 Revisions as part of bi-annual review
3.0	2020.10.01	Myagmarjav L, Specialist Fauna, James Hamilton, Principle Advisor, Biodiversity team	Erdenebayar Naran, Manager Environment and Biodiversity	NOC 2020-008 Revisions as part of bi-annual review

12 SUPPORTING ANNEXES

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12.1 Annex 1: Biodiversity Commitments Register

Table 12-1 tracks the history of changes to all biodiversity related management actions from the OT construction phase.

Table 12-1 Biodiversity commitments register

Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF01-a	Workers' behaviour/ presence of humans	General	Limit access of all project personnel to undisturbed habitats to reduce potential habitat degradation and interaction with wildlife. Restrict personnel movements to designated roads and paths to minimise disturbance.	B06, SEP, TMP 05, TMP 12, TMP 29, TMP 30,	Biodiversity Management Plan, Stakeholder Engagement Plan, Transport Management Plan
FF01-b	Workers' behaviour/ presence of humans	General	All trapping, hunting or disturbance to wild animals will be strictly forbidden	B01, B02	Biodiversity Management Plan, Illegal Wildlife, Wildlife Products, and Plant Procedure
FF01-c	Workers' behaviour/ presence of humans	General	Provide all project operations staff and contractors with fuel for <i>ger</i> stoves (where applicable) to remove the need of local timber (i.e., saxaul)	B04	Biodiversity Management Plan
FF01-d	Workers' behaviour/ presence of humans	General	Keeping pets or feeding wildlife within the Project area and camps will be strictly prohibited.	CSCB	HR-ST-01 Camp Standard and Code of Behaviour
FF01-e	Workers' behaviour/ presence of humans	General	Enforce no unauthorised waste disposal/littering from Oyu Tolgoi vehicles or around work place (see <i>Chapter D8: Waste Construction Management Plan</i>).	B13	Biodiversity Management Plan
FF02-a	Workers' behaviour/ presence of humans	Illegal hunting/ animal products	Control illegal hunting by Oyu Tolgoi personnel when at work (awareness, publicity and enforcement of strict no-hunting policy, including inspection as required and suitable penalties)	B01	Biodiversity Management Plan, Illegal Wildlife, Wildlife Products, and Plant Procedure



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FF02-b	Workers' behaviour/ presence of humans	Illegal hunting/ animal products	Engage with local and regional stakeholders to control hunting in the Oyu Tolgoi Aol and more broadly within Khanbogd <i>soum</i> . As part of this, research the most effective actions to address illegal hunting and plant/animal collecting, and undertake appropriate and practicable actions adequate to facilitate the reduction in the level and impact of illegal hunting and plant/animal collecting to baseline levels (i.e., prior to the Oyu Tolgoi Project).	B05	Biodiversity Management Plan
FF02-c	Workers' behaviour/ presence of humans	Illegal hunting/ animal products	Inspect an adequate proportion of all aircraft baggage under Oyu Tolgoi control for illegal wild animal products.	B02	Biodiversity Management Plan, Illegal Wildlife, Wildlife Products, and Plant Procedure
FF02-d	Workers' behaviour/ presence of humans	Illegal hunting/ animal products	Routinely inspect vehicles entering the Oyu Tolgoi site for illegal wild animal products.	B02	Biodiversity Management Plan, Illegal Wildlife, Wildlife Products, and Plant Procedure
FF02-e	Workers' behaviour/ presence of humans	Illegal hunting/ animal products	Publicise and apply suitable penalties to offenders under Oyu Tolgoi control found trafficking illegal wild animal products.	B03, IWPAPP	Biodiversity Management Plan, Illegal Wildlife, Wildlife Products, and Plant Procedure
FF03-a	Water resources	Mine Licence Area activities	Adherence to applicable Project Standards.		Water Resources Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF03-b	Water resources	Mine Licence Area activities	Oyu Tolgoi will install a replacement spring downstream of the mining lease area which will be fed by the diverted Undai base flow and ensure replacement spring mimics the ecological functions of Bor Ovoo spring in terms of maintaining similar surface and subsurface flow patterns and seasonal variations throughout the year.	WR12, WR13	Water Resources Management Plan
FF03-c	Water resources	Mine Licence Area activities	To minimise adverse impacts to flora and fauna, further measures to protect water resources are provided in <i>Chapter D7: Water Resources Construction Management Plan</i> .	WR10, WRm01, WRm02	Water Resources Management Plan
FF04	Land disturbance	Land disturbance procedure	Oyu Tolgoi operates Land Disturbance Permit procedure which is an internal approval for any type of land disturbing activities covering all native vegetation clearing inside and outside the lease areas.	LDPP	Land Disturbance Permit Procedure
FF04-a	Land disturbance	Land disturbance procedure	Prior to disturbance, proposed disturbance areas will be demarcated and inspected by Oyu Tolgoi Environmental Officers for aspects which may require environmental protection (threatened flora and fauna, priority fauna habitat, significant ecological communities etc.).	LDPP	Land Disturbance Permit Procedure
FF04-b	Land disturbance	Land disturbance procedure	Where necessary, rare or endangered species of flora identified in the work area may be transplanted in order to avoid adverse environmental impacts.	LDPP	Land Disturbance Permit Procedure



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FF04-c	Land disturbance	Land disturbance procedure	Where impacts to an item or items of environmental or cultural significance are unavoidable, all practicable steps will be taken to minimise the degree of impact.	LDPP	Land Disturbance Permit Procedure
FF04-d	Land disturbance	Land disturbance procedure	Areas containing an item or items of environmental or cultural significance (including biodiversity) which is determined cannot be disturbed will be physically barricaded and sign posted.	LDPP	Land Disturbance Permit Procedure
FF04-e	Land disturbance	Land disturbance procedure	Where practicable, clearance of vegetation identified as containing potential breeding resources for fauna is to be conducted outside of breeding periods.	LDPP	Land Disturbance Permit Procedure
FF04-f	Land disturbance	Land disturbance procedure	<p>Where construction activities are unable to be scheduled outside of breeding periods, for example – Houbara Bustard lekking season, specific activity plans will be developed that include:</p> <ul style="list-style-type: none"> • Field monitoring of proposed disturbance area immediately prior to and during activities to identify habitat or activity that will be avoided; • Specific measures to minimise construction activities in identified sensitive areas (such as the Galbyn Gobi Important Bird Area); • Measures to schedule works such that impacts on sensitive areas can be avoided where ever possible; and • Specific induction of contractors and employees on measures to minimise disturbance of breeding species through restriction of certain 	LDPP	Land Disturbance Permit Procedure



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
			activities or avoidance of machinery use in identified areas.		
FF05-a	Land take, earthworks and construction	Fencing	Oyu Tolgoi will erect fencing around the Mine Licence Area. Fencing will be used to prevent access to active mining areas and plant operations including trial pits, put down areas and temporary camps. It will also prevent access to large mammals offering some protection to vegetation within the Mine Licence Area.	Nil	
FF05-b	Land take, earthworks and construction	Fencing	Fencing will be appropriate for the wildlife under consideration.	Nil	
FF05-c	Land take, earthworks and construction	Fencing	Fencing will be maintained throughout construction.	Nil	
FF06-a	Land take, earthworks and construction	Restoration[1] [1] Per Rio Tinto's Biodiversity Strategy (2012),	Oyu Tolgoi will assess the feasibility and practicality of collecting seeds from local species and they will be propagated in a Khanbogd nursery where practical.	LU03, RP	Land Disturbance and Rehabilitation Management Plan, Land Disturbance Permit Procedure, Rehabilitation Procedure
FF06-b	Land take, earthworks and construction	Restoration	Oyu Tolgoi will return the maximum amount of disturbed land to pre-mining conditions suitable for nomadic herdsmen and their grazing animals.	MCP	Mine Closure Plan
FF06-c	Land take, earthworks and construction	Restoration	Oyu Tolgoi will leave the open pit areas (e.g., borrow pits), waste dumps and TSF in a condition that adequately protects long term safety of animals and the public.	MCP	Mine Closure Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF06-d	Land take, earthworks and construction	Restoration	Oyu Tolgoi will use, where possible, locally occurring vegetation species in the reclamation process.	MCP	Mine Closure Plan Rehabilitation Procedure also includes this requirement
FF07	Rehabilitation	General	Oyu Tolgoi will implement annual Rehabilitation Management Plans with the aim to achieve final land uses compatible with pre-mining uses including endemic vegetation cover, water bodies, wildlife habitat, and livestock pasture.	LU03	Land Disturbance Control and Rehabilitation Management Plan Rehabilitation Procedure
FF07-a	Rehabilitation	General	Oyu Tolgoi will rehabilitate and restore areas and features impacted in line with the standard Rio Tinto rehabilitation and restoration practice.	LU	Land Disturbance Control and Rehabilitation Management Plan Rehabilitation Procedure Mine Closure Plan
FF07-b	Rehabilitation	General	Oyu Tolgoi will collect seeds from local species for direct use in rehabilitation activities and for propagation at Khanbogd nursery (see also FF09).	Nil	Nil
FF07-c	Rehabilitation	General	Suitable plant species for use in rehabilitation, seed species mix, application rates etc. will be determined by rehabilitation trials conducted by the Oyu Tolgoi Environment Team. Vegetation of natural analogue sites will be used to guide the ratio of annual to perennial plants used in rehabilitation seeding mixes.	MCP	Mine Closure Plan
FF07-d	Rehabilitation	General	Where appropriate, rehabilitation and restoration of disturbed vegetation will specifically include	RP	Rehabilitation Procedure



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			Priority Biodiversity Features such as Mongolian Chesney, Riverine Elm Trees and Saxaul.		
FF07-e	Rehabilitation	General	Where appropriate, use culturally useful/significant plant species as part of rehabilitation of disturbed areas.	RP	Rehabilitation Procedure
FF07-f	Rehabilitation	General	As part of its rehabilitation programmes, Oyu Tolgoi will progressively recreate stable landforms compatible with the surrounding environment following the completion of Oyu Tolgoi mine project infrastructure components.	RP	Rehabilitation Procedure
FF07-g	Rehabilitation	General	Areas disturbed during exploration, construction, development and mining operations will be progressively rehabilitated rather than deferring large scale rehabilitation to the mine closure phase.	LU03, MCP	Land Disturbance Control and Rehabilitation Management Plan, Mine Closure Plan
FF07-h	Rehabilitation	General	Rehabilitation will also be managed through the Mine Closure Management Plan that will be developed as part of the suite of operational management plans. See Chapter D21: Mine Closure and Rehabilitation Framework and also Chapter D4: Topsoil Construction Management Plan.	MCP	Mine Closure Plan
FF07-i	Rehabilitation	Rehabilitation	Areas disturbed during exploration, construction, development and mining operations, including the Temporary Airstrip, will be progressively rehabilitated rather than deferring large scale rehabilitation to the mine closure phase.	LU03, MCP	Land Disturbance Control and Rehabilitation Management Plan, Mine Closure Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF08	Reinstatement	Roads and tracks	Old and disused roads and tracks that were constructed by Oyu Tolgoi will be progressively rehabilitated. Rehabilitated tracks and roads will be appropriately sign-posted to prevent future use by vehicles and will be monitored to assess rehab success.	RP	Rehabilitation Procedure
FF09	Khanbogd nursery	Restoration	A native plant nursery has been established in Khanbogd Town to cultivate locally native species for use in Oyu Tolgoi rehabilitation, on-site greening projects and landscaping as well as Khanbogd Town greening and landscaping.	Nil	Nil
FF09a	Khanbogd nursery	Restoration	Nursery began initial operation in 2011 and is planned to reach full production capacity by 2014. Other objectives for the nursery are to: <ul style="list-style-type: none"> Establish an information centre within the nursery grounds to educate visitors on the geography, biodiversity, cultural history, environmental impacts of pollution/waste and traditions of nature conservation in the South Gobi region. Promote the cultivation of Rare and Very Rare plant species of the local area - including species identified as Priority Biodiversity Features 	Nil	Nil
FF10	Land take, earthworks and construction	Rare species	Prior to disturbance, proposed land disturbance areas will be demarcated and inspected by suitably qualified Oyu Tolgoi Environmental Officers for aspects which may require	LDDP	Land Disturbance Permit Procedure



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
			<p>environmental protection (e.g., threatened flora and fauna, priority fauna habitat, conservation significant ecological communities, etc.).</p> <p>Based on results of environmental survey, the Environmental Department may develop specific measures to protect flora and fauna with a proposed land disturbance envelope. These measures must be implemented and maintained by the earthwork operators/contractors at all times throughout the proposed earthwork.</p> <p>Biodiversity features retained within a land disturbance envelope will be mapped and monitored to ensure adverse impacts are avoided/minimised.</p> <p>In circumstances where trees must be removed and not translocated, the species and tree age/diameters will be logged.</p> <p>Recording of all other incidents involving fauna.</p>		
FF11	Land take, earthworks and construction.	Rare plants relocation	<p>Where pre-clearance surveys identify the presence of priority plant species, the Oyu Tolgoi Environmental Department will investigate the potential for relocating individuals of priority plant species.</p> <p>Any use of herbicides will comply with the requirements for pesticide use and management of paragraphs 12-15 of the 2006 version of IFC Performance Standard 3: Pollution Control and Abatement.</p>	LDPP	Land Disturbance Permit Procedure



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF11-a	Land take, earthworks and construction.	Rare plants relocation	- Prior to disturbance, proposed land disturbance areas will be demarcated and inspected by suitably qualified Oyu Tolgoi Environmental Officers for aspects which may require environmental protection including rare and very rare plants or other priority flora.	LDPP	Land Disturbance Permit Procedure
FF11-b	Land take, earthworks and construction.	Rare plants relocation	- Prior to any relocation effort, a relocation plan will be drawn up and locations identified for the relocation of flora.	LDPP	Land Disturbance Permit Procedure
FF11-c	Land take, earthworks and construction.	Rare plants relocation	- Rare and very rare plants within the Mine Licence Area that could be affected by construction (but which are not within any land disturbance envelope) will be demarcated to ensure no unintentional disturbance occurs.	LDPP	Land Disturbance Permit Procedure
FF11-d	Land take, earthworks and construction.	Rare plants relocation	- Weed Control Management, as outlined in the interim rehabilitation management plan, will be implemented.	LU-M 01, RP	Land Disturbance and Rehabilitation Management Plan, Rehabilitation Procedure
FF11-e	Land take, earthworks and construction.	Rare plants relocation	- Herbicides will not be used unless the appropriate approvals have been obtained from the applicable Mongolian authorities. Wherever possible the use of herbicides will be minimised.	RP	Rehabilitation Procedure
FF11-f	Land take, earthworks and construction.	Rare plants relocation	- There will be no new quarries constructed by Oyu Tolgoi in the "pristine" or "limited use" zones of the SGSPA (South Gobi Strictly Protected Area).	LDPP	Land Disturbance Permit Procedure



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF12	Noise and vibration	General	<p>1. Noisy activities including road traffic and noisy equipment will be managed to minimise potential disturbance to wildlife.</p> <p>2. Noisy construction activities will be limited to normal working hours</p> <p>3. Noisy equipment in the mine will be located in areas where there is natural screening of the equipment</p> <p>4. No stationary noisy equipment to be located within 500 m of a spring or other faunal focal point</p> <p>5. Particularly noisy equipment which has the potential to reach the upper limits of the Project standards will be fitted with noise abatement equipment such as noise barriers, baffles, sound insulation or enclosures where practicable (See Chapter D3: Noise and Vibration Construction Management Plan)</p> <p>Refer to Chapter B4: Noise and Vibration Baseline for noise standards containing specific noise parameters/guidance</p>	NV04, NMCP	Noise and Vibration Management Plan, Noise Monitoring and Control Procedure
FF13	Light pollution	General	As much as practical, all light units will be designed so as to illuminate the minimal necessary area, thus not creating light pollution. This applies to light units both on and off site.	NIL	NIL
FF13-a	Light pollution	General	As much as practical, lighting units will be positioned to utilise natural or equipment screening to reduce the visual impact.	NIL	NIL



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FF13-b	Light pollution	General	To the extent practicable, no permanent lighting units will be stationed within 500 m of a spring or other faunal focal point (with the exception of the Bor Ovoo spring which is proposed to be directly disturbed by the mine development)	NIL	NIL
FF14	Vehicle movements	General	Traffic management and vehicle/machinery hygiene measures will be implemented that minimise adverse impact to flora and fauna. These measures are detailed in the Chapter D11: Transport Construction Management Plan. Specific measures identified as part of an infrastructure specific biodiversity impact and mitigation assessment are provided in FF15 – FF21 below.	TMP	Transport Management Plan
FF15	Roads	Speed restrictions	Enforce speed limits of Oyu Tolgoi vehicles on sealed and unsealed roads on and off-lease (speed limits for Oyu Tolgoi vehicles will be reviewed in consultation with a wildlife expert).	TMP07	Transport Management Plan
FF15-a	Roads	Speed restrictions	Engage with key stakeholders to support the adoption and enforcement of suitable speed limits (in line with Oyu Tolgoi vehicle speed limits) on all public users of the Oyu Tolgoi to GS Road.	TMP29	Transport Management Plan
FF16	Roads	Off road traffic	Unless specifically authorised, prohibit Oyu Tolgoi Project vehicles (i.e., including contractors) from driving 'off-road (i.e., off existing defined tracks and roads).	TMP05	Transport Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF17	Roads	Driver behaviour	Oyu Tolgoi will engage with key stakeholders to encourage all road users to minimise parking beside roads except in an emergency or to manage fatigue. This applies to all roads used or maintained by Oyu Tolgoi. All Oyu Tolgoi and contractors' vehicles will have GPS tracking systems fitted which will record vehicle movements.	TMP05, TMP12, TMP30	Transport Management Plan
FF18	Roads	Warning signs	Erect signage on roads to warn drivers of the risk of collision with wild animals. This applies to all roads used or maintained by Oyu Tolgoi.	Nil	Nil
FF19a	Roads	Litter and carcasses	Oyu Tolgoi will inspect and remove litter and other anthropogenic waste from along the Oyu Tolgoi to Gashuun Sukhait road, Oyu Tolgoi to Khanbogd road and Oyu Tolgoi Borefield Access road 3 times weekly during peak construction period (frequency of inspections to be reviewed on an ongoing basis, and is expected to be reduced as project moves to operational phase and traffic on roads reduces).	B12	Biodiversity Management Plan
FF19b	Roads	Litter and carcasses	All collision carcasses identified by litter inspection teams and/or vehicles travelling along roads will be reported to site environmental offices and inspected by trained site biodiversity specialists.	B10, TMP08	Biodiversity Management Plan, Transport Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF20	Oyu Tolgoi -GS road	Underpasses	As described in the Biodiversity Action Plan: <ul style="list-style-type: none"> Engage an independent scientific advisory panel. The panel's initial mandate will be to provide an opinion on a series of technical questions related to the OT-GSK road mitigation strategy. 	B15	Biodiversity Management Plan OT-GSK Road Mitigation Strategy Animal movement assessments as part of the Core Biodiversity Monitoring Program annual report
FF21	Roads	Roads and tracks	As described in the Biodiversity Action Plan: <ul style="list-style-type: none"> Write a workplan for the installation of structures or barriers at sensitive areas to prevent vehicles from leaving the Oyu Tolgoi to Gashuun-Sukhait, Oyu Tolgoi to Khanbogd and Oyu Tolgoi airport roads; Install the structures. Structures should serve as an effective deterrent while at the same time facilitate wildlife crossing (or not present a barrier to wildlife crossings) and not creating a risk to traffic safety. 	NIL	NIL
FF22a	Dust	On site and strategic areas off site	Dust suppression activities will be undertaken on site and in strategic areas off site as per <i>Chapter D2: Atmospheric Emissions Construction Management Plan</i> .	AQ05 TMP16	Atmospheric Emissions Management Plan, Transport Management Plan
FF22b	Dust	On site and strategic areas off site	Dust control and progressive sealing of the Oyu Tolgoi to Gashuun Sukhait road will minimise the potential for windborne dust transmission.	TMP02 TMP16	Transport Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF24	Transmission lines/other project structures	Predatory birds	Document and where safe to do so in accordance with HSE policies, remove collision carcasses and nests from medium voltage and high voltage powerlines during regular inspections. Revise periodicity of inspections after 6 months then at annual intervals.	B10, B11	Biodiversity Action Plan, Road and Powerline Inspection Procedure
FF24-a	Transmission lines	Predatory birds	Where safe to do so and in accordance with HSE policies, Oyu Tolgoi will remove nests of birds which predate bustards (except where known to be Saker Falcon nests) where nests are made on project-related infrastructure.	B11	Biodiversity Management Plan
FF25	Flora & Fauna Protection Measures - Airport Operation	Airport Operation	Impacts from airport operations will be managed so as to minimise adverse impacts to wildlife. Specific measures for the protection of flora and fauna are described in the <i>Chapter D11: Transport Construction Management Plan</i> .	Nil	Nil
FF26	Sustainable development	Khanbogd regional development	Seek opportunities to engage with key stakeholders and integrate biodiversity mitigation actions, including those that minimise cumulative fragmentation effects of linear infrastructure into regional planning, including infrastructure development, within Khanbogd soum. (It is noted that more detailed commitments may be developed in association with the Oyu Tolgoi Project social team).	SEP	Stakeholder Engagement Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF27	Power infrastructure line	Collision risk reduction	Add bird flight diverters to all high voltage offsite power lines constructed for the Oyu Tolgoi project (install alternating flapper-type flight diverters and large spirals, alternating contrasting colours, at a frequency of at least one of each every 10 - 20 m (i.e., one device every 5 -10 m).	B08	Biodiversity Management Plan
FF28	Power infrastructure line	Electrocution risk reduction	Insulate medium-voltage power line poles, dead-ends and sub-stations and on pylons where necessary and safe to do so in accordance with HSE policies.	B09	Biodiversity Management Plan
FF29	Roads	Collision fragmentation and risk reduction	Provide driver awareness and training for all Oyu Tolgoi staff and contractors with specific information on priority biodiversity features (e.g., ungulates and birds).	B07	Biodiversity Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
FF30	Biodiversity Management Plan	Monitoring	<p>Oyu Tolgoi is committed to the development of a Biodiversity Management Plan (BMP) for the Project's operational phase.</p> <p>Mitigation actions that are not able to be implemented as part of the Project design and or actual construction will be implemented during the operation phase of the Project and will be captured in the Oyu Tolgoi BMP. The BMP will set out the operational biodiversity objectives, associated targets and actions that will be undertaken by Oyu Tolgoi in order to effectively manage biodiversity. Actions will be assigned to a specific individual or department and other human and financial resources will be allocated as appropriate. The Oyu Tolgoi BMP will have strong linkages with the operations EMS and performance against each BMP action will be regularly tracked and reported to site management.</p>	Nil	Nil
FF31	Monitoring Biodiversity	- Monitoring	<p>Oyu Tolgoi will develop a detailed Monitoring and Evaluation Program which provides scientifically robust methods for assessing:</p> <ul style="list-style-type: none"> • Projected-related residual impacts on biodiversity • The adequacy and effectiveness of mitigation actions • The adequacy of measures that mitigate impacts to critical ecosystem services including vegetation and pasture quality. • The adequacy and effectiveness of offset actions. 	Section 7.3, B17	Biodiversity Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
			<ul style="list-style-type: none"> Where appropriate, Oyu Tolgoi will seek out opportunities to coordinate and collaborate with other South Gobi biodiversity stakeholders so as to maximise the spatiotemporal breadth and cost-efficiency of its monitoring and evaluation program. 		
FF32	Monitoring - animal crossings	Monitoring	Oyu Tolgoi will ensure that biodiversity impact mitigation is considered during logistics planning and will implement monitoring of ungulate movements which will inform any potential future restrictions on traffic movements.	BAP	Core Biodiversity Monitoring Program Annual Report
FF33	Monitoring Hydrology -	Monitoring	<p>Oyu Tolgoi has committed to undertaking the following specific monitoring with respect to groundwater:</p> <ul style="list-style-type: none"> In consultation with experts, establish a groundwater monitoring programme sufficient to detect project-related impacts of mine dewatering on surficial and alluvial aquifers (temporal and spatial analyses required to assess rate and extent). In consultation with experts, establish a groundwater monitoring programme sufficient to enable the detection of project-related impacts on groundwater levels and surface hydrology in the Undai downstream of the mine. In consultation with experts, establish a groundwater monitoring programme sufficient to detect impacts on surficial and alluvial 	WRm01, WRm02, WRm11	Water Resources Management Plan



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Construction Phase ID Ref	Topic/ Aspect	Applicability/ Activity	Control Description	Operations Phase ID Ref	Documents
			groundwater levels related to abstraction from the Gunii Hooloi deep cretaceous aquifer.		

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12.2 Annex 2: List of Priority Biodiversity

The following tables provide a summary of the current priority plant list (Table 12-2) and priority biodiversity features (Table 12-3). These are reviewed and updated as per Section 10.

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Table 12-2 Key information on conservation priority plant species and justification for prioritization and current management category

Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Agriophyllum pungens</i>	Y		Rare	n/a	n/a						Recorded from nine phytogeographical regions of Mongolia (University of Greifswald 2010), and common in Khanbogd Soum (OT project data). This annual self-seeds and so is not a priority for rehabilitation.
<i>Allium anisopodium</i>	Y		Rare	n/a	n/a			Y			Recorded from 12 phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. It is sparsely distributed within Khanbogd Soum and so should be transplanted when found during an LDP.
<i>Allium mongolicum</i> (WCS)	Y		Rare	n/a	n/a						Widely distributed in Mongolia (University of Greifswald 2010), and common in Khanbogd Soum - growing in patches in some areas (OT project data). This perennial self-seeds and so is not a priority for rehabilitation.
<i>Amygdalus mongolica</i>	Y		Rare	Rare	EN	Possibly	Y				As a nationally Endangered species (Nyambayar <i>et al.</i> 2011), this is considered a high priority species that should be avoided at all times. It has been recorded from three phytogeographical regions of Mongolia (University of Greifswald 2010). The UoA might overlap >10% of its national range, so is identified as possibly representing tier

⁶ Law on Natural Plants (1995, 2004); Government Resolution #153 (1995)

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							Management category				
Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	Justification for prioritization and management category
											2 Critical Habitat for the species. Impacts are considered unlikely.
<i>Arnebia guttata</i>	Y	Y	Very Rare	n/a	n/a			Y			Recorded from nine phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. In Khanbogd Soum only a few plants are found at a time, and seed has not been seen - when found, it is thus preferable to transplant it for rehabilitation.
<i>Artemisia rutifolia</i>	Y		Rare	n/a	n/a			Y			Recorded from seven phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare where it occurs in Khanbogd Soum. It is unlikely to be disturbed by the project, as it has only been recorded from Khanbogd Mountain to date. It is not clear whether seeds could be collected, so it should be transplanted if it is ever found during an LDP.
<i>Artemisia santolinifolia</i>	Y		Rare	n/a	n/a			Y			Recorded from 12 phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare, though it is collected heavily by local people. It is sparsely distributed within Khanbogd Soum

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Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
											and so should be transplanted when found during an LDP.
<i>Artemisia xanthochroa</i>	Y	Y	Very Rare	n/a	NT			Y			Recorded from four phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare where it occurs in Khanbogd Soum. It is unlikely to be disturbed by the project, as it has only been recorded from Khanbogd Mountain to date. It is not clear whether seeds could be collected, so it should be transplanted if it is ever found during an LDP.
<i>Asterothamnus central-asiaticus</i>	Y	Y	Very Rare	n/a	LC			Y			Recorded from seven phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in Khanbogd Soum. It is sparsely distributed within Khanbogd Soum and so should be transplanted when found during an LDP.
<i>Brachanthemum gobicum</i>	Y	Y	Very Rare	n/a	NT			Y			Recorded from three phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in Khanbogd Soum. It grows uncommonly in patches in sandy soils within Khanbogd Soum and so should be transplanted when found during an LDP.

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Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Caragana brachypoda</i>	Y	Y	Very Rare	n/a	VU			Y			Recorded from two phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in Khanbogd Soum. It grows uncommonly in patches within Khanbogd Soum and so should be transplanted when found during an LDP.
<i>Caragana gobica</i>	No, but likely	Y	Very Rare	n/a	VU			Y			This species was predicted from Khanbogd Soum, but has not been found there to date. It should be transplanted if ever found during an LDP.
<i>Chesneya mongolica</i>	Y	Y	Very Rare	Very Rare	NT			Y			Recorded from six phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. It is sparsely distributed within Khanbogd Soum and so should be transplanted when found during an LDP.
<i>Cistanche deserticola</i>	No, but likely	Y	Very Rare	Rare	EN		Y				This species was predicted from Khanbogd Soum, but has not been found there to date. It is precautionarily listed as a priority, since it is nationally Endangered (Nyambayar <i>et al.</i> 2011) and may yet be found. It has been recorded from five phytogeographical regions of Mongolia (University of Greifswald 2010). Given the lack of records from multiple surveys in Khanbogd Soum, it is unlikely that the UoA represents Critical Habitat for the species. Impacts are considered unlikely.

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Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Cistanche lanzhouensis</i> (formerly <i>feddenana</i>) C.	Y		Rare	n/a	n/a	Possibly	Y				A genuinely rare parasitic species within Khanbogd Soum (OT project data), and only found in one phytogeographical region of Mongolia (University of Greifswald 2010). It is otherwise found in China, where it is not very widespread (eFloras 2008). As a nationally Rare species within law, it is precautionarily treated as a priority species, until assessed within the national Red List or Red Book. As such, impacts should be avoided at all times. If it is genuinely nationally Critically Endangered or Endangered, the UoA appears to hold >10% of its national range and thus may represent tier 2 Critical Habitat for the species. Impacts are considered unlikely.
<i>Cynomorium songaricum</i>	Y		Rare	Rare	n/a			Y			It is recorded from seven phytogeographical regions of Mongolia (University of Greifswald 2010), and is reportedly abundant within Khanbogd Soum (OT project data - WCS 2016). Therefore, although it is listed as a nationally Rare species (Anon 2014) it is not treated as a priority species. Impacts are considered unlikely.
<i>Ephedra equisetina</i>	Y		Very Rare	n/a	VU			Y			Recorded from nine phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in mountainous areas of Khanbogd Soum. Given its habitat, it is unlikely to be disturbed by the project. It is not clear whether seeds could be

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							Management category				
Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	Justification for prioritization and management category
											collected, so it should be transplanted if it is ever found during an LDP.
<i>Ephedra sinica</i>	Y		Rare	n/a	n/a					Y	Recorded widely within Mongolia (University of Greifswald 2010) and beyond. It is common within Khanbogd Soum and produces seed (OT project data), so is not a priority for transplanting. It is a particularly important plant for rehabilitation as it stabilises sandy soil. Further efforts need to be made to propagate this species within the OT nursery.
<i>Glycyrrhiza uralensis</i>	Y		Rare	n/a	n/a				Y		Recorded widely within Mongolia (University of Greifswald 2010) and beyond. It is easily grown from seed (OT project data), so is not a priority for transplanting.
<i>Gueldenstaedtia monophylla</i>	Y		Very Rare	n/a	VU			Y			Recorded from six phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. It is sparsely distributed within Khanbogd Soum and so should be transplanted when found during an LDP.
<i>Gymnocarpus przewalskii</i>	No, but likely	Y	Very Rare	n/a	VU			Y			Recorded from two widely separated phytogeographical regions of Mongolia. It was predicted from Khanbogd Soum, but has not been found there to date. It should be transplanted if ever found during an LDP.

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Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Ilijinia regelii</i>	No, but likely	Y	Very Rare	n/a	VU			Y			Recorded from three phytogeographical regions of Mongolia (University of Greifswald 2010). It was predicted from Khanbogd Soum, but has not been found there to date. It should be transplanted if ever found during an LDP.
<i>Incarvillea potaninii</i>	No, but likely	Y	Very Rare	n/a	EN		Y				This species was predicted from Khanbogd Soum, but has not been found there to date. Since it is nationally Endangered (Nyambayar <i>et al.</i> 2011) and may yet be found, it is precautionarily listed as a high priority species that should be avoided at all times. It has been recorded from three phytogeographical regions of Mongolia (University of Greifswald 2010). Given the lack of records from multiple surveys in Khanbogd Soum, it is unlikely that the UoA represents Critical Habitat for the species. Impacts are considered unlikely.
<i>Jurinea mongolica</i>	No, but likely	Y	Very Rare	n/a	VU			Y			Recorded from four phytogeographical regions of Mongolia (University of Greifswald 2010). It was predicted from Khanbogd Soum, but has not been found there to date. It should be transplanted if ever found during an LDP.
<i>Limonium aureum</i>	Y	Y	Very Rare	n/a	LC			Y			Recorded from nine phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. It is sparsely distributed within Khanbogd Soum and so should be transplanted when found during an LDP.

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							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Lycium truncatum</i>	Y			Rare	n/a		Y				As a nationally Rare species (Anon 2014), this is considered a high priority species that should be avoided at all times. It has only been found in several small patches within Khanbogd Soum (OT project data). Given its apparent rarity in Khanbogd Soum and distribution across four phytogeographical regions of Mongolia (University of Greifswald 2010), it is unlikely that the UoA holds >10% of its national range. The UoA is thus unlikely to represent Critical Habitat for this species. Past impacts are considered possible for this species.
<i>Oligaea leucophylla</i>	Y	Y	Very Rare	n/a	NT				Y		Recorded from five phytogeographical regions of Mongolia (University of Greifswald 2010), but rare in Khanbogd Soum (OT project data). Seeds have been propagated in the OT nursery and are optimal to use for rehabilitation than transplanted plants (which have had low survival rates).
<i>Oxytropis aciphylla</i>	Y		Rare	n/a	n/a					Y	Recorded from 10 phytogeographical regions of Mongolia (University of Greifswald 2010). It is a common perennial in Khanbogd Soum (OT project data). Seeds have been seen, and propagation should be trialled in the nursery.



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							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Pennisetum centrasiaticum</i> (WCS)	Y		Rare	n/a	n/a			Y			Recorded from three phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in mountainous areas of Khanbogd Soum. Given its habitat, it is unlikely to be disturbed by the project. If it is ever found during an LDP, seeds should be collected for propagation or plants should be transplanted.
<i>Phragmites communis</i>	Y		Rare	n/a	n/a						Widespread and self-seeds readily, so is not a focus for rehabilitation.
<i>Populus euphratica</i>	Y		Very Rare	Rare	VU			Y			Recorded from six phytogeographical regions of Mongolia (University of Greifswald 2010). Riverine Elm and Poplar is a priority habitat, and so mature trees should be avoided wherever possible. If small trees are found during an LDP, they should be transplanted.
<i>Potaninia mongolica</i>	Y	Y	Very Rare	n/a	NT			Y			Recorded from four phytogeographical regions of Mongolia (University of Greifswald 2010), and common within Khanbogd Soum (OT project data). It is, however, believed to be a relict species and is not known to produce seed within Khanbogd Soum. Plants should thus be transplanted when found during an LDP.

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Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Sedum aizoon</i>	Y		Rare	n/a	n/a			Y			Recorded from 12 phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in mountainous areas of Khanbogd Soum. Given its habitat, it is unlikely to be disturbed by the project. If it is ever found during an LDP, seeds should be collected for propagation or plants should be transplanted (though this latter option will be challenging).
<i>Setaria glauca</i>	Y		Rare	n/a	n/a						Recorded from four phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. An annual species that self-seeds readily. Not a focus for rehabilitation.
<i>Sophora alopecuroides</i>	Y		Rare	n/a	n/a			Y			Recorded from five phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. It is sparsely distributed within Khanbogd Soum and so should be transplanted when found during an LDP.

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							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Spongiocarpella (Oxytropis) grubovii</i>	Y	Y	Very Rare	Very Rare	EN	Possibly	Y				As a nationally Endangered species (Nyambayar et al. 2011), this is considered a high priority species that should be avoided at all times. It has been recorded from two phytogeographical regions of Mongolia (University of Greifswald 2010). It is otherwise found in China, where it is not very widespread (eFloras 2008). The UoA might overlap >10% of its national range, so is identified as possibly representing tier 2 Critical Habitat for the species. Past impacts are considered possible for this species.
<i>Stellaria dichotoma</i>	Y		Rare	n/a	n/a					Y	Recorded from 12 phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. It produces seed every year, is not uncommon, and can probably be grown from seed. Further efforts need to be made to propagate this species within the OT nursery.
<i>Tugarinovia mongolica</i>	Y	Y	Very Rare	n/a	VU			Y			Recorded from four phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare in mountainous areas of Khanbogd Soum. Given its habitat, it is unlikely to be disturbed by the project. Seeds have not been found in the area so, if plants are ever found during an LDP, they should be transplanted (though this latter will be challenging).



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Species	Occurrence in the Unit of Analysis	ESIA CH-candidate species	Law ⁶	Red book 3rd edition)	National Red List	Tier 2 CH-qualifying (updated)	Management category				Justification for prioritization and management category
							Priority plant - Avoid	Transplant for rehab	Grow from seed for rehab	Research how to grow from seed for rehab	
<i>Vincetoxicum sibiricum</i>	Y		Very Rare	n/a	LC					Y	Recorded from 13 phytogeographical regions of Mongolia (University of Greifswald 2010), and the OT project does not consider it to be genuinely rare. This perennial produces seed every year, is not uncommon, and can probably be grown from seed. Further efforts need to be made to propagate this species within the OT nursery.
<i>Zygophyllum potaninii</i>	Y	Y	Very Rare	n/a	EN	Possibly	Y				As a nationally Endangered species (Nyambayar et al. 2011), this is considered a high priority species that should be avoided at all times. It has been recorded from four phytogeographical regions of Mongolia (University of Greifswald 2010). It is otherwise found in China (eFloras 2008). The UoA might overlap >10% of its national range, so is identified as possibly representing tier 2 Critical Habitat for the species. Past impacts are considered possible for this species.

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12.2.1 Current Priorities

Table 12-3 presents a full list of priority biodiversity, noting changes from the ESIA.

Table 12-3 Priority biodiversity features

Priority feature	CH-qualifying?	National Red List status	Global Red List status	Justification for change
NATURAL HABITAT				
Riverine elm and poplar				Updated from 'riverine elm trees' to 'riverine elm and poplar' to reflect stakeholder priorities communicated to OT.
Ephemeral Lakes and Pools				No change - identified in the ESIA as a priority habitat.
Saxaul forest				No change - identified in the ESIA as a priority habitat.
Granite outcrop floral communities	Yes			No change - identified in the ESIA as a priority habitat and CH-qualifying feature because of the unique species assemblage supported.
Rangeland				Differentiation of habitat types is arbitrary and difficult to assess on the ground. 'Rangeland' captures stakeholder values and the gradation that exists between desert, semi-desert and desert-steppe habitats.
Eastern-Gobi desert steppe				This was ill-defined and replaced by 'rangeland'.
Alashan Plateau semi-desert				This was ill-defined and replaced by 'rangeland'.
MAMMALS				
Snow Leopard			EN	Identified in the ESIA but this species has been removed on the basis that there is no current regular occurrence in the study area.
Asiatic Wild Ass	Yes	EN	NT	Identified in the ESIA as a globally- and nationally-threatened species, present within the area in CH-qualifying numbers. Subsequently downlisted to NT globally, but retained as a nationally EN species that triggers CH.
Argali	Yes	EN	NT	No change - identified in the ESIA as a nationally-threatened species present within the study area in CH-qualifying numbers.
Goitered Gazelle	Yes	VU	VU	No change - identified in the ESIA as a globally- and nationally-threatened species present within the study area in CH-qualifying numbers.
Mongolian Gazelle		EN	LC	No change - identified in the ESIA as a nationally-threatened species present within the study area.

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Priority feature	CH-qualifying?	National Red List status	Global Red List status	Justification for change
Long-eared Jerboa		VU	LC	No change - identified in the ESIA as a nationally-threatened species present within the study area.
Marbled Polecat		DD	VU	Identified since the ESIA as a globally-threatened species present within the study area.
BIRDS				
Swan Goose		NT	VU	No change - identified in the ESIA as a globally-threatened species present within the study area.
Ferruginous Duck		VU	NT	No change - identified in the ESIA as a nationally-threatened species present within the study area.
Short-toed Snake-eagle	Yes	EN	LC	No change - identified in the ESIA as a nationally-threatened species present within the study area in CH-qualifying numbers.
Saker Falcon		VU	EN	No change - identified in the ESIA as a globally- and nationally-threatened species present within the study area.
Egyptian Vulture			EN	Identified erroneously in the ESIA, presumably in place of the next species.
Lammergeier		VU	LC	Identified since the ESIA as a nationally-threatened species present within the study area.
Great Bustard		VU	VU	No change - identified in the ESIA as a globally- and nationally-threatened species present within the study area.
Houbara Bustard		VU	VU	No change - identified in the ESIA as a globally- and nationally-threatened species present within the study area.
Relict Gull		EN	VU	No change - identified in the ESIA as a globally- and nationally-threatened species present within the study area.
Pallas' Sandgrouse		LC	LC	No change - identified in the ESIA as a stakeholder priority.
Mongolian Accentor		LC	LC	No change - identified in the ESIA as a restricted-range species.
Mongolian Ground-jay		VU	LC	No change - identified in the ESIA as a nationally-threatened species present within the study area.
Yellow-breasted Bunting		NT	VU	No change - identified in the ESIA as a globally-threatened species present within the study area.
Dalmatian Pelican		CR	VU	Identified since the ESIA as a globally- and nationally-threatened species sometimes present within the study area.
PLANTS				

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Priority feature	CH-qualifying?	National Red List status	Global Red List status	Justification for change
18 'very rare' plants such as Mongolian Chesney	Yes			Updated since the ESIA - see Table 12-2.
<i>Amygdalus mongolica</i>	Yes	EN		Updated since the ESIA - see Table 12-2.
<i>Cistanche deserticola</i>		EN		Updated since the ESIA - see Table 12-2.
<i>Cistanche lanzhouensis</i> (formerly <i>C. feddenana</i>)	Yes			Updated since the ESIA - see Table 12-2.
<i>Cynomorium songaricum</i>				Updated since the ESIA - see Table 12-2.
<i>Incarvillea potaninii</i>		EN		Updated since the ESIA - see Table 12-2.
<i>Lycium truncatum</i>				Updated since the ESIA - see Table 12-2.
<i>Spongiocarpella (Oxytropis) grubovii</i>	Yes	EN		Updated since the ESIA - see Table 12-2.
<i>Zygophyllum potaninii</i>	Yes	EN		Updated since the ESIA - see Table 12-2.
ECOSYSTEM SERVICES				
Water regulation				No change - identified in the ESIA as a priority ecosystem service.
Biomass fuel				No change - identified in the ESIA as a priority ecosystem service.
Fresh water				No change - identified in the ESIA as a priority ecosystem service.
Livestock				This was ill-defined and replaced by "Pasture"
SITES OF CONSERVATION IMPORTANCE				
Galba Gobi Important Bird Area				No change - identified in the ESIA as a site of conservation importance.
Small Gobi B Strictly Protected Area			Cat' I	No change - identified in the ESIA as a site of conservation importance.
Zagiin Us			Cat' VI	No change - identified in the ESIA as a site of conservation importance.

From the ESIA, blue shading represents changes, green shading additions, and orange shading removals.

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12.3 Annex 3: Re-Assessing Risks to OT's Priority Biodiversity Features

During the preparation of the project Environmental and Social Impact Assessment (ESIA), Oyu Tolgoi LLC (OT) commissioned Biodiversity Management Plan options papers for project infrastructure: airport, borefield-pipeline corridor, coal link road, Gunii-Hooloi borefield, high-voltage transmission line, Khanbogd town, mine license area, OT-Gashuun-Sukhait road, OT-Khanbogd transmission line, and the Undaii river diversion. These identified six potentially significant impacts on priority biodiversity that OT might cause before mitigation (Table 1 column headers).

A qualitative risk-based approach was used to identify potentially significant impacts. The options papers assessed the risk to each priority biodiversity feature from each of these impacts using Rio Tinto's likelihood-consequence qualitative risk matrix. When an impact was assessed as posing a critical or high risk to biodiversity, this impact was deemed 'significant'. To achieve the goal of delivering a net positive impact on biodiversity in the South Gobi, OT identified mitigation and offset measures to address all significant impacts. Since the ESIA, during the completion of the Oyu Tolgoi Biodiversity Management Plan, the assessment of risks to biodiversity has been updated. This revised assessment forms the basis for identifying significant impacts that require offsets. This annex documents the changes that have taken place.

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Table 12-4 Current priority biodiversity and assessed risks

	CH-qualifying?	Direct habitat loss under infrastructure	Indirect habitat loss: avoidance of infrastructure	Direct mortality: collision/electrocution with infrastructure / vehicles	Indirect mortality from hunting / collection	Indirect mortality: increased predators	Fragmentation	Maximum threat
HABITATS								
Riverine elm and poplar		Low /Moderate						Low /Moderate
Ephemeral Lakes & Pools								
Tall saxaul forest		Low /Moderate			Low /Moderate			Low /Moderate
Granite outcrop floral communities	Yes				Low /Moderate			
Rangeland		Low /Moderate						Low /Moderate
MAMMALS								
Asiatic Wild Ass	Yes	Low /Moderate	High	Low /Moderate	Critical	Low /Moderate	Critical	Critical
Argali		Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate
Goitered Gazelle	Yes	Low /Moderate	High	Low /Moderate	High	Low /Moderate	Critical	Critical
Mongolian Gazelle		Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate	Low /Moderate
Long-eared Jerboa						Low /Moderate		Low /Moderate
Marbled Polecat		Low /Moderate						Low /Moderate
BIRDS								
Swan Goose				Low /Moderate				Low /Moderate
Ferruginous Duck				Low /Moderate				Low /Moderate
Short-toed Snake-eagle		Low /Moderate		Low /Moderate		Low /Moderate		Low /Moderate
Saker Falcon		Low /Moderate		Low /Moderate	High	Low /Moderate		High
Lammergeier		Low /Moderate		Low /Moderate				Low /Moderate
Great Bustard				Low /Moderate	Low /Moderate			Low /Moderate
Houbara Bustard		Low /Moderate	High	High	Low /Moderate	High	Low /Moderate	High
Relict Gull				Low /Moderate				Low /Moderate
Pallas' Sandgrouse		Low /Moderate		Low /Moderate				Low /Moderate

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	CH-qualifying?	Direct habitat loss under infrastructure	Indirect habitat loss: avoidance of infrastructure	Direct mortality: collision/electrocution with infrastructure / vehicles	Indirect mortality from hunting / collection	Indirect mortality: increased predators	Fragmentation	Maximum threat
Mongolian Accentor		Low /Moderate						Low /Moderate
Mongolian Ground-jay		Low /Moderate		Low /Moderate		Low /Moderate		Low /Moderate
Yellow -breasted Bunting								
Dalmatian Pelican				Low /Moderate				Low /Moderate
PLANTS								
<i>Amygdalus mongolica</i>	Yes	Low /Moderate						Low /Moderate
<i>Cistanche deserticola</i>		Low /Moderate						Low /Moderate
<i>Cistanche lanzhouensis</i> (formerly <i>C. feddenana</i>)	Yes	Low /Moderate			Low /Moderate			Low /Moderate
<i>Cynomorium songaricum</i>		Low /Moderate			High			High
<i>Incarvillea potaninii</i>		Low /Moderate						Low /Moderate
<i>Lycium truncatum</i>		High						High
<i>Spongiocarpella (Oxytropis) grubovii</i>	Yes	High						High
<i>Zygophyllum potaninii</i>	Yes	High						High

Blue highlights indicate first-time risk assessments for biodiversity identified as of priority post the original pre-ESIA infrastructure risk assessments. Dark grey highlights indicate revisions driven by improved information post-ESIA. All risks were assessed for all species: blank cells indicate that risks are either not applicable or negligible. All impacts identified as critical or high risk are expected to result in significant impacts to the affected priority biodiversity features. Mitigation and offsets have been designed to address all significant impacts.