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BESPOKE ESG ADVISORS

A REPORT FOR METAGRO

Environmental & Social Impact Assessment - Metagro

09 July 2024

METagro

Creating Sustainable Value

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Abbreviations

AOI	Area of Influence
BAP	Biodiversity Action Plan
CDC	Centre for Disease Control and Prevention
CHA	Critical Habitat Assessment
CITES	Convention on International Trade Endangered Species of Wild Fauna and Flora
CR	Critically Endangered
CSHS	Community Safety, Health and Security
CTM	Custom Tarialan Management
DEIA	Detailed Environmental Impact Assessment
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EN	Endangered
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
FAO	Food and Agriculture Organisation of the United Nations
GAHP	Good Animal Husbandry Practices
GDI	Gender Development Index

GDP	Gross Domestic Product
GEIA	General Environmental Impact Assessment
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GIS	Geographic Information System
GMO	Genetically Modified Organism
GOM	Government of Mongolia
GPS	Global Positioning System
HACCP	Hazard Analysis and Critical Control Point
HAZOP	Hazard and Operability
HR	Human Resources
HSE	Health, Safety and Environment
IAQM	Institute of Air Quality Management
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
ILO	International Labour Organisation
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
IUCN	International Union for Conservation of Nature and Natural Resources
LC	Least Concern
MASL	Metres Above Sea Level
MET	Ministry of Environment and Tourism
MFARD	Mongolian Farmers Association for Rural Development
MNFA	Mongolian National Farmer Association
MNS	Mongolian National Standard
MNT	Mongolian Tugrik
MOFALI	Ministry of Food, Agriculture and Light Industry
NAMAC	National Association of Mongolian Agricultural Cooperatives
NGO	Non-governmental Organisation
NNL	No Net Loss
NSO	National Statistical Offices
NT	Near Threatened
ODS	Ozone Depleting Substance
OECD	Organisation for Co-operation and Development
OHS	Occupational Health and Safety
PAA	Project Affected Area
PBF	Priority Biodiversity Features

PDCA	Plan-Do-Check-Act
PPE	Personal Protective Equipment
PS	Performance Standard
RBO	River Basin Organisation
SEP	Stakeholder Engagement Plan
SHC	Soum Health Centres
SOP	Standard Operating Procedure
STI	Sexually Transmitted Infection
TAHC	Terrestrial Animal Health Code
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VHC	Village Health Centres
VU	Vulnerable
ANNUAL	World Bank Group
WHO	World Health Organisation
WRI	World Resources Institute

1. Introduction

1.1 Background

The International Finance Corporation (IFC) is considering providing finance to MCS Group for their Metagro agribusiness project located in eastern Mongolia. To meet the requirements IFC Performance Standards, MCS Group/Metagro therefore commissioned Earth Active to conduct an Environmental and Social Impact Assessment (ESIA) of its operations.

MCS Group/Metagro is seeking IFC finance for its key operations which have been conceived around two main business strands: the development of 1) arable farming and 2) cattle production and processing[1]. IFC has made three prior investments within the MCS Group: MCS Group #25170, 2008; MCS Property #31669, 2012; MCS Covid #44118, 2020.

National Environmental Impact Assessments (EIAs) for the various site components have been conducted by national consultants and are referenced in this document. This ESIA report, however, is a separate report focused on the work Metagro needs to carry out in order to meet international standards (described in more detail later) focused on its active and maturing development of the Metagro Farm site for arable farming and cattle production. These agribusiness developments will hereinafter be referred to as the 'Project'.

In addition to this ESIA report, a Critical Habitat Assessment (CHA) and a Stakeholder Engagement Plan (SEP) have been developed and are provided separately, with summary findings incorporated into this report. Based on the CHA findings, a Biodiversity Action Plan (BAP) will be required for the project and this will be developed over the next 4 months in partnership with local species experts.

1.2 Purpose of ESIA Study

The ESIA study has been undertaken to identify, evaluate and manage environmental and social (E&S) risks and impacts that may arise due to implementation and operation of the Project. The document has been prepared in line with the requirements of IFC's Performance Standards, World Bank Group's EHS Guidelines and applicable sector guidelines, as well as applicable local and national regulations. The principal objectives of the ESIA study are to:

- identify any potentially significant adverse E&S impacts associated with the proposed Project.
- determine measures to prevent, minimise, mitigate, and if required compensate such impacts in line with the mitigation hierarchy.
- identify potential E&S opportunities to improve the sustainability of the Project.
- work with the design team to inform Project design based on E&S issues.
- identify and conduct required and agreed data-gap-filling complementary studies (e.g. CHA studies) beyond the on-going national EIA work, given the Project's context and its environmental and social risks.

[1] Metagro were also planning to develop a "pig production" business strand, consisting of a pig farm at its main site and an in-development concept for a pig abattoir and meat processing plant in Baganuur an eastern district of Ulaanbaatar. However, in November 2023 it was confirmed that the pig production business concept has been put on hold.

1.3 Methodology of ESIA Study

The ESIA process is a systematic approach to identifying, describing and evaluating the potential environmental and social effects of a Project, and developing measures that will be implemented to manage these effects. These measures include ones that avoid or reduce the significance of adverse effects to an acceptable level and enhance beneficial effects.

The diagram below provides an overview of the main project tasks and outputs and their relationships.

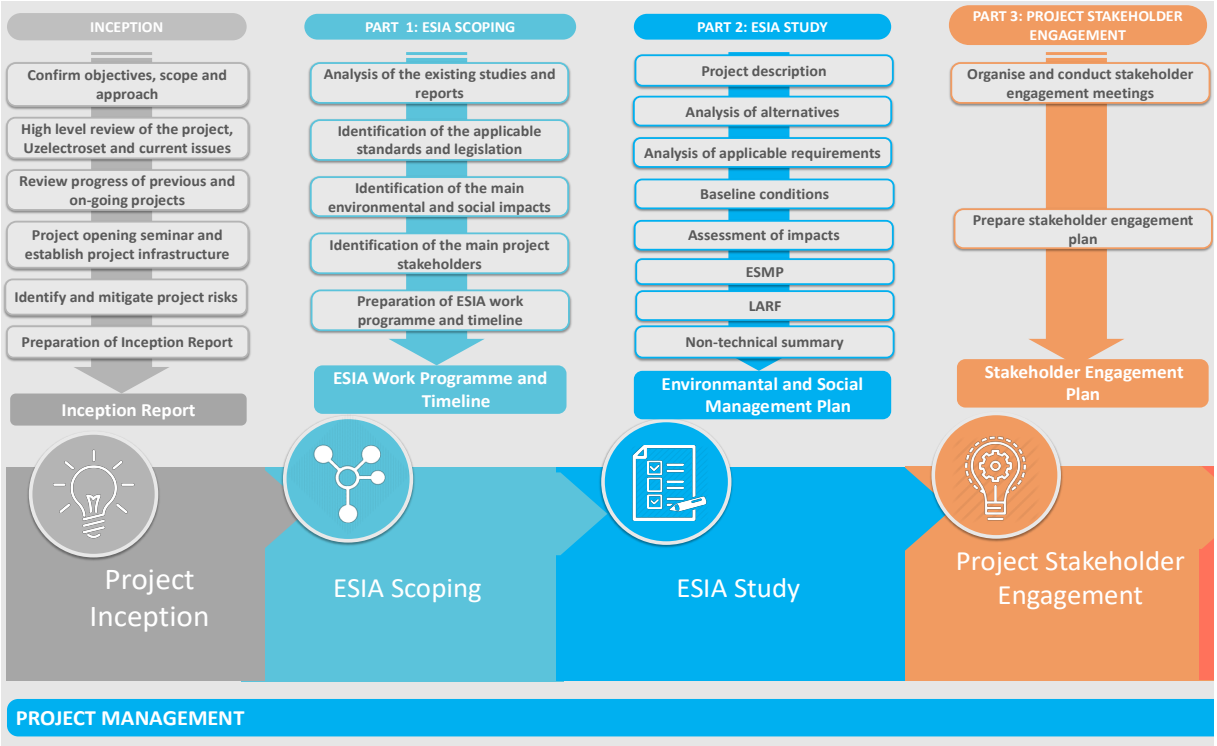


Figure 1. Overview of Approach and Methodology

The ESIA process consisted of the following key elements:

- Initial screening of the Project and scoping of the assessment process
- Examination of alternatives
- Stakeholder identification (focusing on those directly affected) and gathering of environmental and social baseline data
- Impact identification, prediction, and analysis
- Generation of mitigation or management measures and actions
- Significance of impacts and evaluation of residual impacts
- Documentation of the assessment process (i.e., ESIA report)

This ESIA also supports the requirements of Mongolia's environmental assessment laws and regulations, including the relevant disclosure of information and public consultation requirements, and has developed been developed in line with the expectations of good international industry practice (GIIP).

As discussed in detail in Section 3.3 the following main lender standards were used to guide the ESIA:

- IFC Performance Standards 2012

- WBG Guidelines: Annual Crop Production (2016)
- WBG Guidelines: Mammalian Livestock Production (2007)
- WBG Guidelines: Meat Processing (2007)
- IFC Good Practices on Mainstreaming Animal Welfare in Livestock Operations
- IFC Practices for Sustainable Investment in Livestock Operations
- CDC Animal Welfare Toolkit
- Global Gap for Livestock certification
- IFC & EBRD Note on Workers' Accommodation: Processes and Standards

1.4 Preliminary ESIA Screening and Scoping

The first stage in the ESIA process typically involves 'screening' of the Project based on initial review materials, in line with the environmental and social risk (as required by IFC screening criteria). After this preliminary screening, the ESIA team undertook the scoping phase of the Project, which involved the following:

- **Desktop study:** Review of Project documentation relating to corporate governance, technical operations, and environmental and social management. This included reviews of local and regional environmental and social information via internet searches, and a focus on existing online ecological datasets for context.
- **Interviews with Project personnel:** Close collaboration with senior staff from corporate management and site operations to gain a better understanding of the Project's development and business objectives, including the rationale behind Project design decisions.
- **In-country reconnaissance:** Site visit and consultations during 29 May – 9 June 2023 for direct observation of the Project's operational approach and context, including visits with Project proponents, stakeholder meetings in Ulaanbaatar, tours of the Metagro Farm and surrounding areas, as well as discussions with administrative authorities, local community members and other key stakeholders.
- A Scoping Report was prepared, dated 31 July 2023, and a summary of findings is included in **Appendix B**. The following potential E&S impacts were therefore scoped into the full Project ESIA.

- Air Quality
- Traffic and Transport
- Noise and Vibration
- Climate
- Water Resources
- Waste
- Geology and Soils
- Animal Welfare
- Biodiversity
- Project Design and Facilities
- Engagement and Communication
- Benefits Sharing
- Grievance Management
- E&S Capacity
- Population Influx
- Occupational Health and Safety
- Community Health and Safety
- Gender
- Labour Management
- Supply Chain
- Security and Human Rights

The following topics were scoped out of further consideration in the ESIA (see Scoping Study for justification):

- Landscape and Visual Impact
- Land Use
- Land Acquisition and Involuntary Resettlement
- Cultural Heritage
- Indigenous Peoples

1.5 ESIA Data Gathering

The ESIA team has used a combination of primary and secondary data from various sources including the following:

- Desk-based study and client dialogue and information share conducted throughout the duration of this assessment (May to March 2024)
- In-country reconnaissance with international consultants and national teams (29 May to 9 June 2023)
- Detailed field surveys for biodiversity and water quality baselines during two site visits (29 June to 4 July 2023 and 2 to 6 October 2023)
- Stakeholder consultation during the initial field assessment and the two detailed field surveys.
- Additional site survey work for the baseline environmental assessment of the cattle slaughterhouse and wastewater treatment plan (August 2023, by national partner EcoTrend)

1.6 ESIA Report Structure and Related Reports

This document presents the ESIA report for the Project and is set out as follows:

- Chapter 1: Introduction
- Chapter 2: Project Description
- Chapter 3: Standards and Legislative Framework
- Chapter 4: Analysis of Alternatives
- Chapter 5: Environmental Baseline
- Chapter 6: Socio-Economic Baseline
- Chapter 7: Environmental and Social Management System
- Chapter 8: Environmental & Social Impacts, Risks and Mitigations
- Chapter 9: Environmental and Social Management

The ESIA is one of several documents prepared to meet IFC requirements. Others including the:

- Environmental and Social Action Plan (ESAP) – included within this ESIA Report
- Stakeholder Engagement Plan (SEP)
- Non-Technical Summary

Details on the contents of the SEP are included in Section 0 and SEP actions are planned to commence in 2024.

1.7 ESIA and Metagro Teams

The ESIA project was led by Earth Active an international ESG consultancy based in the UK working in collaboration with MFC, an international social consultancy based in Canada. National Mongolian specialists from EcoTrend and independent national experts were also involved. An overview of the full ESIA team is included in **Appendix A** and it is referred to collectively in this document as "the consultant team".

The consultant team gratefully acknowledges the ready cooperation and responsiveness of Metagro during meetings, site visits and related fact-finding and discussions. The principal contacts at Metagro involved during this ESIA are listed below, and we thank them and their colleagues for all their assistance:

Table 1. Principal participants from Metagro

Munkhtur Togooch	Chairman of Board of Directors
Solongo Batbekh	Chief Executive Officer
Munkhbat Shasnaabadraa	Chief Operating Officer
Azzaya Lkhagvasuren	Project Manager / Business development manager
Zoljargal Ulziibayar	former Project Manager
Orgil Batsaikhan	Head of Business Development Unit
Byambasuren Sanjjav	Head of HR and Administration Unit
Larry Naeth	Senior Agronomist
Altanbadralt Sharkhuu	Senior Agronomist
Bayarmaa Battogtokh	Environmental Specialist
Oyun Batbuyan	HSE Manager
Altanzaya Bayarmunkh	Public Relationship Officer
Sainzaya Ulziisaikhan	Quality Control Engineer
Dr. Onolbaatar Byambaa	Head of Cattle Feedlot
Dr. Sumiya Perelei	Veterinarian

2. Project Description

2.1 Background

Metagro was established in December 2021 as the agriculture division of the MCS Group, the largest private sector business in Mongolia with a vision to create a vertically integrated agriculture business model by integrating arable farming with livestock projects. MCS Group's motto is "Introducing world standards to Mongolia", which includes the implementation of advanced global agriculture technologies for the Mongolian agriculture industry. The Project is part of the wider MCS Group business that currently employs 13,000 people full-time and provides 30,000 direct and indirect job opportunities. IFC has made three prior investments within the MCS Group: MCS Group #25170, 2008; MCS Property #31669, 2012; MCS Covid #44118, 2020.

Metagro will supply quality meat products to the national market in Mongolia in response to growing domestic meat consumption demand and to reduce the import dependency on these products. Exports to international markets are also included in the Metagro business model.

Metagro has now established full-scale agriculture on its large 10,257 hectare arable landholdings in Eastern Mongolia and had essentially completed the construction and full-scale operation of a 5,000 head cattle feedlot, as at the end of December 2023. Around 1,600 young cattle are to be supplied to the Metagro Farm each month by national herders and breeders and fattened on-site prior to processing for meat. Feed for the cattle is supplied by a combination of crops grown in the Metagro arable fields and feed imported from external suppliers.

Metagro also intended to launch its plans for pig production in the near future and has longer-term concepts for sheep and poultry meat production, as shown in the illustrative business implementation concept below.

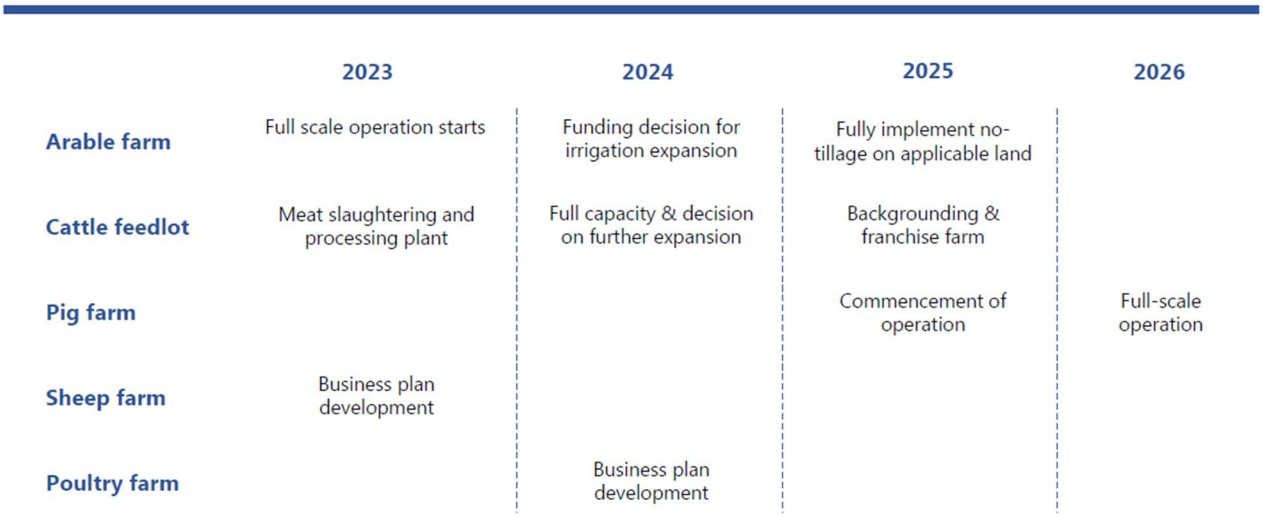


Figure 2. Metagro's five-year business implementation plan

However, in November 2023 the pig production business concept was put on hold – this applies to both the pig farm itself and to an in-development concept for a pig abattoir and meat processing plant in Baganuur an eastern district of Ulaanbaatar. The land for potential pig production has not been acquired and it is

understood that if and when a pig production business is developed, the design and footprint of the necessary facilities may be subject to change.

This ESIA report is therefore focused on Metagro's active and maturing development of the Metagro Farm site for arable farming and cattle production.

2.2 Project Location

Metagro's headquarters are in Mongolia's capital city of Ulaanbaatar. The Metagro Farm site is based on portions of the former 20,000 hectare Chandgana collective farm in the Kherlen district of Khentii province, about 290 km directly east of Ulaanbaatar. Chinggis City is the capital of Khentii province (aimag), 45km east-south-east of the site.

Figure 3. Location of the main Metagro farming operations in Mongolia.

The nearest local community to the Metagro Farm is Ulziit village, about 3 km east of the Project site at its closest point, with a population of approximately 1,100 people. The next nearest community is Murun (or Mörön), with a population of approximately 1,800, located about 16 km east-south-east of the Metagro Farm. Chinggis City is 45km away to the east-south-east and has a population of about 25,000 people, while the Khentii aimag overall has a population of about 80,000.

2.3 Metagro Farm

The overall layout and orientation of the Metagro Farm and Feedlot operation, and homestead are shown in the figure below.

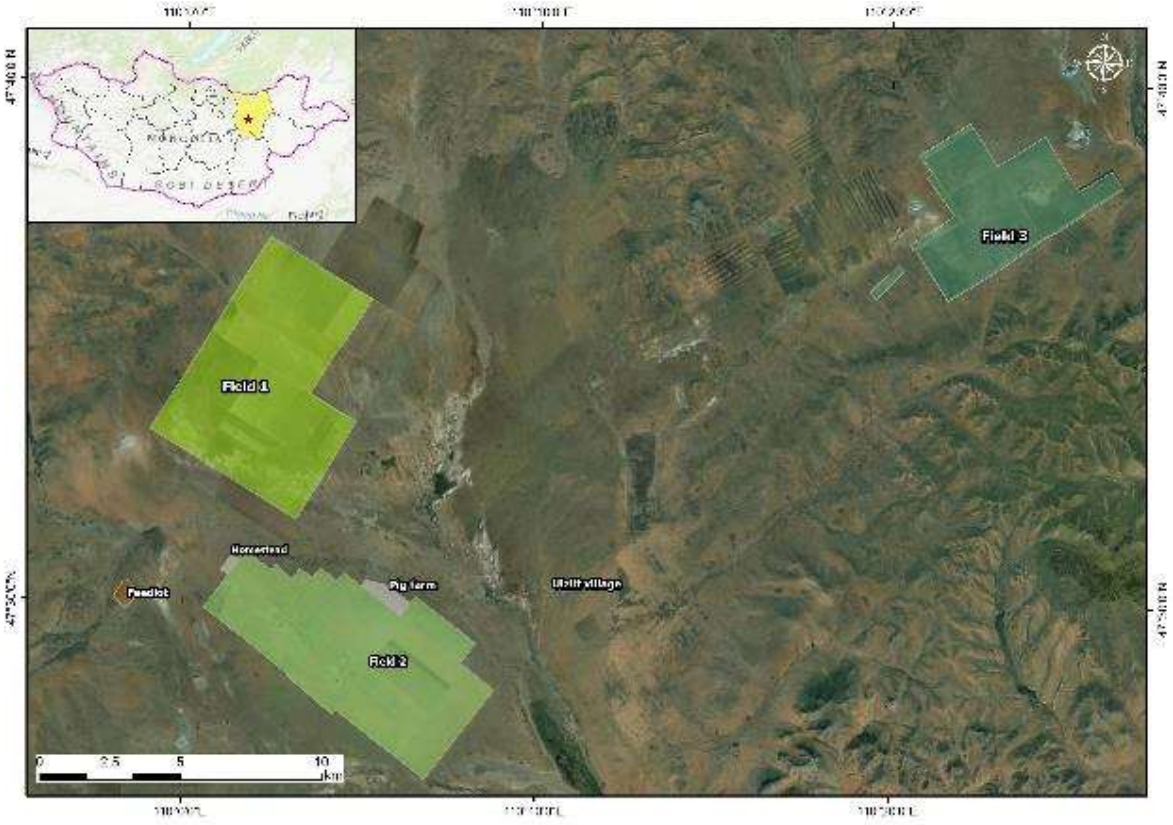


Figure 4. Metagro Farm site - general layout of arable fields, homestead, cattle feedlot, & on-hold pig farm

The main agribusiness components at the Metagro Farm are:

2.3.1 Arable Land

The arable land operations consist of three very large arable fields (Fields 1, 2 & 3), totalling approximately 10,257ha, and growing primarily wheat, barley and mustard (plus corn, alfalfa and other trial crops) primarily as the main fodder source for the on-site livestock operations. 4,000ha of this land was cultivated in 2022, and the full landholding was cultivated in 2023. The distribution of crops for the 2023 season is shown in the following figure.

Metagro intends to cultivate using no-tillage agricultural techniques showcasing regenerative farming good practice. Crops are currently rain-fed, but to enhance crop yields an irrigated area of 100 ha has been developed and it is planned to increase this to 400ha under the current project.

Much of the arable land was previously fenced by prior farming operations; this has been upgraded by Metagro around the entire 88.5km perimeter. The fencing is primarily to avoid intrusion from neighbouring nomadic livestock which would disrupt the Project's no-tillage technology and for the preservation of field coverage (residue from the previous harvest).

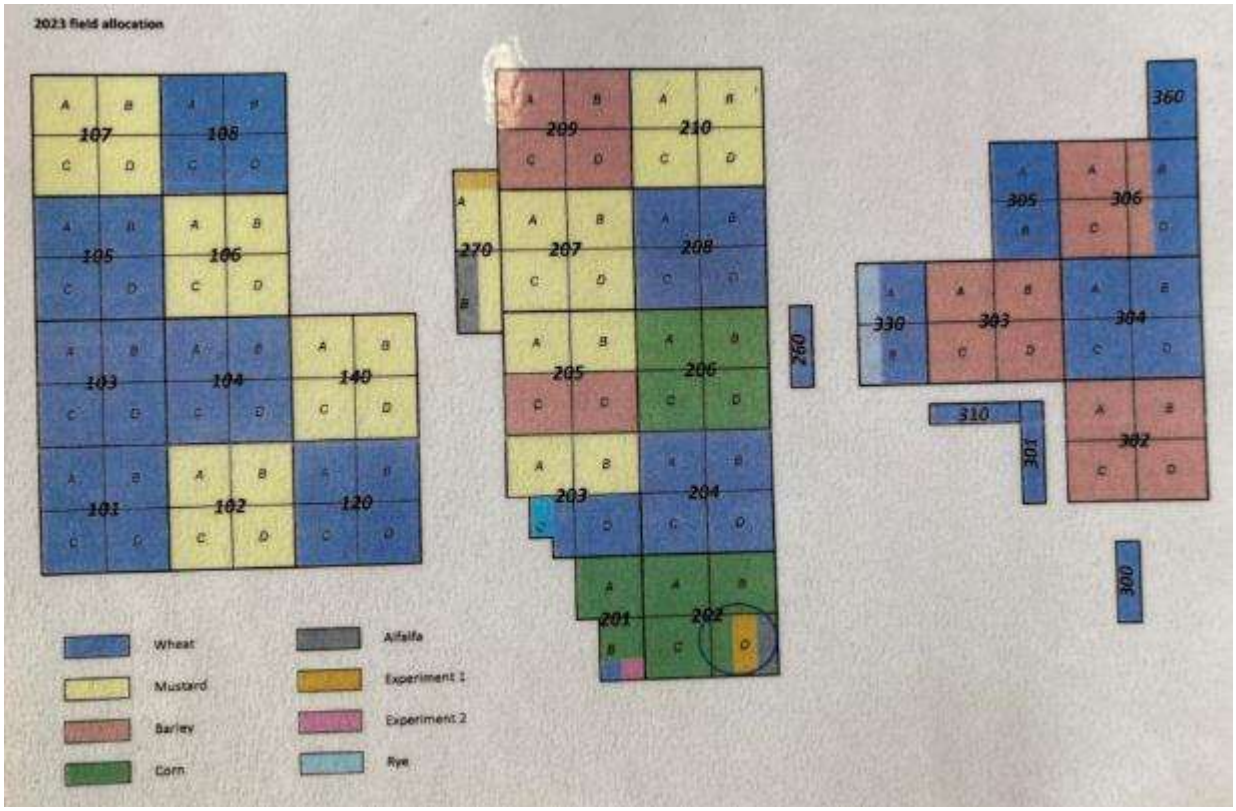


Figure 5. Cropping pattern at Metagro Farm for the 2023 season

2.3.2 Cattle Feedlot / Cattle Slaughterhouse

The cattle feedlot has recently been constructed on 50ha of land to house up to 5,000 head of cattle at any one time. This is ultimately expected to yield about 20,000 head of cattle per year, with imported ~18-month old calves fed and fattening over a period of 3 to 6 months. In 2024, the company plans to ship 12,000 heads to slaughterhouse. The incremental launch of the cattle operations commenced in January 2023 with receipt of the first small consignment of calves for fattening; by June 2023 there were a total of 243 cattle on site and 21 had been sent to abattoir; by November 2023 there were over 2,700 cattle on-site. At full-scale production, the throughput will be 1,620 head of cattle per month. In addition, ~200 sheep were also on site in June 2023.

A cattle slaughterhouse and primary carcass processing unit have recently been completed adjacent to the cattle feedlot and a waste-water treatment plant for the feedlot operations is under construction (as at February 2024).

These feedlot operations will give a projected yield of 3,000 tonnes of beef per year; quarter carcasses will be transported to Ulaanbaatar for further meat processing (de-boning / cutting), packaging and sale. Until this on-site facility is in full operation, cattle are being slaughtered and meat processed at a third-party facility operated by Trust Trade in Nalaikh, a satellite district east of Ulaanbaatar, approximately 250km from the Metagro site. Trust Trade is also undertaking all meat packaging activities. Metagro plans to retail traceable packed meat to the market mainly in Ulaanbaatar using its own channel and some of the existing sales and distribution channels of the MCS group. Sales and marketing campaigns for Metagro meat products have recently commenced.

2.4 Project Design and Facilities

Metagro's technical design and facilities were developed in cooperation with internationally acclaimed agribusiness experts from around the world, including Telus (formerly known as Feedlot Health

Management Services,Canada) for the cattle feedlot and Cantek (Turkey) for slaughterhouse and carcass processing.

For its workers at the Farm site, Metagro has established a Homestead with accommodation capacity of 112 persons in 6 houses fully equipped with modern living conditions and an office building. The living compound is adjacent to an artificial water reservoir and pond. Contractors residing on-site typically stay in traditional gers with sanitation facilities in adjacent mobile containers.

Next to the worker Homestead are greenhouses for growing vegetables, trees, and fruits, plus experimental planting areas. Vegetables and fruits are for internal consumption by Metagro staff. Tree saplings are being planted around the surrounding arable lands for wind protection and are also being cultivated for the national tree planting initiative.

North of the Homestead accommodation, four large storage / workshop / garage buildings have been completed. There will also be a silo terminal for storing both product grains and seeds for future crop planting. Its initial capacity will be 4,000 tonnes, to be expanded in the future to facilitate increasing harvest volumes and feed requirements for the livestock farms.

Concept layouts of the main infrastructure being implemented at the Metagro Homestead are shown below.

Figure 6. Metagro Farm - concept final plan of Homestead and key facilities

Figure 7. Homestead accommodation (completed)

Figure 8. Storage sheds / workshop / garage (completed) and silos (due 2024)

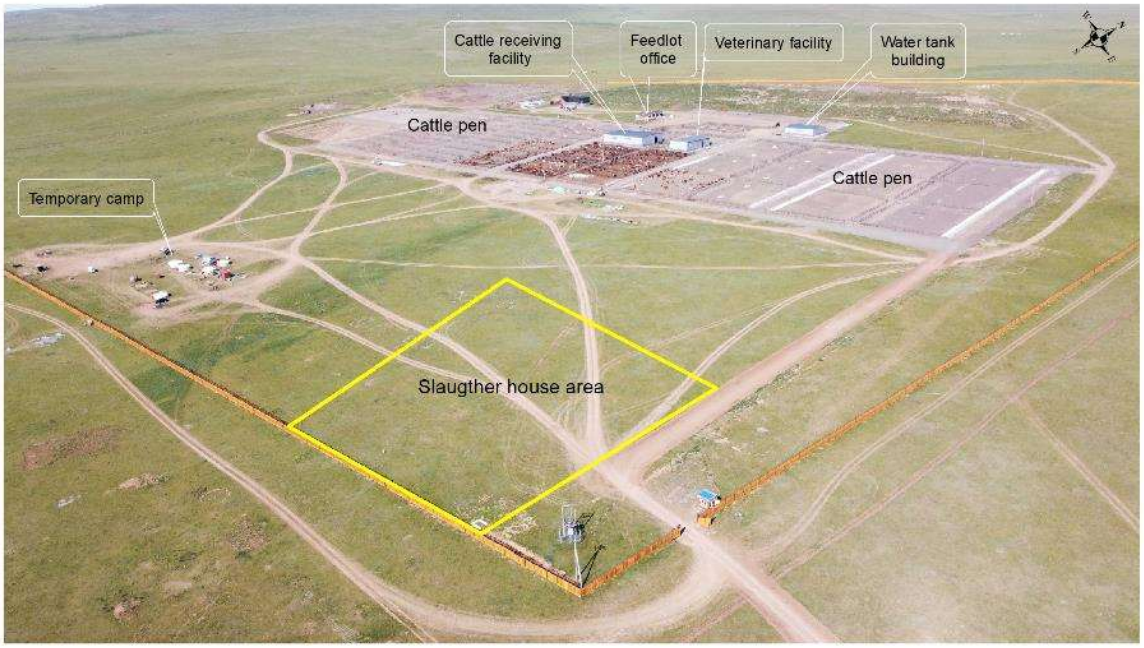


Figure 9. Cattle feedlot and in-construction slaughterhouse & carcass processing facility (1.5 ha, foreground)

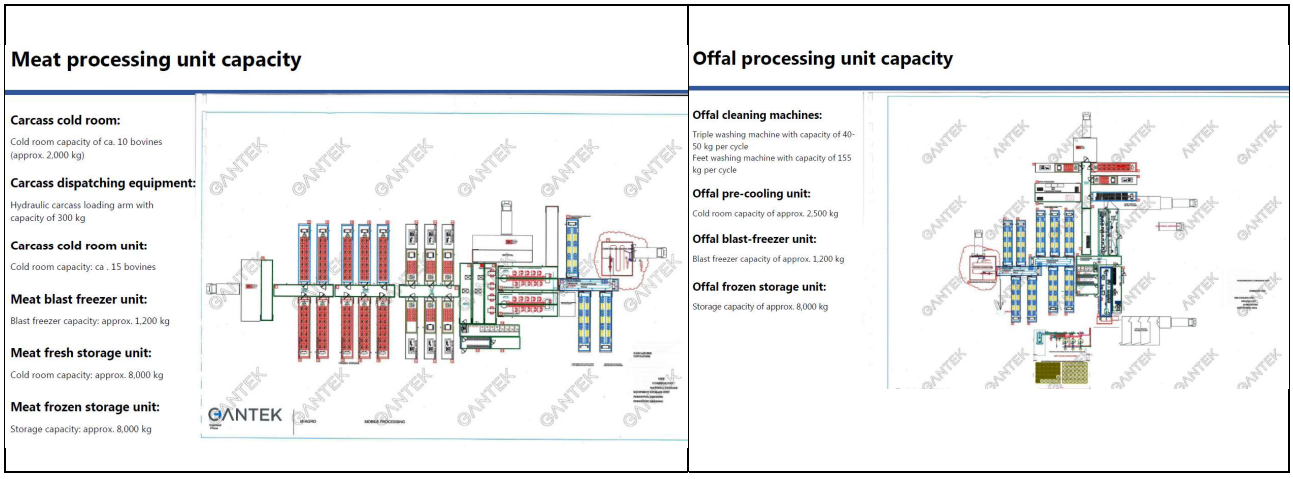


Figure 10. Detailed layout of cattle slaughterhouse and meat processing facility, late 2023. Metagro

The following figures shows Metagro's progress and tracking of site construction activities as of September 2023.

OPERATION HIGHLIGHTS CONSTRUCTION PROGRESS AS OF SEPT 2023

№	Work	Capacity	Progress %	Completion
Cattle Feedlot:				
1	Admin building	118 m2	100%	completed
2	Buildings			
	Veterinary building	312 m2	98%	Oct 1
	Water building	320 m2	100%	Completed
	Cattle reception building	690 m2	100%	Completed
3	Feed mixing area	5 feeds	100%	Completed
4	Soil compaction	90,000 m2	100%	Completed
5	Feedlot pen fence	5,000 cattle	98%	Oct 1
6	Perimeter fence	2,780 m	100%	Completed
7	Silage pile	4,400 m2	100%	Completed
Arable and Camp:				
1	Buildings			
	Workshop	864 m2	98%	Oct 1
	Machinery garage	3 x 1,296 m2	98%	Oct 1
2	Threshing floor II	2,000 m2	100%	Completed
3	Grain silo	4,000 tn	0%	Postponed (Y24)
4	Fuel station relocation & expansion	100 m3	60%	Oct30
5	Arable land fence - Field II, III	14 km	100%	Completed
6	Camp parking and walkway	238 m + 936 m2	100%	Completed
7	Recreational area	546 m2	100%	Completed
Abattoir:				
1	Slaughterhouse & WWTP & HP	40 heads/day	15%	Dec 20
2	Deboning & Cutting	40 heads/day	10%	Dec 20
Other:				
1	Power infrastructure expansion (TL & SS)		90%	Oct 10

Figure 11. Project construction progress, September 2023

2.5 Project Land Acquisition

The Metagro Farm operations are established on the former Chandgana collective farm of about 20,000ha that was set-up by the Government of Mongolia in 1976 in the Chandgana valley of Khentii aimag. On March 13, 1977, a resolution of the Provincial People's Party Committee was issued to cultivate 20,000ha, initiated by the Soviet expedition for cultivation of the Chandgana collective farm. Until the collapse of the centrally planned economy, the Chandgana collective farm was one of the leaders of Mongolian agriculture by combining crop farming with dairy farming (400 cows).

After 1992 all collective farms were dissolved and the arable lands of Chandgana farm were acquired by 12 private entities. Thereafter the arable lands of the Chandgana valley were not in regular annual cultivation, mainly due to capital costs and financial problems.

In 2014 Custom Tarialan Management (CTM) acquired 8,000ha of this land, which was then cultivated more regularly. In December 2021 Metagro was established, and thereafter acquired 30-year possession rights on this 8,000ha via investment in Ulziit Ensada LLC. In January 2022 rights to an additional 2,200ha of arable land were acquired, creating the current landholding of precisely 10,257ha of arable land consisting of 36 cadastral land parcels. Ulziit Ensada LLC was later renamed M-Agro LLC. Relevant details on the arable land holdings are given below and summarised in the accompanying figure.

Table 2. Metagro arable land holdings

No of land parcels	Land size, ha	Term	Date From	Intended use	Possession right
14	4986.0572	15 years	2015.04.30	Irrigated farming	M-Agro
12	3028.9412	15 years	2020.09.29	Irrigated farming	M-Agro
2	801.3007	7 years	2022.02.28	Irrigated farming	M-Agro
8	1440.4551	22 years	2022.02.28	Irrigated farming	M-Agro
TOTAL	**10256.7542**				

Additionally, Metagro has acquired 2 additional land plots through the provincial local auction process for its key operations:

Table 3. Metagro operational land holdings

No	Location	Certificate #	State registration ID	Land size, ha	Term	Intended use	Possession right
1	Chandgana steppe, Ulziit village, Kherlen soum, Khentii province	0000093280	E-1817001038	20.0	30 years from 2022.06.17	Homestead and farm operations	M-Agro
2	As above	0000093296	E-1817001039	50.0	30 years from 2022.06.17	Cattle feedlot, slaughterhouse and carcass processing	M-Agro

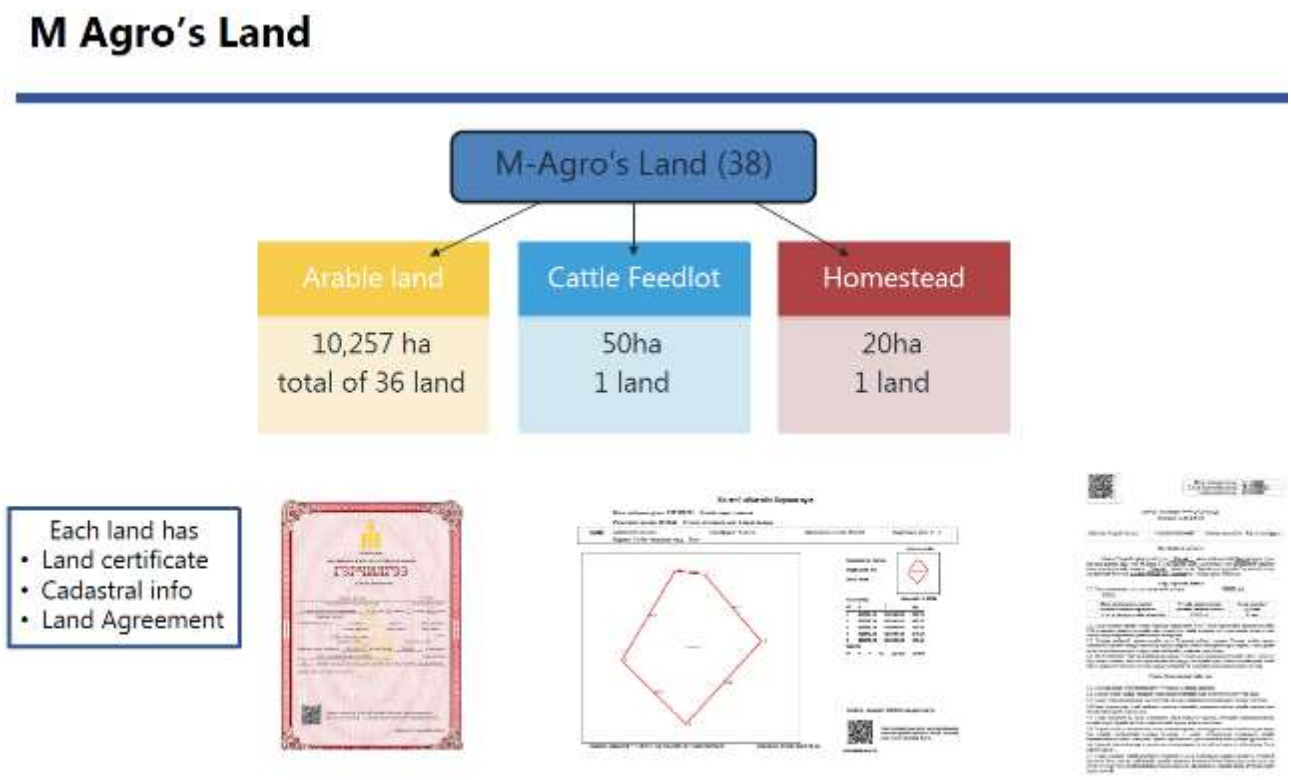


Figure 12. Summary of Metagro's land

A further land parcel of 89.7ha has been under negotiation with the local authorities via the provincial local auction process for the potential development of the pig farm, however it is understood that as of November 2023 this land acquisition process is now on hold.

2.6 Project Workforce

(Par. 8) The client will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of this Performance Standard and national law.

(Par. 9) The client will provide workers with documented information that is clear and understandable, regarding their rights under national labour and employment law and any applicable collective agreements, including their rights related to hours of work, wages, overtime

(Par. 10) Where the client is a party to a collective bargaining agreement with a workers' organisation, such agreement will be respected. Where such agreements do not exist, or do not address working conditions and terms of employment, the client will provide reasonable working conditions and terms of employment.
(Par.13) In countries where national law recognises workers' rights to form and to join workers' organisations of their choosing without interference and to bargain collectively, the client will comply with national law. [...]
(Par. 14) [...] The client will engage with workers' representatives and workers' organisations and provide them with information needed for meaningful negotiation in a timely manner. Workers' organisations are expected to fairly represent the workers in the workforce.

(Par. 15) The client will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. [...] The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women. The principles of non-discrimination apply to migrant workers.
(Par. 16) In countries where national law provides for non-discrimination in employment, the client will comply with national law. [...]
(Par. 17) Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job will not be deemed as discrimination, provided they are consistent with national law.

(Par. 18) Prior to implementing any collective dismissals, the client will carry out an analysis of alternatives to retrenchment. If the analysis does not identify viable alternatives to retrenchment, a retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers
(Par. 19) The client should ensure that all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner. All outstanding back pay and social security benefits and pension contributions and benefits will be paid (i) on or before termination of the working relationship to the workers, (ii) where appropriate, for the benefit of the workers, or (iii) payment will be made in accordance with a timeline agreed through a collective agreement. Where payments are made for the benefit of workers, workers will be provided with evidence of such payments.

(Par.20) The client will provide a grievance mechanism for workers (and their organisations, where they exist) to raise workplace concerns. The client will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. [...]

(Par.21) The client will not employ children in any manner that is economically exploitative or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. [...] All work of persons under the age of 18 will be subject to an appropriate risk assessment and regular monitoring of health, working conditions, and hours of work.
(Par. 22) The client will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labour, such as indentured labour, bonded labour, or similar labour-contracting arrangements. The client will not employ trafficked persons.

(Par. 11) The client will identify migrant workers and ensure that they are engaged on substantially equivalent terms and conditions to non-migrant workers carrying out similar work.
(Par. 12) Where accommodation services are provided to workers covered by the scope of this Performance Standard, the client will put in place and implement policies on the quality and management of the accommodation and provision of basic services. [...]

Nearly all MCS Group and Metagro staff, including senior managers and corporate executives, are Mongolian nationals. For site-level positions, Metagro states that the priority is to hire locally. As of 27 November 2023, Metagro employed 143 staff, of which 108 (75.5%) were men and 35 (24.5%) were women.

At the Metagro Farm site itself, it is planned to have a total of 37 staff by the end of 2023 including 25 full-time staff and 12 seasonal staff working during the seeding and harvesting periods.

A breakdown of the workforce as of September 2023 is given in Metagro's summary below:

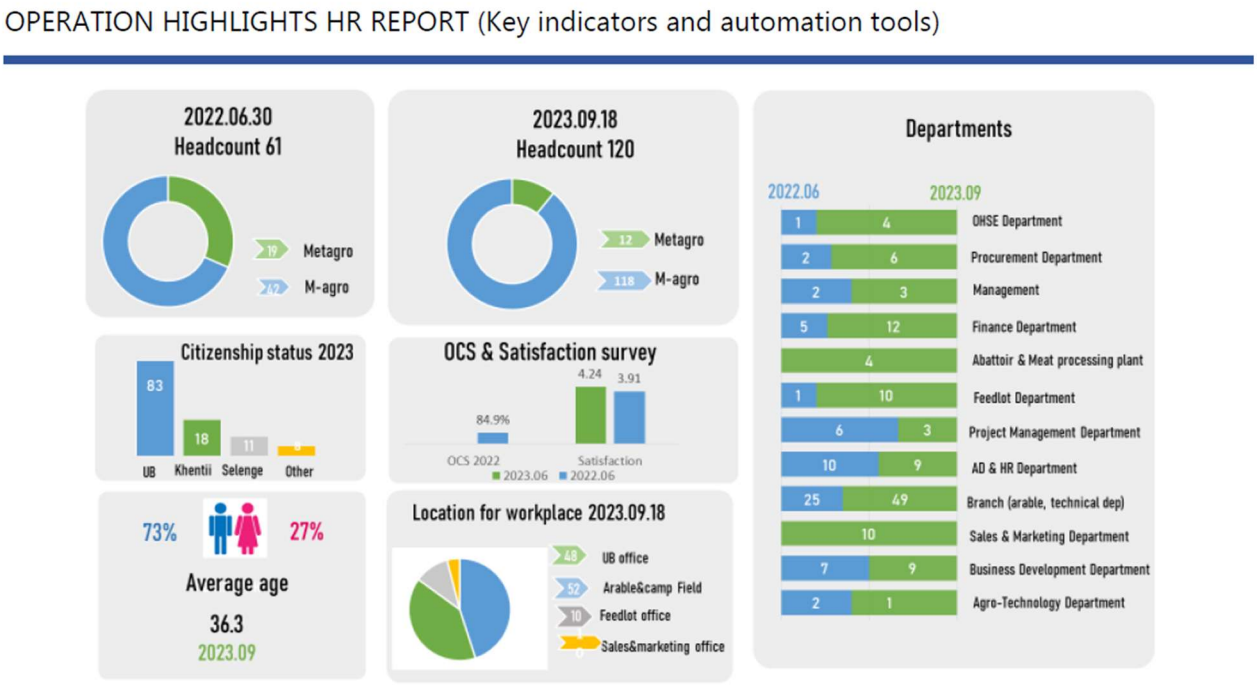


Figure 13. Metagro human resources breakdown, September 2023

Construction works, security and housekeeping services are currently undertaken by Mongolian private contractors. The 14 security personnel were hired from Khentii aimag. Camp services are provided by a national company and include 10 women from different parts of Mongolia, including seven from local communities, namely three women from Khentii aimag, two women from Baganuur district of Ulaanbaatar city, one woman from Umnugovi aimag and one woman from Darkhan-Uul aimag.

2.7 Need for the Project

2.7.1 Current State of the Agriculture Sector in Mongolia

Mongolia is self-sufficient in animal products, wheat and potatoes but crop and livestock productivity remain low, limiting the country's ability to meet growing domestic demand and requiring significant imports. For example, urban demand for vegetables is primarily met by imports and rural demand is largely unsatisfied, therefore vegetable consumption is well below recommended levels. Most exported livestock products have

little value-addition, causing them to be sold at low prices in international markets. Without a quality-based pricing system, there is no incentive to produce high-quality goods.

To increase productivity, reduce imports, and increase the export of livestock products, investments need to be made in improving the quality of these products, digitising quality assurance systems, integrating domestic supply chains, and branding and certifying nature-friendly products.

The Government aims to develop and expand the existing integrated agricultural industry to increase the intensive industry area as per its plans: Vision-2050: Long-term Development Policy of Mongolia, Action Plan 2021-2030, State Policy on Food and Agriculture (2016-2025), National Water Programme (2010-2021) and Food Security National Programme (2009-2016). The Government has also identified agriculture as one of the key areas for its climate actions and seeks investment in climate smart agriculture.

The main agricultural activities are currently potatoes, vegetables and meat. The main constraints with agricultural growth in Mongolia are generally:

- Short growing season (95-110 days) due to high altitude, extreme fluctuations in temperature, long winters and low precipitation.
- Productivity constraints caused by water resource availability, drought and/or climate change.
- Weak food and agricultural value chain (processing, packaging, and distribution).
- Poor maintenance of irrigation infrastructure leading to reduced effectiveness and therefore low productivity in the irrigated area.
- Over the past decade, in particular, the GoM has worked to take on a more active role in many agricultural segments, including livestock, farming, processing and distribution.

2.7.2 Environmental Need

Metagro cites the following as examples of the environmental benefits of the Project:

- Less pasture damage: 70% of Mongolian territory is used by nomadic herders for pasture. This pasture often experiences overgrazing which is the major contributor to desertification. According to the Meteorological agency of Mongolia in 2020-2021, 40% of pasture exceeded its grazing capacity by 1-3 times, 25% of pasture exceeded its capacity by 3-5 times and 20% of pasture exceeded its capacity by more than 5 times. livestecosys.
- Less carbon emission: Due to the much shorter feeding period within the feedlot approach, cattle will be emitting less carbon compared to traditional nomadic livestock.

2.7.3 Socio-Economic Need

Metagro cites the following as examples of the positive social impacts of the Project:

- Better livelihoods for herders: Herders who become cow-and-calf suppliers to the Project can earn a stable cash flow and higher income than with traditional nomadic herding.
- Instead of losing cattle during harsh winters, supplying cattle to Metagro's feedlot would be beneficial for herders. This will also ease the burden of taking care of a large number of cattle.
- Food security and safety: Industrial meat preparation is essential for ensuring food safety in Mongolia. As of 2021, only 5.2% of total meat consumption was prepared by industrial methods. Metagro will contribute to food safety by preparing meat through industrial methods.

2.8 Environmental Context

Mongolia is a large and sparsely populated landlocked country with a wide-ranging weather system that has shaped the human and non-human communities that reside there. Further context is provided below with details of local conditions provided in subsequent sections.

2.8.1 Atmosphere

Mongolia has a harsh continental climate and experiences many sunny days a year, often with clear cloudless skies. Annual precipitation exceeds 400mm at high mountain belts and averages 300-400mm in the Khangai, Khuvsgul and Khentii mountains and in the Khalkh river basin in the Eastern region. About 85% of total precipitation falls from April to September, of which 50-60% falls in July and August[3]. The changing climate has brought increased adverse weather events in the form of winter storms, prolonged droughts, and extreme temperatures.

Whilst Mongolia is a vast and sparsely populated country, air quality is a growing concern, especially in the population centres with pollution sources from domestic coal burning for heating and cooking in ger districts, vehicles, power plants, increased development, and the overall industrial demands of economic growth exacerbating emissions and further air quality degradation. Cold temperatures can be extreme, and the burning of coal and biomass as fuels within homes for warmth is common, leading to a significant source of indoor and outdoor air pollution especially in the winter months. Industrial fossil fuel power plants are also a significant source of air pollution in the region, as well as contributing to greenhouse gas (GHG) emissions.

2.8.2 Biosphere

The eastern Mongolia region primarily consists of vast semi-arid grasslands, inland wetlands, Central Asia mountain ranges, and long meandering rivers. Rich fauna and flora biodiversity in the region remains undisturbed in areas due to the remoteness and relative inaccessibility of habitats for humans. Biodiversity in the region includes mammals like the Mongolian white-tailed gazelle (*Procapra gutturosa*) and Mongolian marmot (*Marmota sibirica*), reptiles, amphibians, rare and endangered species of plant, and various species of migratory and resident birds. The Eastern Mongolian Steppes are a UNESCO World Heritage site and are a representative area of intact and pristine grassland. The steppes are home to the largest remaining intact temperate grasslands on earth and are characterised by treeless flat steppes, gently rolling hills, wetlands, and interlinkages with the Khyangan Mountain Range. However, habitats and species in areas of eastern Mongolia are subject to climatic and anthropogenic pressures from extreme weather and activities such as nomadic herding, farming, mining, and hunting. These pressures have led to significant issues with desertification and land degradation in the region. Whilst there are shrub and low-lying woody vegetation species across the grasslands, there are also forest resources in the region, however they are limited and have been diminished, and continue to be, due to logging, fires, pests, and disease.

2.8.3 Hydrosphere

Inland wetlands, rivers and snow-capped mountains are key water reservoirs in Mongolia. Climate change and extreme temperatures have had significant impacts on Mongolian water resources, leading to significant seasonal changes in the water properties such as rivers freezing or drying up. Water pollution is a known issue in eastern Mongolia with mining industry activities linked as a primary source. The prominent Mongolian mining sector, primarily coal and metals, can lead to hazardous waste products reaching natural water resources, both surface and groundwater. Water pollution can also be linked to non-treated and semi-

[3] https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/06593841_Mongolia-NC3-2-Mongolia%20TNC%202018%20print%20version.pdf

treated human waste discharge from population centres. Industrial sector demands on the consumption of water resources is another significant impact on the Mongolian hydrosphere.

2.8.4 Lithosphere

The soils of Mongolia are able to support the vast semi-arid grassland landscapes the country is well known for. The productivity and fertility levels of the soils for growing crops for human consumption are however generally low. The arid soils make the Mongolian lithosphere highly sensitive to the more frequent extreme weather events brought by a changing climate. Extreme temperatures and prolonged droughts have accentuated the impact of wind erosion of soils. Climatic and anthropogenic pressures reducing vegetation cover also expose the soils to further erosion.

2.9 Socio-Economic Context

2.9.1 Population

Mongolia spans an area almost six times the UK but has one of the world's lowest population densities. The total land area of Mongolia is 1,564,116km2; it is the 19th largest country in the world but with a population of about 3.4 million people, its population density is only 2.1/km^2 (only Greenland and the Falkland Islands are lower). Nearly 60% of the population lives in urban centres and nearly half of the entire Mongolian population lives in the capital of Ulaanbaatar alone.

2.9.2 Social indicators

The following table lists some recent socio-economic statistics for Mongolia:

Table 4. Recent socio-economic data for Mongolia. [4]

Social Indicator	Statistic	Year
Population of Mongolia[5]	3, 457, 500	2022
National poverty headcount rate	27.8%	2020
Unemployment rate in Mongolia (% of total labour force)[6]	6.7	2022
Prevalence of severe food insecurity in the population (%)	5.0	2020
Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	3.4	2020
Access to electricity, rural (% of rural population)	100%	2021
People using safely managed sanitation services (% of population)	56%	2020
Literacy rate, youth total (% of people ages 15-24)	99%	2020
GDP per person employed (constant 2017 PPP $)	32,745	2022
Proportion of people living below 50 percent of median income (%)	9.9 %	2018

2.9.3 Livelihoods

Mongolians have traditionally been primarily nomadic pastoralists and superb horsemen travelling with their flocks of sheep, goats, cattle, and horses over the country's immense grasslands. Today, herder households only make up 27% of all households and only 9% are registered as herders. In recent years, the government has prioritised the development of the nation's economy and has focused on attracting international investors to help the country find a place in the global market. The downside is that this has created ongoing

[4] The World Bank, 2023.
[5] National Statistical Office Yearbook, 2022
[6] Key Indicators for Asia and the Pacific. ADB Data Library, 2023.

tension between Mongolia's traditional nomadic past and its modernistic future, with the overwhelming migration of youth to urban centres for education, job opportunities and a more modern lifestyle.

2.9.4 Agriculture

Mongolia is a landlocked, mountainous country with a total land area of 156 million hectares. Most of Mongolia is pastureland (126 million hectares) including agricultural land (113, 567.1 thousand hectares). Due to physical, economic and cultural factors, only about one percent of Mongolia (~1 million hectares) is arable land with most located in northern river valleys. The contribution of agriculture, forestry and fishing sectors to Mongolia's GDP in 2022 was 13.1% and the agricultural sector employs around 25% of the population.

As of 2022, about 29.8% of Mongolia's population are living in rural areas where agriculture is the main source of income and livelihoods. The proportion of the population living in rural areas declined from 43% in 2001 to 31% in 2021 as households migrated to urban areas in search of employment opportunities in the industrial and service sectors.

Between 2008 and 2021, there was a significant decline in the share of the agricultural sector (from 21% to 13%), while industry increased from 34%, and services rose from 44%. Similarly, employment in the agricultural sector fell from 36% in 2009 to 28% in 2019.

2.9.5 Nomadic Herding

Mongolia has maintained a nomadic lifestyle for millennia. One in every 4 people in Mongolia is a herder, of which 59.6% are men and 40.4% are women. Nomadic herders raise herds of camels, yaks, goats, horses, and sheep, mostly to sell the fur so it can be made into yarn, with some also earning money from herd meat.

Herders roam in small tribal or extended family groups, with many families moving closer to urban areas for better access to markets. In 2022, Mongolia counted 190,776 nomadic herder households (683,195 household members) and 248,296 households with livestock.[7] Approximately 83% of all herders have electricity, 74% have TV sets, 57% have vehicles, 50% have motorcycles and 3% have tractors.

2.9.6 Economy

Mongolia's economy, traditionally based on herding and agriculture, has transformed into an economy focused more on extractive industries, spurred by significant investment by foreign enterprises. The main sectors contributing to the economy are mining, wholesale and retail trade, manufacturing, agriculture, and construction.

Overall, the Mongolian economy is greatly dependent on the mining and service industries. The mining sector is the biggest contributor to the national GDP and accounts for around 90% of Mongolian exports. The Oyu Tolgoi copper and gold mine alone is expected to account for as much as 33% of Mongolia's GDP once full commercial ore production starts.

In 2021, the agriculture sector contributed13.0% of the GDP (NSO 2022). Agriculture (primarily nomadic pastoralism) continues to decline as a share of national employment and contribution to the GDP.

2.9.7 Poverty

Poverty in Mongolia is persistent, and the incidence is higher in rural areas. As of 2018, the poverty headcount rate was 28.4% at the national level, 27.2% in urban areas, and 30.8% in rural areas. Between 2017 and 2018, the poverty rate declined by 4% in rural areas and increased by 0.1% in urban areas. This decrease in poverty in rural areas may be attributed to the increase of economic growth that Mongolia has experienced over the

[7] Agricultural sector in 2022. NSO, 2023.

past decade, as well as increasing herd sizes and large transfers of public revenue from mining and Ulaanbaatar to rural areas. Although the poverty rate remains high in rural areas, poverty has become increasingly concentrated in urban areas.[8] As of 2020, data from the World Bank (Table 4) show that Mongolia's national poverty headcount rate was 27.8%, a 0.6 point decrease in poverty from 2018. According to the same data source, if COVID-19 pandemic not occurred, there could be a 3,5% decline in the poverty rate in 2020.

2.9.8 Ethnicity and Religion

The 2020 Population and Housing Census highlights that 83.8% of the resident population of Mongolia were Khalkh, the dominant ethnic group of Mongolia. The Khalkhs, the Kazakhs, the Durvuds, the Bayads, and the Buriads are the ethnic groups that make up higher percentages in the total population.

The Kazakh people, who are mainly concentrated in the northwest of the country in the western aimag of Bayan-Ulgii, make up 3.8% of the population. Durvud (Dörvöd), Bayad and Buriad ethnic groups have been declining since 2010. Ethnic distinctions among the Mongolian population are relatively minor. There are also small groups of Turkic-speaking minorities in the western and northern parts of Mongolia: Uyghurs, Uzbeks, Tuvans (or Tuvinians), Uriankhai and Hotons, though their first language is Mongolian.

According to the 2020 census, 87.1% of all religious people were Buddhists. Though Buddhism is the largest religion, most of the actively religious youth aged 15-19 were Christians and Muslims. Religious beliefs differed among ethnic groups. 84.7% of the Kazakh people were religious, of whom 81.9% were Muslims. Shamanism is reported to be 4.2% of all religious people. This differs according to ethnicity: 10% of the Buriads, 13.8% of the Darkhads.

In Mongolia there are no reported conflicts among different ethnic groups based on ethnicity or religion.

2.9.9 Human Rights

Following a peaceful revolution in 1990, Mongolia transitioned from a Soviet-era single-party system to a democratic system with free elections. It is an electoral democracy with firmly institutionalised political rights and civil liberties. According to the Human Freedom Index, Mongolia scores 8 out of 10, where 10 represents more freedom.

A 2022 Amnesty International report states that NGOs faced new restrictions on their activities and those protesting mining and other development projects faced imprisonment under proposed legislation. Authorities failed to protect herder communities from environmental degradation caused by mining operations. Some human rights defenders were subjected to intimidation and police investigations. A national mechanism for the prevention of torture was established but torture and other ill-treatment of detainees continued to be reported.

A new Labour Law has entered into force on 1 January 2022 and addresses and regulates non-discrimination and provides protection against harassment and violence at the workplace. Mongolia's criminal code criminalises the use or threat of physical violence, abuse of a position of authority (financial or official) and taking advantage of a victim's incapacity to self-defence.

2.9.10 Gender Issues

According to the Organisation for Economic Co-operation and Development (OECD) Development Centre's latest cross-country ranking classifying countries according to their level of discrimination in social institutions, Mongolia is among 43 countries with low levels of discrimination. Mongolia's Gender

8 World Bank. 21 June 2019. Mongolia's 2018 Poverty Rate Estimated at 28.4 percent. Available at: https://www.worldbank.org/en/news/press-release/2019/06/21/mongolias-2018-poverty-rate-estimated-at-284-percent.

Development Index (GDI) improved from 0.717 in 2005 to 1.046 in 2020, largely due to women's average longevity and educational levels, which are both higher than those of men.

At the end of 2017, 68.2% of men and 57% of women belonged to the Mongolian workforce[9] and women and girls dominated among graduates in universities, colleges and skills training and educational schools. Women continue to have a limited presence in higher-level managerial positions and in entrepreneurial work.[10] Working women shoulder most of the household and care duties.

Livestock herding and working in fields are traditionally male occupations. Girls and women typically migrate to cities for education and employment. Women are more educated than men and are more likely to be employed, a phenomenon deemed a "reverse gender gap."

In recent years, higher alcoholism rates for Mongolian men (in many cases linked to unemployment) have led to violence within the home, with approximately one-third of Mongolian women suffering from domestic violence. Research found that 72% of violent crime (murder, violent robbery and attacks) is fuelled by alcohol in Mongolia, with women and children being especially prone to experiencing domestic violence.[11]

Mongolian men have a shorter lifespan than women by 8.34 years,[12] which is generally ascribed to men's risky behaviour including substance abuse (smoking and alcohol), high suicide rates, murder and traffic incidents as well as hard labour activities. The 2020 World Bank survey results showed a significant positive correlation between men's adherence to stereotypical masculine gender norms and their engagement in risky health behaviours. [13]

9 National Statistics Office of Mongolia, 2017.
10 International Labor Organisation. 2019. Accelerating the 2030 Sustainable Development Goals through decent work – Mongolia.
11 BMC Public Health, January 2022
12 www.statista.com/statistics/971017/life-expectancy-at-birth-in-mongolia-by-gender
13 Understanding the causal factors in the gender gap in life expectancy in Mongolia. WB & East Asia and Pacific Gender. December 2020.

3. Applicable Regulations, Standards and Guidelines

Metagro is subject to the E&S requirements of the IFC Performance Standards, World Bank Guidelines, and Mongolian legislation. Specific requirements are summarised in this section.

3.1 Relevant National Legislation

An overview of key relevant Mongolian legislation is summarised in **Appendix C** covering environmental protection, worker health and safety, labour management, and property rights. This sets out the legislation which triggers the need for assessment of environmental impacts from the Project, as well as legislation which is applicable to the management and operation of the Project which will need to be reflected in Project management plans for construction and operation.

In the early 1990s, Mongolia established a new legal framework with a hierarchy of policies and legislative provisions for environmental and social management in its national Constitution, international treaties, and environment and resource protection laws. Mongolian law requires an Environmental Impact Assessment (EIA), however, the social component of this ESIA is not a legal requirement.

To satisfy national E&S legislative requirements, Metagro has undertaken and submitted the following EIA and Environmental Management Plan (EMP) reports to the relevant authorities for its key operations:

Table 5. Metagro's National EIA & Related Reports

Operational Area	National EIA / EMP Studies submitted
Threshing floor, arable farm and arboriculture	Environmental baseline assessment_2022. Green Assessment LLC General EIA 2023 EMP 2023
Cattle feedlot	Environmental baseline assessment_2022. Green Assessment LLC General EIA 2022 EMP 2022 EMP 2022_Performance report EMP 2023
Irrigated farming	Environmental baseline assessment_2023. Green Assessment LLC General EIA 2023
Meat processing, waste treatment	Environmental baseline assessment_2023. Ecotrend Ltd.

Metagro also has a detailed programme of permit applications and compliance monitoring to underpin its operations. The following table illustrates the permits and assessment from relevant public authorities for its currently in-construction meat processing and waste treatment plant, as at mid-September 2023.

Table 6. Illustrative Metagro Permit Applications and Compliance Monitoring

No	Area	Type	Name	Timeline	Frequency	Relevant authority
1	Workplace	Review	Workplace review	2023/12/15	Every 3 year	Province's inspection agency
2	Ozone quote	Permit	For each equipment	2023/09/15	Each time	Ministry of Environment and Tourism
3	Environment	Assessment	General EIA	2023/10/01	Every 5 year	Province's Environmental department

No	Area	Type	Name	Timeline	Frequency	Relevant authority
		Audit	Environmental audit	2023/12/01	Every 2 year	Ministry of Environment and Tourism
4	Fire and emergency	Review	Fire safety review	2023/10/15	Every 3 year	Province's Emergency Department
5	Water	Permit	Well drilling permit	2023/09/15	One time	Governor of Local authority
		Review	Water usage review	2023/10/15	One time	Water agency
		Permit	Water usage certificate	2023/10/29	One time	Ministry of Environment and Tourism
6	Waste	Contract	Ordinary waste	2023/09/01	Contract period	Licensed company
		Contract	Hazardous waste	2023/09/01	Contract period	Licensed company
7	Wastewater	Due diligence	Land status and quality due diligence	2023/10/01		
8	Pest	Contract	Pest prevention and decontamination	2023/09/01	Contract period	Licensed company
9	Chemicals	Permit	Chemical usage and storage permit	2024/01/01	With term	Ministry of Health and Ministry of Environment and Tourism
		Review	Chemical warehouse review	2024/01/01	One time	Emergency department
10	Construction	Review	Preliminary control review on construction site	2023/09/15	Every 5 year	Ministry of Health
		Review	Health review on construction designing	2023/09/15	Every 5 year	

3.2 International Conventions

Mongolia has signed and ratified a number of international conventions and treaties that commit the country to the conservation and protection of biological and environmental resources, and people. In certain cases, conventions and agreements have influenced policy, guidelines and regulations, and therefore are relevant to planning, construction and operation of the Project. The table below sets out some of the key international conventions and protocols that are relevant to the Project.

Table 7. Key International Treaties Applicable to the Project

Name	Objective	How it Relates to the Project
Labour Relations and Workers' Rights		

Name	Objective	How it Relates to the Project
International Labour Organisation (ILO) conventions, of which 38 are currently in force, including eight fundamental conventions: Forced Labour Convention, 1930 Freedom of Association and Protection of the Right to Organise Convention, 1948 Right to Organise and Collective Bargaining Convention, 1949 Equal Remuneration Convention, 1951 Abolition of Forced Labour Convention, 1957 Discrimination (Employment and Occupation) Convention, 1958 Minimum Age Convention, 1973 Worst Forms of Child Labour Convention, 1999		Working conditions and regulation on site during construction and operation of the Project.
Biodiversity		
United Nations Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention	A multilateral treaty to develop national strategies for the conservation and sustainable use of biological diversity and a fair and equitable sharing of benefits arising from genetic resources.	Protection of the biodiversity in the surrounding area of the Project.
Convention on the Conservation of Migratory Species (Bonn Convention)	Global platform for the conservation and sustainable use of migratory animals and their habitats to conserve migratory species within their migratory ranges.	Protection of the biodiversity in the surrounding area of the Project.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention, March 3, 1973	To ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.	Protection of the biodiversity in the surrounding area of the Project.
International Union for Conservation of Nature and Natural Resources (IUCN)	The IUCN is the world's main authority on the conservation status of species. IUCN established a red list set upon precise criteria to evaluate the extinction risk of thousands of species and subspecies.	Protection of the biodiversity in the surrounding area of the Project.
Hazardous Chemicals and Waste Management		
The Stockholm Convention on Persistent Organic Pollutants, 2001	Management of products constituting persistent organic pollutants	POP use during the construction and operation of the Project
Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, (Rotterdam l998)	This Convention applies to banned or severely restricted chemicals; severely hazardous pesticide formulations	Agricultural activities to be undertaken as part of the Project should not utilise any banned severely restricted chemicals or severely hazardous pesticide formulations.
FAO International Code of Conduct on the Distribution and Use of Pesticides	The definition of the rules of conduct of public or private bodies involved in the distribution and use of pesticides.	Regulations apply to the distribution and use of pesticides. The global list of pesticides authorised by the CSP should serve as a guide for acceptable pesticide use.

Name	Objective	How it Relates to the Project
Basel Convention on the control of transboundary movements of hazardous wastes and their disposal, March 22, 1989	The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted on 22 March 1989. The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as "hazardous wastes" based on their origin and/or composition and their characteristics, as well as two types of wastes defined as "other wastes" - household waste and incinerator ash.	Waste management during the construction and operation of the Project
Energy, Climate Change and Air Quality		
The United Nations Convention Framework on Climate Change, 1992 and Kyoto Protocol to the United Nations Framework Convention (1997)	To achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.	GHG emissions during the construction and operation of the Project.
Paris Climate Agreement, 2015	The main objective of the Paris Climate Agreement is to strengthen the global response to the threat of climate change by keeping the global temperature increase below 2 degrees Celsius relative to pre-industrial levels and to continue efforts to further limit the temperature increase to 1.5 degrees Celsius. In addition, the Agreement aims to increase countries' capacity to cope with the impacts of climate change and to make financial flows compatible with a low level of Green House Gases (GHG) emissions and a climate resilient pathway.	GHG emissions during the construction and operation of the Project.
The Montreal Protocol on Substances that Deplete the Ozone Layer, 1987	To protect the stratospheric ozone layer by phasing out the production and consumption of Ozone Depleting Substances (ODS).	ODS use during the construction and operation of the Project

3.3 Lender Requirements and Standards

The applicable international standards that are considered within the ESIA process include the following, as cited in the Terms of Reference for the assignment and augmented by the review team:

IFC Performance Standards 2012:

Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts.
Provides guidance for the assessment and management of environmental and social risks related to

company's operations and create an appropriate environmental and social management system (ESMS) using the mitigation hierarchy to integrate standards into core operations.

Performance Standard 2: Labour and Working Conditions, Ensures the fair treatment, non-discrimination, and equal opportunity of workers.

Performance Standard 3: Resource Efficiency and Pollution Prevention. Promotes energy efficiency and the sustainable use of resources, including energy and water, through the avoidance, minimisation and reduction of project-related pollution and greenhouse gas emissions.

Performance Standard 4: Community Health, Safety and Security Aims to anticipate and avoid adverse impacts on the health and safety of the Affected Community, safeguarding personnel and property according to relevant human rights principles.

Performance Standard 5: Land Acquisition and Involuntary Resettlement. Guides the avoidance and minimisation of adverse social and economic impacts from land acquisition, with the aim of restoring or improving livelihoods and standards of living, including among displaced persons. (Scoped out for this project).

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. Promotes the protection and conservation of biodiversity, ecosystem, services and the sustainable management of living natural resources.

Performance Standard 7: Indigenous Peoples. Aims to minimise or avoid adverse impacts to Indigenous Peoples, promoting sustainable and culturally appropriate development benefits and opportunities, and implementing Free, Prior and Informed Consent where required. (Scoped out for this project).

Performance Standard 8: Cultural Heritage. Promotes the protection and preservation of cultural heritage and the equitable sharing of their benefits. (Scoped out for this project).

In addition to the IFC PSs, the World Bank Group have also developed general and sector-specific environmental health and safety guidelines. The EHS guidelines are designed to be used in conjunction with the IFC PSs and provide guidance to users on common EHS issues potentially applicable to various industry sectors. The applicability of these guidelines should be tailored to the hazards and risks of a project based on the site-specific variables of host country context, assimilative capacity of the environment, and other project factors as deemed relevant by qualified and experience assessors. The key guideline documents applicable to the Project include:

- Annual Crop Production (2016)
- Mammalian Livestock Production (2007)
- Meat Processing (2007)
- IFC Good Practices on Mainstreaming Animal Welfare in Livestock Operations
- IFC Practices for Sustainable Investment in Livestock Operations
- CDC Animal Welfare Toolkit
- Global Gap for Livestock certification
- IFC & EBRD Note on Workers' Accommodation: Processes and Standards

The industry sector EHS Guidelines incorporate information relevant to the specific facility/development and provide guidance on environmental, occupational health and safety (H&S) and community H&S aspects, as well as performance indicators and monitoring.

GLOBALG.A.P.

Specifically with respect to GLOBALG.A.P. this is a private sector body that sets voluntary standards (based on Good Agricultural Practices) for certifying agricultural products around the globe. There are a number of standards covering agriculture, although the livestock production standard was discontinued as of December 2023.

Most applicable to Metagro's operations is Integrated Farm Assurance (IFA) for combinable crops, that covers all major aspects of production, from preharvest activities to postharvest handling. Core topics for combinable crops include:

- Conservation
- Food defence
- Food fraud mitigation
- Hygiene
- Mass balance
- Recall/Withdrawal procedure
- Site history and site management
- Traceability and segregation
- Waste and pollution management
- Workers' health, safety, and welfare

3.4 Applicability of IFC Performance Standards

The IFC Environmental and Social Performance Standards (PS) considered within the ESIA process are summarised in the following table, along with a review of the relevance and applicability of each standard to this Project.

Table 8. IFC's Environmental & Social Performance Standards

Standard	Summary and Objectives	Areas Covered	Relevance
PS1: Assessment and Management of Environmental and Social Risks and Impacts	Summary This PS applies to all projects directly financed by the IFC and defines the importance of a systematic approach to the management of the E&S impacts associated with Project activities and operations. Objectives • identify and evaluate Project E&S impacts and risks • Adopt a mitigation hierarchy approach to address adverse impacts and risks to workers, affected communities, and the environment • Promote improved E&S performance through effective use of management systems • Develop an ESMS tailored to the nature of the Project for assessing and managing E&S impacts and risks	• ESIA • Environmental and Social Management System (ESMS) • Environmental and Social Policy • Environmental and Social Management Plan (ESMP) • Organisational capacity and commitment • Supply chain management • Project monitoring and reporting	**Applicable** This ESIA has been prepared to meet the IFC PS, together with an ESAP identifying future actions required to ensure ongoing compliance. Metagro is currently developing an ESMS.
PS 2: Labour and Working Conditions	Summary Compliance, at minimum, with national labour, social security and occupational health and safety law, and the fundamental principles and standards embodied in the International Labour Organisation (ILO) conventions. The term 'workers' refers to Project employees including part-time, temporary, seasonal and migrant workers. Objectives	• Management of worker relationships • Human resources policies • Working relationships • Child labour • Forced labour • Non-discrimination and equal opportunity • Workers' organisations • Wages, benefits and conditions of work • Occupational health and safety • Worker accommodation	**Applicable** This PS is mainly applicable to the construction phase of the Project, when additional suppliers and workers will be employed. It is also relevant to maintenance works in the operational phase. Metagro's recruitment plan for 2023 includes 167 workers.

Standard	Summary and Objectives	Areas Covered	Relevance
	• Respect and protect the fundamental principles and rights of workers • Promote a decent work agenda, including fair treatment, non-discrimination and equal opportunities of workers • Establish, maintain and improve a sound worker-management relationship • Promote compliance with any collective agreements to which the Project is a party, national labour and employment laws • Protect and promote the safety and health of workers, especially by promoting safe and healthy working conditions to prevent the use of forced labour and child labour (as defined by the ILO) in relation to Project activities.	• Retrenchment • Grievance mechanism • Non-employee workers • Supply chain • Security personnel requirements	Labor issues are addressed as part of the ESIA and ESAP. Mongolian laws and regulations on employment and working conditions prohibit discrimination based on gender, age, physical ability, race, ethnical origins etc. Men and women are entitled for equal payment for the same job/work performed. Metagro's Labor Management Plan will need to comply with Mongolian and IFC requirements.
PS 3: Resource Efficiency and Pollution Prevention	Summary Projects must meet good international practice regarding resource efficiency and pollution prevention and control, which are essential elements of E&S sustainability. Objectives • Identify Project-related opportunities for energy, water and resource efficiency improvements and waste minimisation • Adopt the mitigation hierarchy approach to addressing adverse impacts on human health and the environment arising from the resource use and pollution released from the Project	• Resource efficiency • Pollution prevention and control • Greenhouse gases • Water • Waste • Safe use and management of hazardous substances and materials • Agrochemical use and management	**Applicable** Metagro is implementing its operations as a leading model of regenerative agriculture; adopting good agricultural practices such as the no-tillage technique. Nevertheless, the scale of its operation mean it is a large local consumer of land, water, power, agricultural inputs including chemicals, fodder crops, and indeed livestock; as well as being a potential source of various pollution and emission risks.

Standard	Summary and Objectives	Areas Covered	Relevance
	• Promote the reduction of Project-related greenhouse gas emissions		
PS 4: Community Health, Safety and Security	Summary Identify and prevent accidents, injury and disease to workers and affected communities; provide workers and affected communities with relevant information, guidance and training relating to health and safety hazards, risks, protective and preventive measures and emergency arrangements; and investigate, document and adopt the measures to prevent recurrence of accidents, injury and diseases. Objectives • Protect and promote the safety and health of workers by ensuring safe and healthy working conditions and implementing a health and safety management system, appropriate to the relevant issues and risks associated with the Project. • Anticipate, assess, and prevent or minimise adverse impacts on the health and safety of Project-affected communities and consumers during the project life cycle from both routine and non-routine circumstances.	• General requirements for health and safety management • Occupational health and safety • Community health and safety • Infrastructure, building and equipment design and safety • Hazardous materials safety • Product safety • Services safety • Traffic and road safety • Natural hazards • Exposure to disease • Emergency preparedness and response	**Applicable** The Project may cause adverse impacts on community health, safety and security during construction, for example with the influx of contractors in the area. The community is also vulnerable to potentially significant loss of groundwater and surface water resource if full-scale irrigation is implemented at the site. Traffic and road safety risks also need to be minimised.
PS 5: Land Acquisition and Involuntary Resettlement.	Summary Physical or economic displacement that can be full, partial, permanent, or temporary. Applicability is determined during the ESIA process. Objectives	• Avoid or minimise displacement • Consultation • Socio-economic assessment and census • Compensation for displaced persons	**Not applicable** The Metagro landholding has been in periodic use for arable agriculture since 1977 and thus there were no households on the site and no customary use of, or

Standard	Summary and Objectives	Areas Covered	Relevance
	• Avoid or, when unavoidable, minimise, involuntary resettlement by exploring alternative project designs • Mitigate adverse social and economic impacts from land acquisition or restrictions on affected persons' use of and access to assets and land by: – Providing compensation for loss of assets at replacement cost – Ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation and informed participation of those affected • Restore or, where possible, improve the livelihoods and standards of living of displaced persons to pre- displacement levels • Improve living conditions among physically displaced persons by providing adequate housing, including security of tenure at resettlement sites	• Grievance mechanism • Resettlement and/or Livelihood Restoration Framework • Monitoring • Physical displacement • Economic displacement • Loss of public amenities • Private sector responsibilities under government- managed resettlement	access to, the Project land when the Metagro Farm landholding was acquired. Therefore, no resettlement or economic displacement is reported to have occurred during land acquisition.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Summary Conservation of biodiversity and sustainable management of living natural resources, and balance with the potential for utilising the multiple economic, social and cultural values of biodiversity and living natural resources. Objectives • Protect and conserve biodiversity using precautionary approach	• Conservation of biodiversity • Assessment of issues and impacts • Biodiversity conservation requirements • Legally protected and internationally recognised areas of biodiversity value • Invasive alien species • Sustainable management of living natural resources	**Applicable** This PS is applicable for both the construction and operational phases. The project has the potential to impact species by modifying their existing habitat for the development of the site. The presence of cattle, machinery and other operational factors could modify the behaviour of species near the site such as from increased noise or human presence.

Standard	Summary and Objectives	Areas Covered	Relevance
	• Adopt the mitigation hierarchy approach, with the aim of achieving no net loss of biodiversity, and where appropriate, a net gain of biodiversity • Promote good international practice (GIP) in the sustainable management and use of living natural resources	• Assessment of issues and impacts of: – Crop and livestock production – Fisheries and aquaculture – Natural and plantation forestry – Use of biomass fuel and biofuel production – Supply chain – Genetically Modified Organisms (GMOs)	Species and habitats could be impacted by pollution run-off such as fertilisers or pesticides into the local environment. There is one protected area that is 6.5km from the site so outside the AoI and no adverse impacts are expected to occur.
PS 7: **Indigenous Peoples**	Summary Indigenous Peoples may be referred to in different countries by different terms. Groups who might not be classified as Indigenous People in one country or region, may be classified as such in another. In PS7 this term is used in a technical sense to refer to a social and cultural group, distinct from dominant groups within national societies. Objectives • Ensure that the transition process fosters full respect for the dignity, human rights, aspirations, cultures and natural resource-based livelihoods of Indigenous Peoples • Anticipate and avoid adverse impacts of projects on the lives and livelihoods of Indigenous Peoples' communities, or when avoidance is not feasible, to minimise, mitigate or compensate for such impacts	Assessment • Avoidance of adverse effects • Preparation of an Indigenous Peoples Development Plan • Information disclosure, meaningful consultation and informed participation • Grievance mechanism and prevention of ethnically based discrimination • Compensation and benefit-sharing • Impacts on traditional or customary lands under use • Relocation of Indigenous Peoples from traditional or customary lands • Cultural heritage	**Not applicable** There are no people meeting the IFC definition of Indigenous People living in or around the Metagro site. The Mongolian government does not legally recognise Indigenous People or specific ethnic minorities. The main group that could potentially fit the IFC definition of indigenous are the Dukha people located in northern Mongolia, around 1,300 km from Ulaanbaatar (far from the Project area).

Standard	Summary and Objectives	Areas Covered	Relevance
	• Enable Indigenous Peoples to benefit from the Project in a culturally appropriate manner • Establish and maintain an ongoing relationship with the Indigenous Peoples affected by the Project throughout the life of the Project • Foster good faith negotiation with, and with the informed participation of, Indigenous Peoples when projects are to be located on traditional or customary lands used by the Indigenous Peoples, when customary or non- traditional livelihoods will be affected by the project, or in the case of commercial exploitation of the Indigenous Peoples' cultural resources to recognise the principle, outlined in the UN Declaration on the Rights of Indigenous Peoples • Recognise the specific needs of men, women and children of Indigenous Peoples by addressing gender issues and mitigating potential disproportionate gender impacts of the Project • Recognise and respect the customary laws and customs of Indigenous Peoples and take these into full consideration • Respect and preserve the culture, knowledge and practices of Indigenous Peoples in accordance with their wishes		
PS 8: Cultural Heritage	Summary Protect cultural heritage and avoid or mitigating adverse impacts on cultural heritage in the course of Project operations.	• Assessment process • Screening for impacts on cultural heritage • Avoiding impacts	**Not applicable** There are no culturally significant places or objects on the Metagro site.

Standard	Summary and Objectives	Areas Covered	Relevance
	PS8 covers both tangible and intangible cultural heritage and is guided by applicable international conventions and other instruments. <u>Objectives</u> • Support the protection and conservation of cultural heritage • Adopt the mitigation hierarchy approach to protecting cultural heritage from adverse impacts arising from the Project • Promote the equitable sharing of benefits from the use of cultural heritage in business activities	• Assessing impacts that cannot be avoided • Managing impacts on cultural heritage • Chance finds procedure • Consultation with affected communities and other stakeholders • Project's use of cultural heritage	The known places of cultural significance in the Project's vicinity (e.g., Great Ulziit Mountain, ovoos) are not deemed susceptible of being affected, either directly or indirectly, by Project activities.

4. Assessment of Alternatives

Footnote 11, Page 3 of IFC PS1: For greenfield developments or large expansions with specifically identified physical elements, aspects, and facilities that are likely to generate potential significant environmental or social impacts, the client will conduct a comprehensive Environmental and Social Impact Assessment, including an examination of alternatives, where appropriate.

The assessment of alternatives is an important step in the management of environmental and social risks of a project through a robust analysis of technically and financially feasible alternatives to reducing potentially significant impacts. The need for an alternatives analysis is defined in IFC PS1 as follows: *"For greenfield developments or large expansions with specifically identified physical elements, aspects, and facilities that are likely to generate potential significant environmental or social impacts, the client will conduct a comprehensive Environmental and Social Impact Assessment, including an examination of alternatives, where appropriate"*

In addition, IFC PS 3 requires the assessment of technically and financially feasible alternatives for eliminating, reducing or managing impacts associated with resource efficiency and emissions, including water use, greenhouse gases (GHGs), air emissions and emissions to land (including waste streams).

4.1 Location Alternatives

(Par. 8) The client will consider feasible alternative project designs to avoid or minimise physical and/or economic displacement, while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable.

The Project planners had considered several alternatives regarding its site location; six arable land options in Bulgan, Darkhan, Selenge, and Khentii provinces of Mongolia were reportedly considered for the Project, and it is understood that the principal reasons for locating the Metagro operations in Khentii included:

1. benefits of a joint venture with Ensada LLC, the principal shareholder in CTM that had previously acquired rights to the landholding in Khentii, as well as being a major agricultural equipment dealer and an existing farm operator in Mongolia
2. road network accessibility to UB
3. availability of quality pastureland
4. water resource availability for irrigation purposes
5. less local conflict potential between nomadic herders and a static farming business with enclosed fields
6. the good genetic within the local cattle herds and sufficient supply of calves to support the feedlot.

4.2 "No-Project" Alternative

The "no project" scenario was that Metagro would not proceed with its business plan. However, this is now not a viable option, because as of November 2023 the arable farm and the cattle feedlot are fully established and operational at the Project site.

4.3 Design & Layout Alternatives

The Project considered several alternatives regarding the detailed location and layout of the new-build facilities, and the process and operational aspects of its activities.

For example, five different plots were analysed for the cattle feedlot as shown in the figure below. The main requirements included:

1. Land slope between 2-4º, to prevent rainwater puddling and to aid animal excrement management via downslope flow
2. Be close to the source of food (within a radius of 10 km)
3. To be at least 2 km away from the populated area,
4. Favourable prevailing wind direction for odour and dust management
5. In the cold season, choose a slope with heat from the sun
6. Having adequate available surface and ground water sources
7. Not directly visible from the main road
8. Not to be affected by 100-year floods
9. Related infrastructure investments to be minimised

Locations of selected places	Coding	Height, m	Land Slope %	Where is the river?	Reflection of the sun	Wind condition	Distance to the river, km	Flood risk	Distance to the power line, km		Distance to the plantation, km	Distance to paved road, km	Suitability /1-5 points/			TOTAL points
									35 kV line	6kV line			National Food Association	Utrem	Camp	
Lesser auspicious																
feedlot1	FL01	1180	5	later	good	cover	1.10		12.57	16.4	3.2	20.56	5	3	5	13
feedlot2	FL02	1176	4	later	good	cover	2.93		10.4	17.38	1.4	21.38	5	4	5	14
Around Great Auspiciousness																
feedlot3	FL03	1232	4	front	in the	windy	1.95		15	14.77	5.8	19.18	3	2	4	9
feedlot4	FL04	1167		front	good	cover	1.37		11.94	12	2.29	15.77	5	5	5	15
feedlot5	FL05	1150		front	good	cover	0.67		10	12	1.68	15.74	5	5	2	12

Figure 14. Location analysis for cattle feedlot

Similarly, multiple iterations of the detailed designs of the cattle feedlot were undertaken by the advisors Telus (formerly known as Feedlot Health Management Services,Canada), for the slaughterhouse and carcass processing facility by turnkey designers and manufacturers Cantek, and for the Homestead and the agricultural operations centre.

5. Environmental Baseline

This section describes the existing environmental setting of the Project area and its immediate surroundings. This includes the physical environment comprising air, water and noise components, and biodiversity and ecological environment. Information on geology, hydrology, prevailing natural hazards such as floods has been collected from literature reviews and background research. Attributes of the physical environment such as air, water, soil and noise in the Project area were assessed through research and on-site monitoring and analysis of samples collected from the area.

85% of the total area of Khentii aimag is agricultural land, 11.5% is forest, and the remaining 0.4% is urban area. Khentii province has a combination of forests and steppes, with majestic mountains such as Noyon uul and Baga Khentii, which are 1880-2450m above sea level.

Khentii is the fourth largest - of 21 provinces in Mongolia - in terms of livestock resources; with 5.1 million (7.2%) of the country's total of 71.1 million animals in 2022. In the province, small stock predominates (sheep 51.4% and goats 32.5%), followed by cattle (8.6% and horses 7.4%). Of the province's resources of livestock, 11.1% are in Kherlen soum, the location of Metagro Farm.

5.1 Area of Influence

(Par. 8) Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project's area of influence. This area of influence encompasses, as appropriate:

- The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated, or managed (including by contractors) and that are a component of the project (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

(Par. 9) In the event of risks and impacts in the project's area of influence resulting from a **third party's actions**, the client will address those risks and impacts in a manner commensurate with the client's control and influence over the third parties, and with due regard to conflict of interest.

In determining the environmental baseline conditions and the likely environmental effects of the Project, a perimeter of 5km around the landholding has been defined as the Project Affected Area (PAA). This PAA encompasses the area within which potentially significant environmental impacts are expected occur considering the physical extent of the proposed works and the nature of the baseline environment, and as such can be considered the Project direct area of influence (AoI). For some specific topic, notably social issues, the AoI (and especially any indirect AoI) extends beyond the PAA. Such variations have been defined in the relevant section where they are applicable.

5.2 Topography

The main topographic features in Mongolia are the Altai, Khangal and Khentii mountain ranges, which create three separate river drainage basins. The Project site is situated on flat high steppe plain within the southeastern foothills of the Khentii mountains, within the catchment basin of the Kherlen river system.

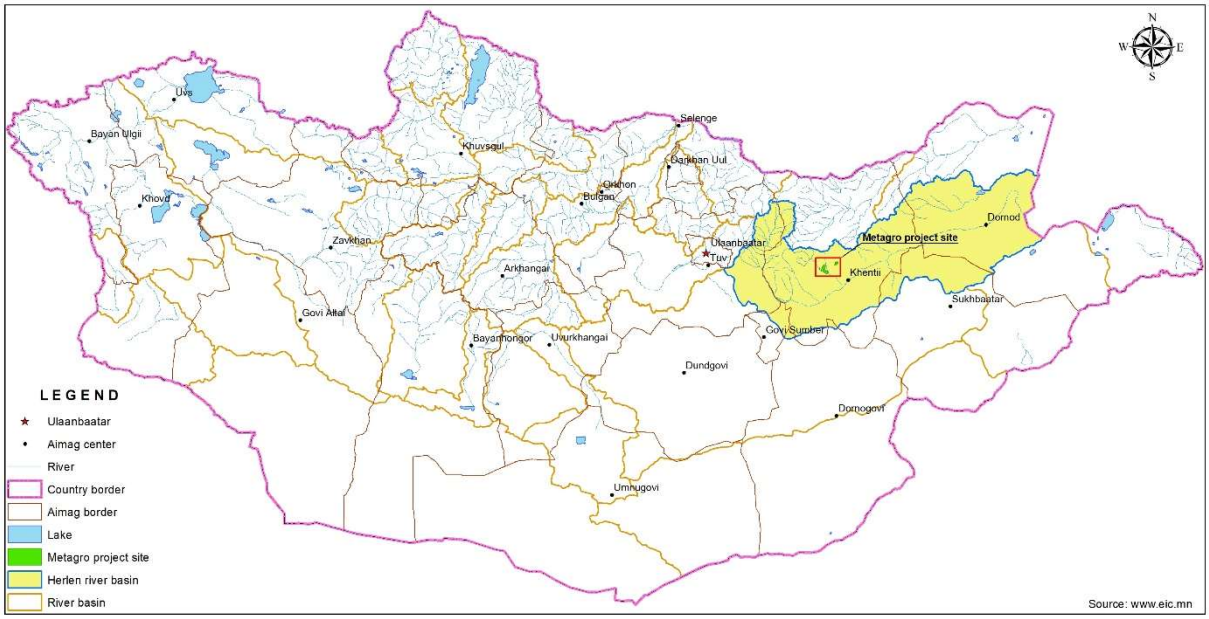


Figure 15. Metagro project site within the Kherlen river catchment basin

Khentii Aimag is divided into three regions with different soil and ecosystems due to its geographical features and climate:

- Taiga Region of Khentii Mountain;
- Mongol-Daguuri, forest steppe region;
- Dry steppe region of Dornod in Mongolia.

The Project area is a primarily a flat-lying plain with most of the crop-growing fields at an elevation of about 1100-1175m above sea level (mASL), with the Murun River flowing south-eastwards across the landholding, and the arterial A0501 road running east-west at the southern boundary of the Project Area.

The mountains around Metagro Farm are characterised by domed peaks of 1200-1300 mASL, separated by wide and narrow valleys. The highest point in the local area is Khar Yyok Uul (1342.6 mASL), located to the northwest, and Ikh Ulziit (1290.5 mASL), which is worshiped by local people every year.

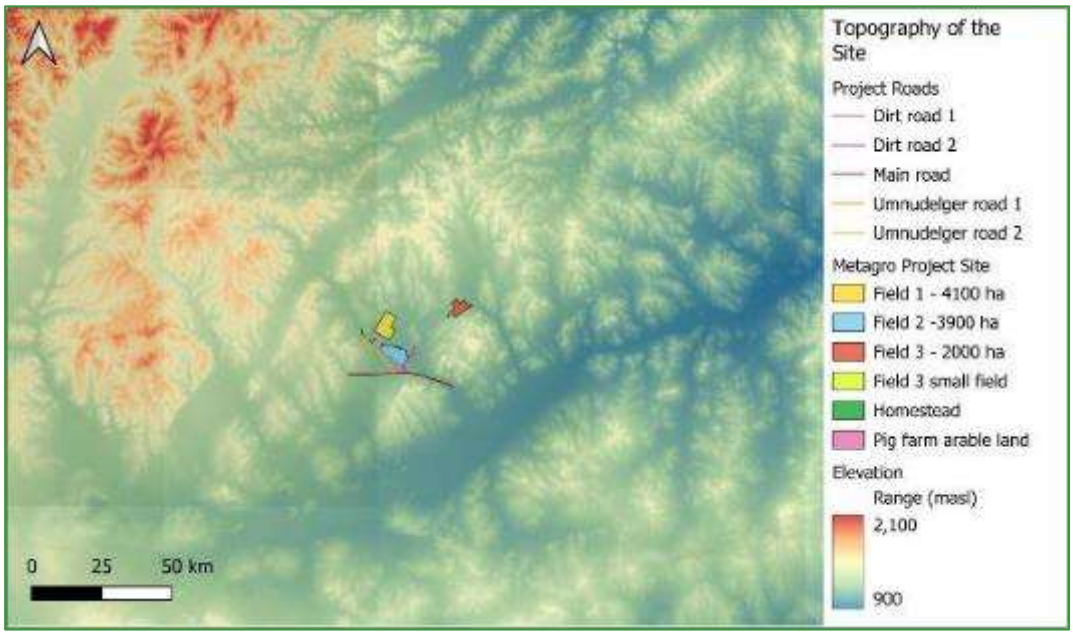


Figure 16. Topography of the Project site

5.3 Geology and Soils

Multiple studies of the geological, soil, water and groundwater setting of the Project area have been conducted as part of characterisation works for site development including water supply requirements.

The general geological profile with increasing depth is reported as follows:

Alluvial sediments are spread along the old channels in the Murun river basin and consist of a small number of cobblestones, gravel, silt, sand, sandstone, and loam.
Quaternary sediments are mainly of lake, riverbank, till, and alluvial origin and are widely distributed in the study area. Sediment thickness ranges from 1.0 to 4.0 m, and the lithological composition consists of a variable mixture of sand, clay, silt, salt, loam and gravel.
Upper Neogene Kherlen Formation The composition of the formation consists mainly of loosely cemented conglomerate, gravel, gravel, gravel, red, reddish, and occasionally grey. mainly coloured siltstone, loam, clay, medium-grained polymictic sand, cobblestone, sandstone. The total thickness is determined to be 10-80 m.
The Upper Cretaceous Bayanshiree Formation is present in the central part of the Project area. It is distributed and overlies the Paleozoic and early Mesozoic sediments in a sharp unconformity and is discontinuously overlain by the sediments of the Upper Neogene Kherlen Formation. The formation is variegated It consists of clay, sand, sandstone, gravel, siltstone, white-grey sandstone, conglomerate, and red sandy clay. The total thickness is 60-70 m.
The Lower Cretaceous Tsagaatsav Formation is distributed around Baga Ulziit Mountain in the western part of the Project area and in the northwestern part. Lower section of this formation conglomerate, gravelite layered agglomerate, tuff, basalt, andesite-basalt, trachybasalt, from trachyandesites, but at the top it consists of conglomerate, sand, limestone, clay, tuff-sand, tuff- siltstone. The total thickness is 250-1100 m.

With respect to the soil cover, the agricultural plains of the Project area are generally covered in sandy brown soils belonging to the Harshoroon subtype of the soil classification of Mongolia. These soils have a high level of fertility, are rich in nutrients, especially humus, are mainly used for pastures, agriculture and forestry,

have good structural stability, are not easily eroded by natural and human factors, and are classified as non-fragile.

These soils also have a good ability to regenerate naturally. However due to the sand content, the water absorption volume of the soil is moderate, and as a result the soil's ability to retain moisture is limited.

Many soil samples across the site have been tested for laboratory parameters; there have been no adverse findings and no reported detections of indicative contaminants in such samples. Most recently a representative sample from the cattle feedlot gave the following main testing results.

Table 9. Physical and chemical parameters of soil cover. Ecotrend

Sample number	Depth, cm	Fiber size, % (in mm)			Mechanical component
		Sand (2-0.05mm)	Dust (0.05-0.002mm)	Clay (< 0.002mm)	
MASP-01	0-20	68.7	21.2	10.1	Sandy
	20-35	74.6	16.1	9.3	Sandy
	35-50	76.0	11.7	12.2	Sandy

Sample number	Depth, cm	pH $_{2}$o (1:2.5)	CaC0 $_{3}$ %	Humus %	EU $_{2.5}$ _ dS/m	mobile, mg/100g	
						r $_{2}$o $_{5}$	K $_{2}$0
MASP-01	0-20	8.42	0.00	2.830	0.251	1.75	15.6
	20-35	8.48	0.00	2.728	0.275	1.69	13.5
	35-50	8.63	0.00	2.064	0.344	1.64	12.9

Source: MAS, Institute of Geography - Geoecology, Results of soil laboratory analysis, 08-29-2023

The average fertile layer of soil cover at this location was 20 cm. The average thickness of the vegetative layer is 20-30 cm. According to the results of laboratory analysis, humus content will decrease from 2.8% at the surface (0-20 cm) to 2.0% at the bottom (20-50 cm). In 100 g of soil, mobile phosphorus is 1.75-1.64 % or average, and mobile potassium is 15.7-12.9 mg/100g or low supply. The general level of fertility of the soil cover at this location is average.

5.4 Water Resources

PS3 Par 10 The client will avoid the release of pollutants or, when avoidance is not feasible, minimise and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts …

PS3 Par 11 To address potential adverse project impacts on existing ambient conditions,12 the client will consider relevant factors, including, for example (i) existing ambient conditions; (ii) the finite assimilative capacity13 of the environment; (iii) existing and future land use; (iv) the project's proximity to areas of importance to biodiversity; and (v) the potential for cumulative impacts with uncertain and/or irreversible consequences. In addition to applying resource efficiency and pollution control measures as required in this Performance Standard, when the project has the potential to constitute a significant source of emissions in an already degraded area, the client will consider additional strategies and adopt measures that avoid or reduce negative effects. These strategies include, but are not limited to, evaluation of project location alternatives and emissions offsets.

PS3 G10. Monitoring is particularly important for large projects with impacts that may be uncertain and potentially irreversible and consequently in need of more frequent evaluation of emissions levels or ambient quality. In addition, clients should include monitoring processes within their management system to alert them to significant increases in pollutant emissions or impacts on ambient conditions that may be an indicator of problems with manufacturing processes or pollution control equipment that could require corrective action (see Performance Standard 1 and its accompanying Guidance Note).

A number of detailed studies have been undertaken within the wider Project AoI to establish water resources quality and availability for operational use, and especially the potential future use of irrigation. The main studies are summarised below and have focused on groundwater exploration and assessment of surface water potential in the Murun River.

Figure 17. Summary of water characterisation studies. Metagro

5.4.1 Groundwater

PS3 Par. 10 The client will avoid the release of pollutants or, when avoidance is not feasible, minimise and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts. Where historical pollution such as land or ground water contamination exists, the client will seek to determine whether it is responsible for mitigation measures. If it is determined that the client is legally responsible, then these liabilities will be resolved in accordance with national law, or where this is silent, with GIIP.
PS3 G10. Monitoring is particularly important for large projects with impacts that may be uncertain and potentially irreversible and consequently in need of more frequent evaluation of emissions levels or ambient quality. In addition, clients should include monitoring processes within their management system to alert them to significant increases in pollutant emissions or impacts on ambient conditions that may be an indicator of problems with manufacturing processes or pollution control equipment that could require corrective action (see Performance Standard 1 and its accompanying Guidance Note).

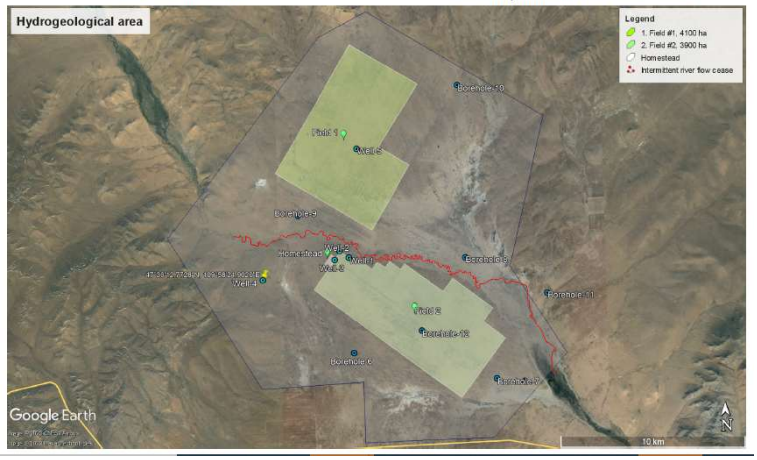
For the assessment and use of groundwater resources:

- a total of 12 exploratory boreholes have been drilled to a maximum depth of 120 m below ground level
- 4 of these wells have been converted to current production use:
  - wells 1, 2 & 3 to provide supply at a combined pumping rate of 57.7 l/s to the trial 100 ha centre-pivot irrigation system in used in Field 1, via interim storage in the 9,591m^3 water reservoir adjacent to the Homestead.
  - well 4 to provide supply to the cattle feedlot operations
  - laboratory testing of all production wells for typical geochemical and metal content indicators has not shown any detections at levels of concern.
- it is estimated that the maximum exploitable potential of the ~45-50m thick upper aquifer across the total project area of 169km^2 is 104,494m^3/day of water over 20 years, i.e., ~**38 million m^3**/year
- current Metagro technical studies consider use of up to **5.9 million m^3**/year of groundwater to enable it to irrigate 2,570 ha of land at an average water application rate of 2,310 m^3/ha. It is calculated that this water volume would require a well field of 46 abstraction wells, operating at an average pumping rate of 15 l/s.

Further details are given in the figures below.

Hydrogeological survey of groundwater

- Groundwater deposit area: 169 km²
- Average thickness of aquifer: 46.2m
- Drilled wells and boreholes: 12
- Exploratory-production wells: 3 wells (Total yield: 57.7 l/s)
- Water quality tests:
  - Pilot irrigation wells: meet drinking water standards.
  - Cattle feedlot wells: meet requirements of cattle water.



Reserve category	Yield	
	l/s	m³/day
Probable reserve (category P)	1,209.4	104,494.3
Reserves rated as category C for industrial use (Crop farming)	7.26	627.7
Reserves to be confirmed category B for industrial use (Proven reserve)	1,202.14	103,866.6
Total	**1,209.4**	104,494.3

Groundwater (Murun river valley)	
Indicators	**Quantity**
Gross amount of irrigation area, ha	3,460
Net amount of potential irrigation area, ha	**2,570**
Optimal amount of potential irrigation area, ha (per dam)	**1,300**
Average irrigation norm (m³/ha)	2,310
Amount of water required (m³/year)	5,952,870
Total duration of irrigation season (days)	210
Number of irrigation days (days)	100
Amount of water required per day (m³/day)	59,528
Water consumption per unit time (l/s)	689
Average water discharge per well (l/s)	15
Number of working wells required (number)	46

Figure 18. *Groundwater reserves and demand estimates. Metagro*

Metagro is evaluating the productivity of its cropping patterns, agrochemical usage, and harvest yields and assessing the added-value of the trial centre point irrigation system. This will enable future business decision-making on the need, extent and the cost-effectiveness of further crop irrigation roll-out, which will be done in consultation with its expert advisors and the appropriate regulators – primarily the Ministry of Food, Agriculture and Light Industry (MOFALI) and Mongolia's Water Resource Department.

- In email correspondence on 25 & 26 January and 1 March 2024, Metagro confirmed that it is only planning to expand irrigation capacity to 400ha per the general layout below, for the foreseeable future until at least 2027.

Table 10. *Metagro Farm maximum projected water use 2023-2027 (as known)*

Water Use	2023	2024	2025	2026	2027
Cattle Farm	10,468	43,800	54,750		
Irrigation System and (irrigated area)	231,217 (100ha)	462,254 (200ha)	462,254 (200ha)	924,508 (400ha)	924,508 (400ha)
Camp	1,044	1,180	1,180		
Spraying Operations	343	343	343		
Total	**243,072**	**276,540**	**287,490**		

5.4.2 Surface Water

PS3 Par. 10 The client will avoid the release of pollutants or, when avoidance is not feasible, minimise and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts. Where historical pollution such as land or ground water contamination exists, the client will seek to determine whether it is responsible for mitigation measures. If it is determined that the client is legally responsible, then these liabilities will be resolved in accordance with national law, or where this is silent, with GIIP.

The Murun River runs from north-west to the southeast, bisecting the Project area. The Murun River originates in part of the Khentii Mountains, including Green Mountains (1807 m), Aram White Gozgor Mountain (1887 m), Namdag Mountain (1587 m), and Modon Khan Mountain (1862 m). It flows for more than 130 km and joins the Kherlen River which is the major river of Eastern Mongolia. The catchment area of the Murun river is 399.9 km^2, it has a constant year-round flow until it reaches the agricultural plain where Metagro is located, whereupon its flow may be intermittent – depending on seasonal snow melt and precipitation patterns. In some dry and dry years, the Murun River dries up and becomes a temporary stream, and it does not reach the Kherlen River.

Figure 19. The Murun River, view north-west, dated 2023-08-19. EcoTrend

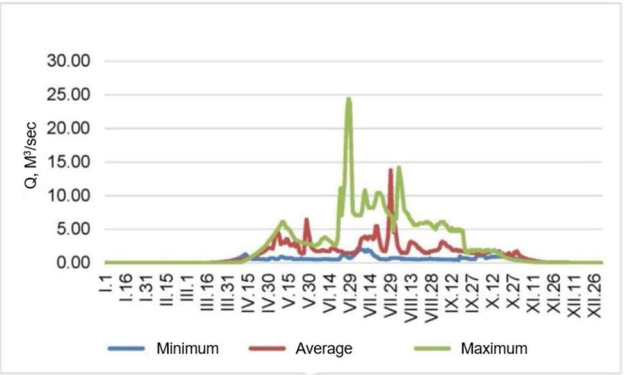


Figure 20. Common annual hydrograph of the Murun River. EcoTrend

The long-term average flow of the Murun River is reported to 0.50-0.60 m^3/sec. The average water level in the Murun River in the Project area is 0.5-0.6 m, and the fluctuation of the water level in a year with abundant water and floods is likely to exceed 1.0 m.

Metagro have commissioned detailed studies of the available water supply in the Murun River for potential irrigation support. It is estimated that with the construction of a dam near the site, up to 2,577 ha of land could be irrigated using low estimates of surface water supply potential, see below. This topic is discussed further in the section on Cumulative Impacts, as the potential for a dam on the Murun river is being led by the European Bank for Reconstruction and Development (EBRD) rather than by Metagro.

Potential use of Murun River water

The potential use is estimated at low, medium and high scenario.

By drawing directly from the river			
Indicators	Low	Medium	High
Potential use for irrigation (million m^3/year)	0.2	0.9	1.2
Potential area to irrigate (ha)	66	400	508

By accumulation (using dam)			
Indicators	Low	Medium	High
Potential accumulation (million m^3/year)	6.9	12.1	17.4
Potential area to irrigate (ha)	2,577	5,233	9,319

As per study, the Murun river water flow was recorded as following:

- 0.58 m^3/s, (July 24, 2003)
- 0.08 m^3/s (July 3, 2011)
- 0.55 m^3/s (Sept 17, 2015)

On average, maximum flood discharge of the Murun River is estimated as 1.12 m^3/s.

Between field 1 and 2 of Metagro, the Murun river intermits for 20 km during the low stream flow. The point where the river flow intermits.

26

Figure 21. *Surface water supply potential. Metagro*

The ESIA consultant team undertook a water quality sampling and testing programme of the Murun river during the two fieldwork events in June and October 2023. The summary report from this work is attached as **Appendix J.**

Four samples from the river were taken at each event and analysed for typical bacteriological and geochemical parameters as below. No adverse results were detected.

Table 11. *Murun River - bacteriological test results*

No.	SAMPLE ID	Sampling months in 2023	TVC in 1 ml	Total coliform	Total termotolerant coliform and presumptive Escherichia coli FC-faecal coliform	Pathogenic bacteria (Salmonella)	Clostridium perfringens
1	SW01	July	18	not detected	not detected	not detected	not detected
		October	36	not detected	not detected	not detected	not detected
2	SW02	July	11	not detected	not detected	not detected	not detected
		October	26	not detected	not detected	not detected	not detected
3	SW03	July	27	not detected	not detected	not detected	not detected
		October	11	not detected	not detected	not detected	not detected
4	SW04	July	34	not detected	not detected	not detected	not detected
		October	31	not detected	not detected	not detected	not detected
Maximum permissible level /MNS 0900:2018/			**100**	**not detected in 100ml**	**not detected in 100ml**	**not detected in 25ml**	**not detected in 100ml**
Source: Khanlab laboratory analysis result, 2023 July 21, and 2023 October 19 Comment: MNS 0900:2018 Environment. Health protection. Safety. Drinking water. Hygienically requirements, assessment of the quality and safety							

Table 12. Murun River – general geochemical testing results

No.	Determination	Units	SW01		SW02		SW03		SW04		MNS 0900:2018	MNS 4586:1998
			July 2023	Oct 2023	July 2023	Oct 2023	July 2023	Oct 2023	July 2023	Oct 2023		
1	pH	-	8.01	8.27	8.36	8.35	7.95	8.15	8.26	8.37	6.5-8.5	6.5-8.5
2	Potassium (K^+)	mg/l	2.11	1.77	2.29	1.80	1.65	3.35	1.87	1.76		
3	Sodium (Na^+)	mg/l	16.54	13.71	18.76	13.54	18.34	28.42	24.62	22.42	200.0	
4	Calcium ($Ca2^+$)	mg/l	44.82	40.09	51.52	38.50	47.65	76.98	58.3	48.56	100.0	
5	Magnesium (Mg^{2+})	mg/l	7.62	7.98	10.51	7.91	9.84	19.29	15.12	14.86	30.0	
6	Ammonium (NH_4^+)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.40	1.5	
7	Chloride (Cl^-)	mg/l	5.1	5.10	<3.0	5.10	3.4	4.91	3.4	11.91	350.0	300
8	Sulfate (SO_4^2)	mg/l	13.08	<5.0	59.51	<5.0	5.15	<5.0	62.81	27.17	500.0	100
9	Nitrite (NO_2)	mg/l	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.0	
10	Nitrate (NO_3)	mg/l	0.55	0.15	0.64	0.15	0.67	0.18	0.61	0.37	50.0	
11	Carbonate (CO_3^{2-})	mg/l	1.5	9.00	9	6.00	<1.50	12.00	9	15.00		
12	Bicarbonate (HCO_3^{2-})	mg/l	198.3	164.8	170.8	177.0	247.1	372.2	219.6	213.6		
13	Total Hardness	mg-equ/l	2.86	2.66	3.44	2.57	3.19	5.43	4.15	3.65	7.0	
14	Total dissolved solid. TDS	mg/l	218	168	262	164	238	340	316	258		
15	Conductivity, EC	µS/cm	340	276.6	432.8	263.2	412.5	607.0	521.4	421.5	1000	
16	Oxidation KMn04	mgO2/l	5.6	3.68	17.12	4.40	3.36	9.76	14.8	2.40		
17	Total suspended solids, TSS	mg/l	<3.0	<3.0	<3.0	<3,0	<3.0	<3.0	<3.0	<3.0		
18	Phosphate, $P0^{3-}_4$	mg/l	0.47	<0.05	0.35	<0.05	0.25	<0.05	0.11	<0.05	3.5	
19	Fluoride, F	mg/l	0.56	0.62	0.52	0.54	0.6	0.60	0.56	0.52		1.5
20	Hydrogen sulfide, H_2S	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	
21	$Chlor_{free}(cl^-)$	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.2-0.3	
22	Turbidity, NTU	mg/l	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	5.0	
23	COD	mgO2/l	<20.0	<20.0	<20.0	<70.0	<20.0	<20.0	<20.0	<20.0		10
24	BOD	mgO2/l	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0		3
25	Chromium, Cr (VI)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		0.01
26	DO	mgO2/l	0.2	0.16	4.1	3.64	0.3	0.26	0.2	0.32		Not lower than 6&4
27	Total alkaline /as $CaC0_3$/	mg/l	165	150.0	155	155.0	202.5	325.0	195	200.0		
28	Bromide, Br	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		

Source: Khanlab laboratory analysis result, 2023 July 21, and 2023 October 24

Comment: MNS 0900:2018 Environmental. Health protection. Safety. Drinking water. Hygienically requirements, assessment of the quality and safety
MNS 4586:1998 Water quality. General requirements

5.4.3 Community Water

There are at least 72 community water wells, 10 ponds / surface water bodies and 9 springs listed in the local Ulziit Community Database in proximity to the Metagro site, see the figures below.

Most of the community wells are used by herders for domestic consumption and watering their animals. The other water features shown are also sometimes used for the same purpose.

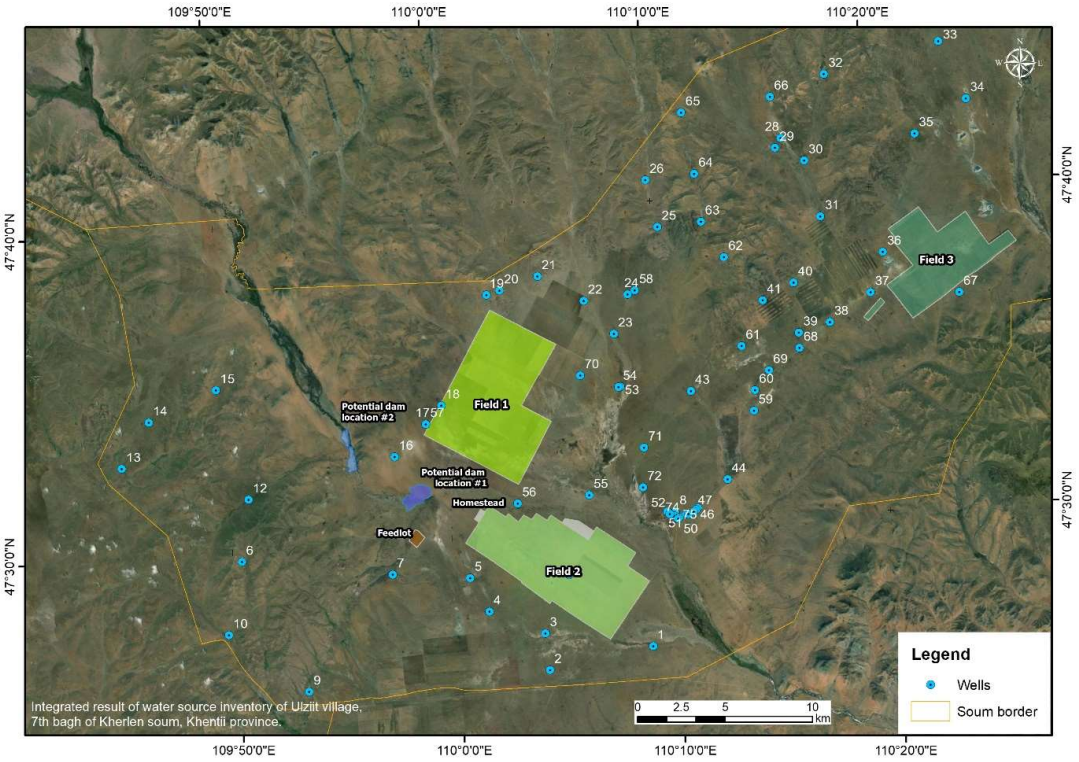


Figure 22. Location of Water Wells in Ulziit Community Database

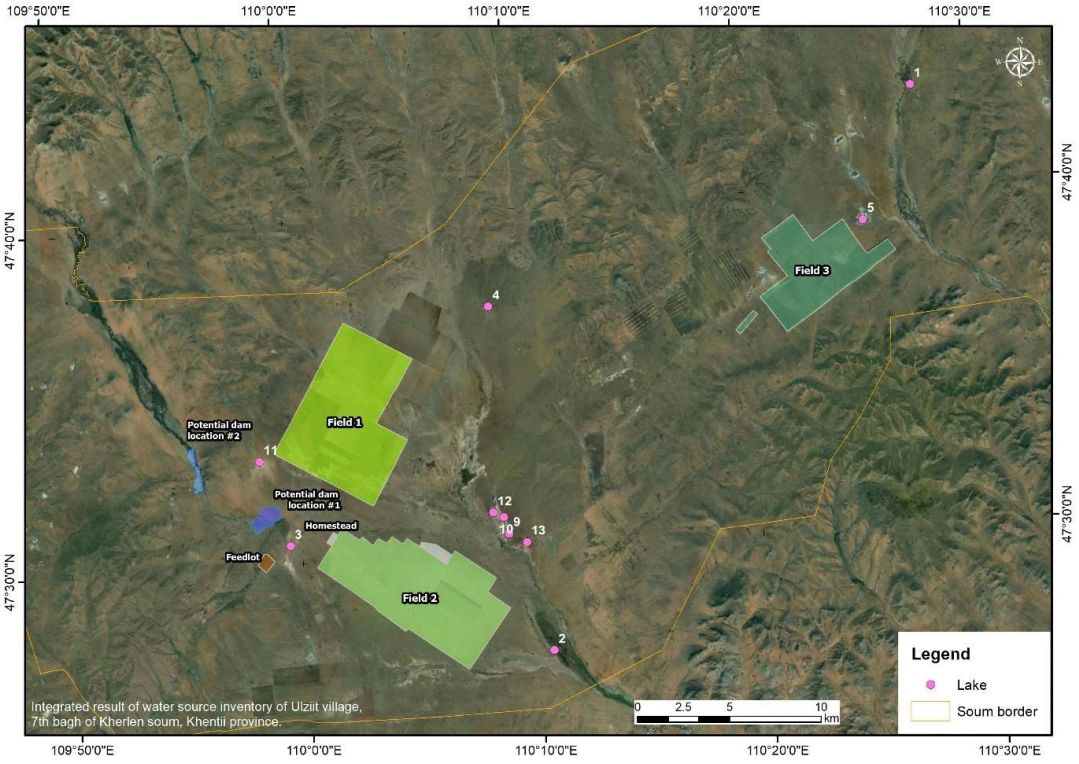


Figure 23. Location of Ponds / Lakes in Ulziit Community Database

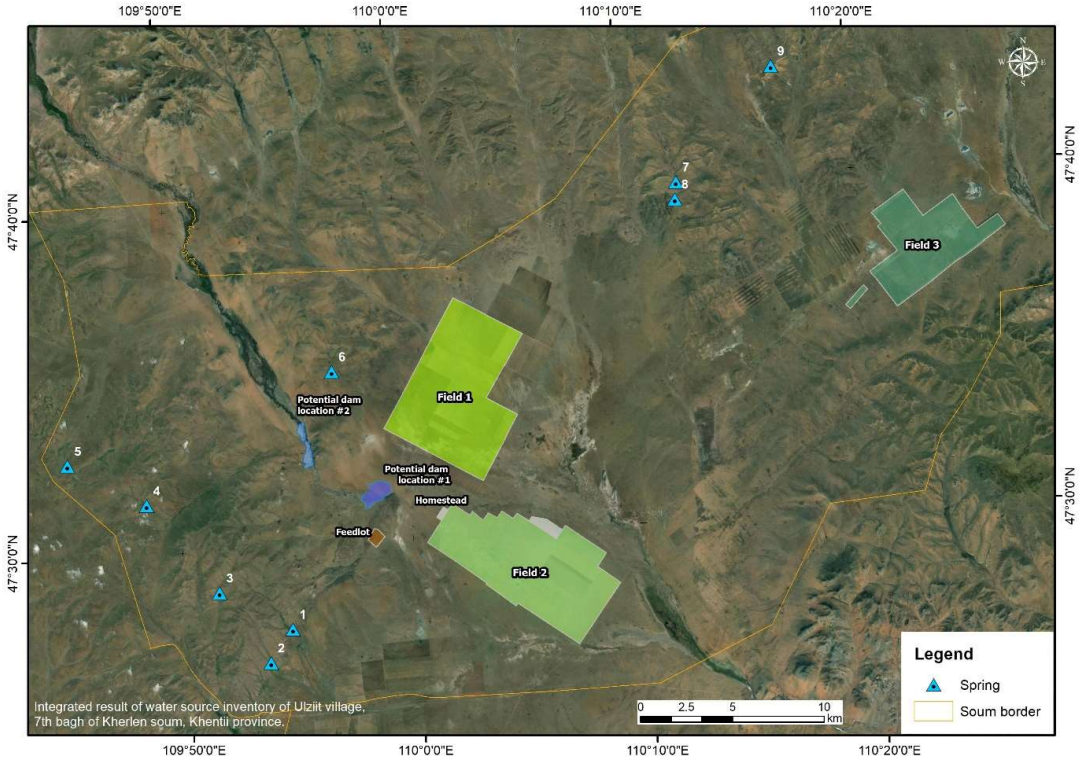


Figure 24. Location of Springs in Ulziit Community Database

Because of the large network and potential sensitivity of this water usage, the ESIA consultant team undertook inspections and information-gathering on the community water wells in closest proximity to Metagro Farm during the two fieldwork events in June and October 2023. The summary report from this work is attached as **Appendix J.**

During the field survey, a total of 29 wells in closest proximity to Metagro Farm were reviewed.

- 8 wells' water levels were measured since measurement activity could not be done due to constraint and accessibility issues.
- 21 wells were locked, blocked, damaged, dried up or covered with objects
  - 12 wells were closed and covered with objects
  - 2 wells were dry
  - 3 wells were in a damaged condition.

Water level and water column information for the 8 measured wells shows that most wells are very shallow and all except 1 have a water column of less than 3m, indeed two wells had less than 1m of water present.

Table 13. Water levels in community wells near the Metagro project site

No.	Well ID	WGS1984		Well type	Condition	Water level, m	Total depth, m	Water Column, m
		E	N					
6	Baruun Chandgana enger	110° 2' 53.9"	47° 37' 37.4"	Hand well	In use	1.85	3.53	1.68
10	4th bagh	110° 6' 19.8"	47° 31' 7.4"	Engineered	In use	1.95	4.25	2.3
13	Nogoon well	110° 6' 50.6"	47° 26' 28.0"	Engineered	In use	2.78	3.95	1.17

20	Ariin well	110° 20' 26.7"	47° 37' 59.1"	Engineered	In use	2.47	3.04	0.57
21	Maanitiin ar	110° 23' 47.9"	47° 36' 35.5"	Engineered	In use	11.4	22.5	11.1
23	Nomgonii ar	110° 7' 57.80"	47° 36' 1.20"	Engineered	In use	9.1	10.7	1.6
26	Nomgon khugshchuudiin khotkhon	110° 8' 59.60"	47° 32' 27.20"	Hand well	In use	3.8	4.35	0.55
27	Nomgon	110° 8' 49.80"	47° 31' 14.30"	Hand well	In use	2.68	5.1	2.42

5.5 Climate

Regional

Khentii province has a strongly continental climate, with rapid temperature fluctuations, low precipitation, and marked regional variations depending on latitude and altitude. Temperature varies dramatically throughout the year; the average temperature during summer is 30~35°C and in winter -32~-37°C.

Annual precipitation in the Khangkai Region steppe region is 320mm. In Mongolia, an estimated 85% of precipitation falls between April and September. Stable snow cover is established every year in the middle of November lasting for 120-150 days, and melts in early spring around March.

Small inter-annual variations in precipitation can lead to severe drought events, with some regions not experiencing rainfall at all. No long-term trend in precipitation change is evident, however variability in rainfall seems to have increased in recent years. The WRI Aqueduct Tool recognises the Project area as extremely high risk for overall water stress, high for riverine flood risk and low-medium for drought risk. The risk of interannual variability is medium-high and the seasonal variability is low-medium.

Khentii province receives an average of 2800-2900 hours of sunshine annually, with the total solar radiation on the horizontal surface amounting to 4500-4600 MJ/m^2.

The relative humidity in this region is high: in the winter months it ranges between 69-72%, in summer and autumn 63-65%, and reaches its lowest in spring, 50-54%.

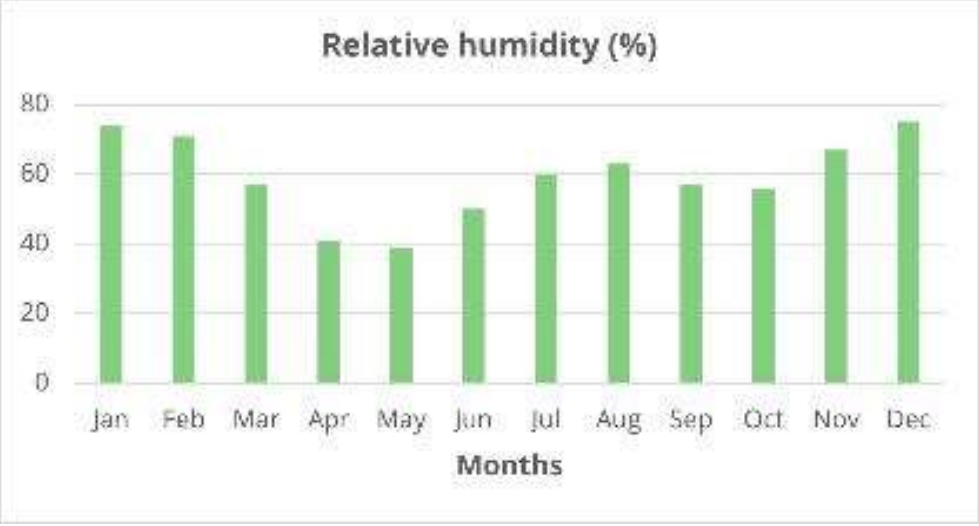


Figure 25. Average monthly relative humidity, Khentii (1960 – 2022)

Site-Specific

Localised data from Metagro for the period between 2011 and 2022/2023 are given in the following figures and demonstrates:

- Average maximum temperature is 26.1°C in July with an absolute maximum recorded of 38.4 °C
- Average minimum temperature is -30.0 °C in January and February, with an absolute minimum recorded of -43.3 °C.
- Annual average precipitation in the area is 258.9mm between 2011 and 2022.
- 77 % of the total precipitation occurs in the months of May to August

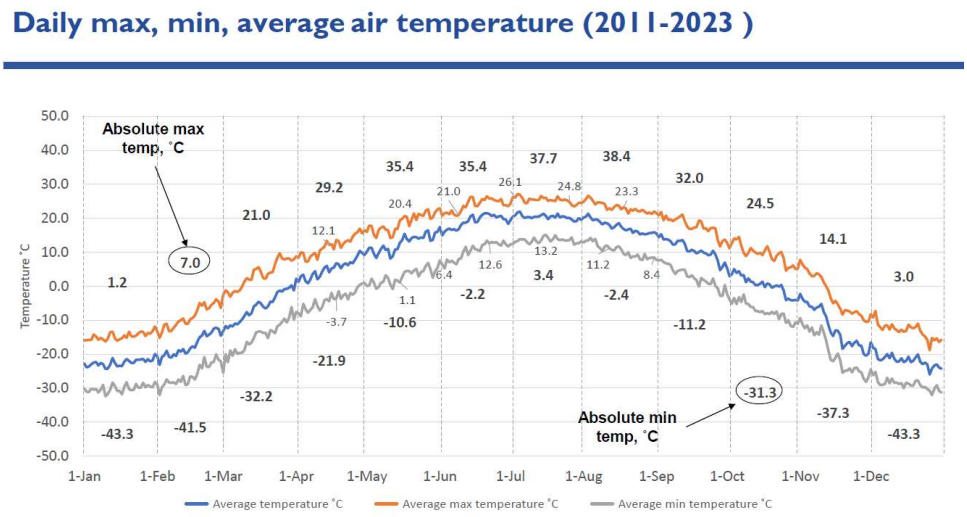


Figure 26. Local average temperature fluctuations (2011 – 2023). Metagro

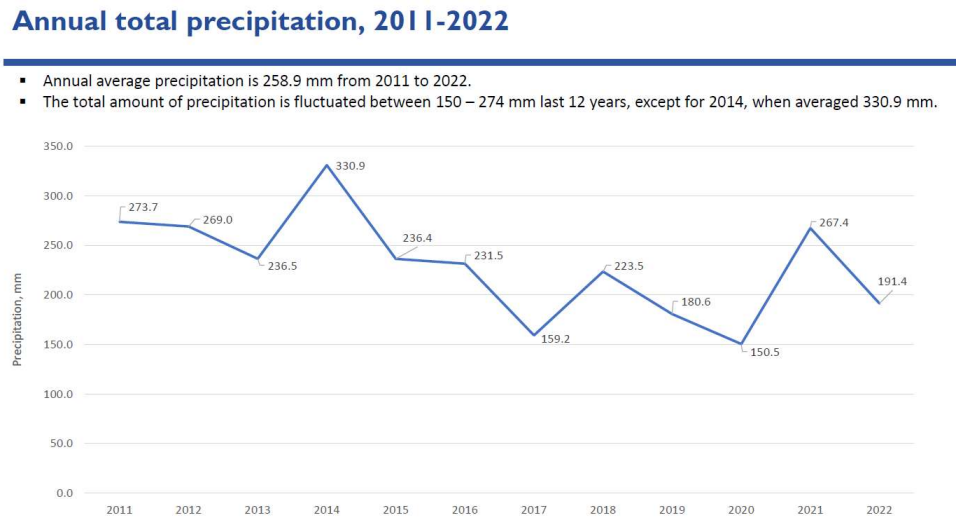


Figure 27. Annual total precipitation trends (2011 – 2022). Metagro

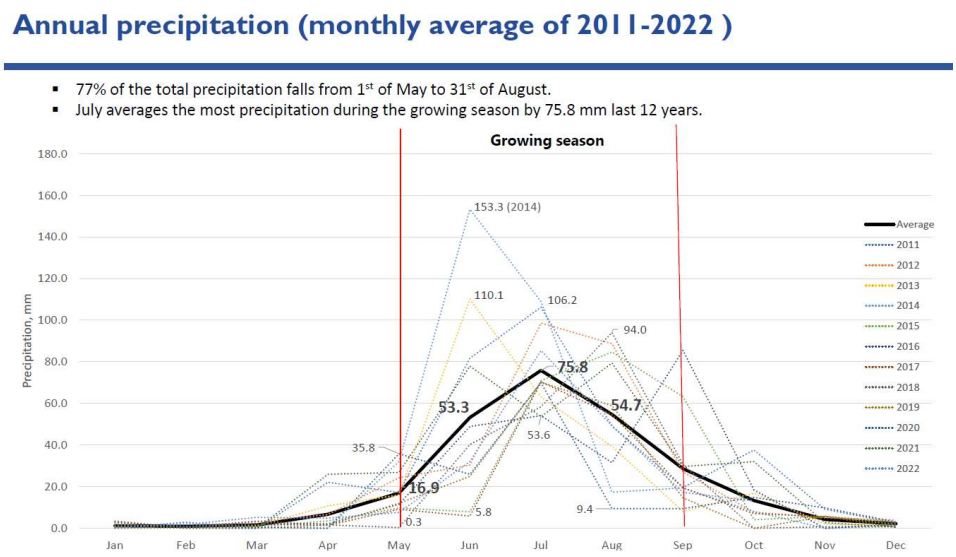


Figure 28. Local precipitation trends (2011 – 2022). Metagro

Data obtained from the Kherlen meteorological station from 2013-2022 indicates the average soil temperature at the Project site, is usually at its highest in July (26.1 °C), and at its lowest in January (-24.6 °C).

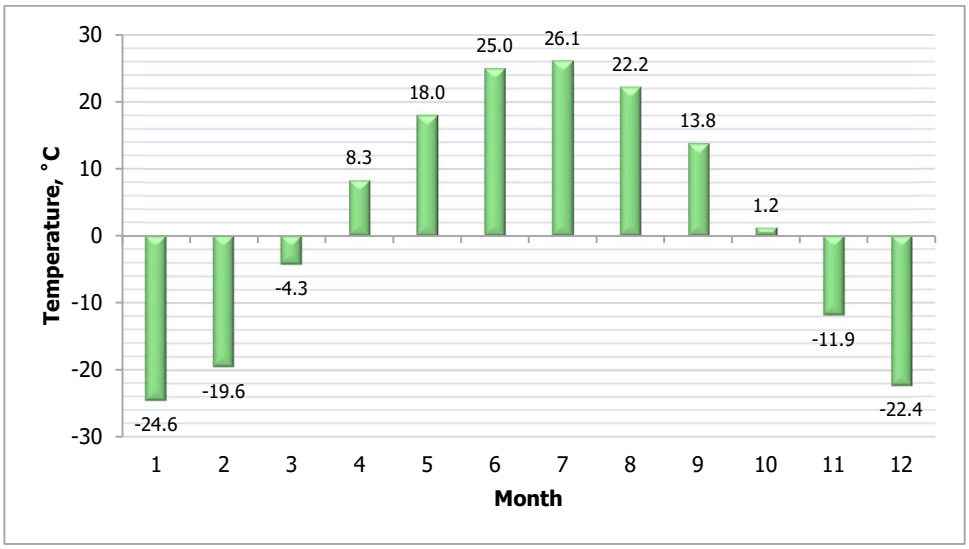


Figure 29. Average monthly soil temperature (2013 – 2022)

The average annual wind speed in the Project area is 3.7 m/s, with the highest wind speeds occurring between the months of April to June. The prevailing wind direction is from the north, and the maximum wind speed record between 2011-2021 was 17.3 m/s, see figures below.

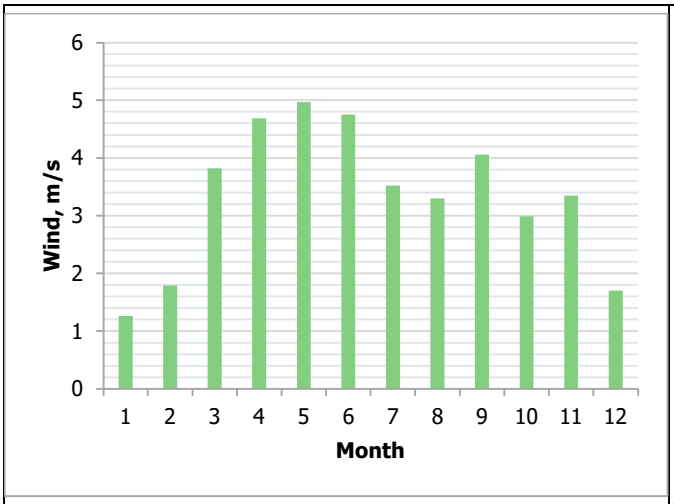


Figure 30. Trend of regional average monthly wind speed

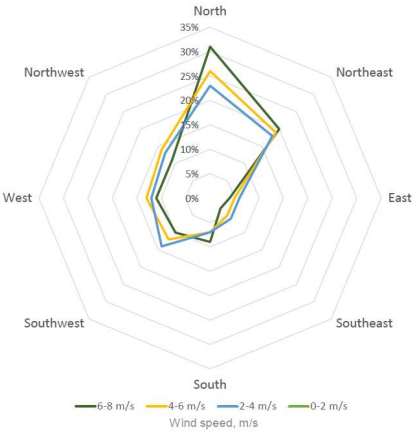


Figure 31. Prevailing wind direction in the local area (2011-2021). Metagro

Climate Change

Climate change projections for Mongolia were sourced from the World Bank climate change knowledge portal. The climate projections for 2080 – 2099 indicates that temperatures are expected to increase in the Khentii region of Mongolia and might lead to an increase in temperature in the coldest month of January projected of up to 4.7°C from the baseline in the worst-case SSP3-7.0 modelling scenario. The frequency of days hotter than 35°C is also modelled to increase, see figures below

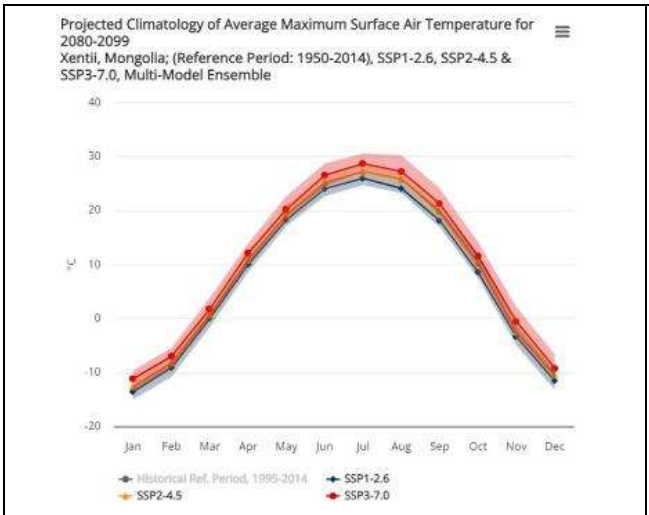


Figure 32. Khentii, Mongolia maximum temperature projections (World Bank, 2023)

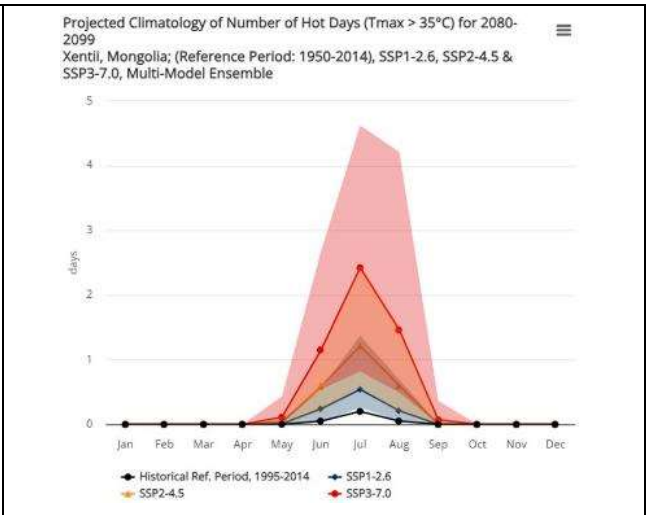


Figure 33. Khentii, Mongolia number of projected hot days (World Bank, 2023)

The projections also show a slight increase in precipitation from the baseline, mostly in the summer months (June, July, and August) as well as a predicted increase in 5-day rainfall intensity.

The project site is already considered by the WRI as being at extremely high risk for overall water stress and high risk for riverine flooding. This projected increase in precipitation and precipitation intensity, alongside the projected increase in temperature which will directly impact glacier and snow melt will increase the overall risk of riverine flooding in the Khentii region of Mongolia.

Natural Hazards

Historically, climate induced natural hazards in Mongolia have mainly been extreme temperatures and storms. 27,605 people were affected by flood between 2019 – 2020 and 22,500 people were affected by storms. Collectively rom 2015 – 2020, a total of 1,388,000 people were affected by extreme temperatures.

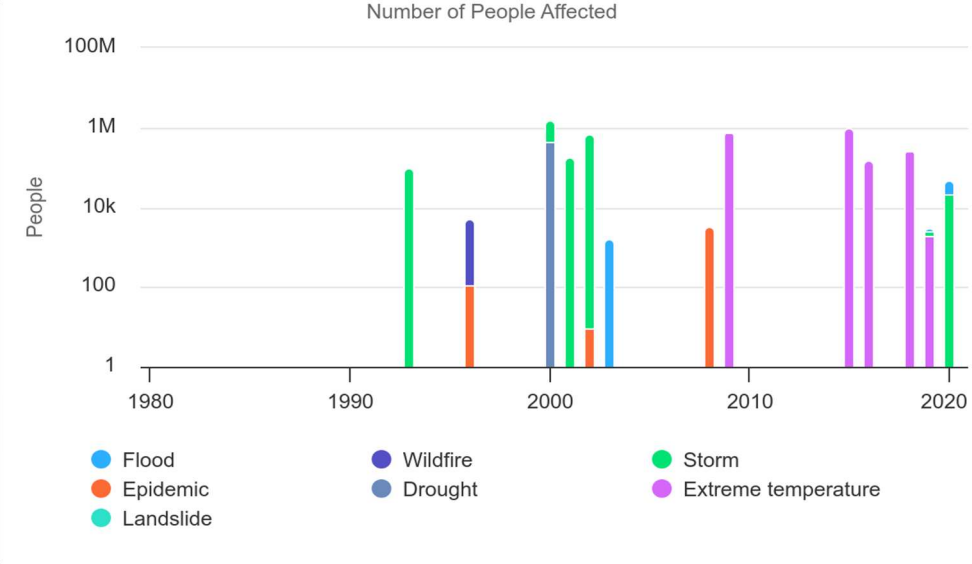


Figure 34. Key natural hazards statistics, Mongolia for 1980-2020 (World Bank Group, 2022)

Of significance for Metagro's operations is the periodic occurrence of "dzud", a Mongolian term referring to severe winter cold coupled with heavy snowstorms which are usually associated with large-scale livestock losses.

- In 2010, heavy snow covered nearly 90% of the territory and a related dzud caused a loss of nearly 8.8 million animals.
- More recently, another dzud killed over 700,000 heads of livestock in 2018 (ADPC and UNDRR, 2019).

According to Mongolia's third national communication to the United Nations Framework Convention on Climate Change (2018), the intensity of dzud's have increased since the 1990s and their frequency is projected to increase by 5 – 20% under the RCP 4.5 modelling scenario (SSP 2-4.5) by 2080. This is due to the projected increase in winter snow by 10 – 14% in the near future.

5.6 Greenhouse Gases

Mongolia currently accounts for 0.16% of global GHG emissions; but with a rapidly growing GDP its emissions are estimated to reach 74.3 Mt CO2e in 2030 from a baseline figure of 51.3 Mt CO2e in 2015 (UNFCCCC, 2022). The agricultural sector in Mongolia contributes 48.5% of national emissions (UN, 2021). The country has set ambitious targets and strategies to regulate and reduce emissions by 22.7% by 2030.

This Project is currently being developed in accordance with IFC performance standards, PS3 (Resource efficiency and pollution prevention) which requires projects with annual emissions > 25,000 tCO_{2e} per annum to quantify direct emissions from the facilities owned or controlled by the project, as well as indirect emissions associated with the off-site production of energy used by the project (Scope 1 and 2 emissions).

During the operational phase of this project, the GHG emissions will be calculated and reported annually in accordance with internationally recognised methodologies and good practice. Irrespective of the identified data gaps in the estimation of the operational phase of the project, Metagro was able to provide relevant

information (estimations and projections) such as; electricity and fuel consumption, fertiliser usage, annual area harvested, trees replanted, etc which were used alongside data gathered from peer-reviewed articles and sectoral emission data available from the World Bank and US EPA.Research conducted by Rural & Environmental Science and Analytical Services (RESAS) in 2022 reported the absolute emissions from an average mixed farm similar to Metagro's to be approximately 5.3 tCO_2-e per hectare.

Based on provided data, research, and the scope and size of the project, the GHG emissions have been estimated to be approximately 105028.4 tCO_2e per annum.

The table below shows a breakdown of the estimated emissions from the operational phase of Metagro's project.

Table 14. Estimated GHG emissions per annum

Estimated GHG Emissions per annum during Operational Phase (tCO_2e)				
		Arable Farm	Livestock Farm	Processing Facilities
Carbon dioxide				
	Direct	6077	4781	23879.2
	Indirect			11457
	Total CO_2 from energy & waste	3608	3978	
Methane				
	Total CO_2e from methane	25201.1	47027.3	
Nitrous Oxide				
	Total CO_2e from nitrous oxide	11690.5	2890.3	
Carbon Sequestration				
	Total CO_2e emissions from operational phase	140589.4		
	Sequestration by forestry & hedges	35561		
Net Emissions		**105028.4**		

The bulk of the emissions from the Metagro project is attributable to the livestock farm and arable farm (waste and fertiliser application).The processing facilities also represents a significant amount of emissions in the farm operations.

Metagro has presented documents highlighting strategies to reduce 20,899 tons of CH_4 emissions over the next 10 years of the project's operation. It aims to achieve this provided a 2% destocking rate is realised in three eastern aimags and through several strategies such as zero-tillage technology and implementation of smart agriculture technologies such as satellite imagery, soil sensors which will enable them monitor crops remotely, use carriable-rate for seedling and fertiliser in the fields and effectively control pests and weeds there maximising productivity and promoting resource efficiency. Throughout the project operation phase, Metagro will not practice bare fallowing, thereby reducing the possibility of carbon emissions being stored in the topsoil and reducing loss of soil moisture. Metagro has structured its business model to effectively

combine both crop and livestock farming allowing a wide range of crop rotations. The rotation scheme will include barley (main forage plant), corn, legumes, oats, triticale, and sunflower (for silage), the rotational planting scheme has been designed to consider the soil's ability to restore fertility without excessive application of fertilisers. Protection of the soil in winter has also been accounted for, metagro has stated that annual crop stems will be left 15-20 cm high in winter and straw will be shredded by special machinery to create mulch in the field.

As part of its commitment to reduce its emission, Metagro has also committed to investing in solar power to initially power its irrigation systems and subsequently all other farm facilities. However, Metagro has not yet conducted a current and future baseline GHG emission study of the project site to benchmark this reduction against, and to estimate its predicted scope 1 and 2 emissions based on the proposed scale of operation. Metagro has also not undertaken a study to estimate the current carbon sequestration during the operation phase and regenerative agriculture phase of its project (6 – 10th year of operation phase), it has stated that its notillage technique will lead to better soil CO_2 capture and sequestration.

Metagro is committed to appropriately monitoring annual GHG emissions and reviewing insights from reports generated to improve resource efficiency throughout the operational phase of the project. It has also committed to measuring carbon stock (sequestration, storage, and emissions) through the establishment of 20 monitoring sites in the project area. Samples for analysis will be taken annually in October from a soil depth of 0-30cm. Organic humus/carbon sequestered in the soil will also be measured periodically through carbon monitoring in the soil and plant roots. Measurement of Nitrogen in the area planted with annual legume crops will be done prior to planting in spring and after harvest in autumn for comparison. In addition to this, annual measurements will also be taken in fields where legumes are planted several years in a row prior to planting and after harvesting.

As part of Metagro's commitment to adequately managing its resource efficiency and reducing emissions, it recently completed a FAO LCA sheet to identify gaps and begin collecting relevant data to appropriately estimate emissions from its operations. Metagro has projected an estimated reduction in its urea fertiliser application (up to 45 tons in 2028) and N synthetic fertilisers (75 tons in 2028). It also has included a tree nursery and camp landscaping section as part of the project for boosting its carbon sequestration accounting for 708,000 trees servings as windbreaks at crop farming fields, 1,080 ornamental plants and 3.3 hectares of grasses for homestead landscaping.

5.7 Air Quality

(Par. 10) The client will avoid the release of pollutants or, when avoidance is not feasible, minimise and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts. Where historical pollution such as land or groundwater contamination exists, the client will seek to determine whether it is responsible for mitigation measures. If it is determined that the client is legally responsible, then these liabilities will be resolved in accordance with national law, or where this is silent, with GIIP.

(Par. 11) To address potential adverse project impacts on existing ambient conditions, the client will consider relevant factors, including, for example (i) existing ambient conditions; (ii) the finite assimilative capacity of the environment; (iii) existing and future land use; (iv) the project's proximity to areas of importance to biodiversity; and (v) the potential for cumulative impacts with uncertain and/or irreversible consequences. In addition to applying resource efficiency and pollution control measures as required in this Performance Standard, when the project has the potential to constitute a significant source of emissions in an already degraded area, the client will consider additional strategies and adopt measures that avoid or reduce negative effects. These strategies include, but are not limited to, evaluation of project location alternatives and emissions offsets.

GN1. [...] clients should take into account the potential impact of their activities on ambient conditions (such as ambient air quality) and seek to avoid or minimise these impacts within the context of the nature and significance of pollutants emitted. For small- and medium-sized projects with limited potential emissions, this may be achieved through compliance with emissions and effluent standards and the application of other pollution prevention and control approaches. Large projects with potentially significant emissions and/or high impacts, however, may require monitoring of impacts on the surrounding environment (i.e., changes in ambient levels), in addition to the implementation of control measures.

GN8. [...] The discharged effluent, air emissions, and other numerical guidelines and performance indicators as well as other prevention and control approaches included in the EHS Guidelines are considered to be default values applicable to new projects, though the application of alternate performance levels and measures may be considered. As described in Performance Standard 3, clients that request application of alternate performance levels or measures must provide justification and explanation for any levels or measures that are less stringent than those identified in the EHS Guidelines and demonstrate consideration of impacts to ambient quality, human health, and the environment [...]
GN9. Clients whose projects have significant emissions or whose operations are in already degraded environments must also strive to improve their performance beyond the performance levels and measures articulated in the EHS Guidelines with due consideration of airshed and watershed assimilative capacity where known.

GN35. When developing a new project that is expected to produce potentially significant emissions of pollutants, clients should evaluate whether the existing background ambient levels are in compliance with the relevant ambient quality guidelines and/or standards. Ambient quality standards are ambient quality levels established and published through national or local legislative and regulatory processes, and ambient quality guidelines refer to ambient quality levels primarily developed through clinical, toxicological, and epidemiological evidence (such as those published by the World Health Organisation) [...]
GN36. If the ambient levels exceed the relevant ambient quality guidelines or standards (i.e., ambient conditions are already deteriorated), clients are expected to demonstrate that they have explored and, if necessary, adopted a higher level of performance than would be otherwise required under less deteriorated ambient conditions as well as further mitigation measures (e.g., offsetting emissions, modifying site selection) in order to minimise further deterioration of the environment or preferably to achieve improvement. If ambient levels are in compliance with relevant ambient quality guidelines and/or standards, projects with potentially significant emissions of pollutants should be designed so as to reduce the potential for significant deterioration and to ensure continuing compliance [...]

To satisfy local EIA requirements, the field team of Ecotrend undertook air quality measures at the Project site in August 2023 using portable instruments and processed the results. Particulate matter concentrations in the air were measured for 24 hours using the Aeroqual Series 500 at a sampling point around the feedlot and slaughterhouse development area.

Table 15. Results of air quality measurement for Particulate Matter in the study area. Ecotrend

#	Point location	Wind direction and speed, m/s	Coordinate		Measurement results	MNS 4585:2016	Measurement results	MNS 4585:2016
			Latitude	Longitude	$PM_{2.5}$ /24-hour average/, µg/m ^{3}		PM_{10} /24-hour average/, µg/m ^{3}	
1	In the study area	2.7-3.9 from the right	47 ^{o} 30'06.8"	109 ^{o} 58'43.4"	1	**50**	3	**100**
WHO Ambient Air Quality Guidelines[14]					**25**		**45**	

The results of the air quality measurement showed negligible concentrations of fine particulate matter (PM 2.5) and coarse particulate matter (PM 10) compared to the permissible amounts of the MNS 4585:2016 standard. Previous air sampling studies for other local EIA studies (Threshing floor, arable farm and arboriculture; Cattle feedlot; Irrigated farming) undertaken by Green Assessment LLC show similar very low concentrations of particulate matter present, well below thresholds of concern.

Gaseous pollutants concentrations (SO_2 NO_2 CO) in the ambient air of the Project site were measured in previous EIA studies as below. All results are well within the maximum allowable limit specified in the Mongolian air quality standard MNS 4585:2016.

Table 16. Results of air quality measurement for gaseous pollutants in the study area. Green Assessment

Sampling point	Coordinates		SO_2 (µg /m^3)	NO_2 (µg /m^3)	CO (µg /m^3)
Regulatory MNS 4585:2016 limit			**0.045**	**0.085**	**0.060**
WHO Ambient Air Quality Guidelines[15]			**40**	**25**	**4mg/m^3**
Feedlot EIA					
1	47°30′ 18.26″ N	109° 58′21.00″ E	0.026	0.028	0.026
2	47°30′ 04.76″ N	109° 58′37.64″ E	0.019	0.022	0.027
3	47°29′ 54.88″ N	109° 58′20.02″ E	0.011	0.007	0.013
4	47°30′ 04.82″ N	109° 58′07.80″ E	0.016	0.032	0.012
Irrigated Farm EIA					
1	47°30'47.35"N	110°1'04.82"E	0.027	0.031	0.028
2	47°30'42.36"N	110°1'18.68"E	0.022	0.027	0.026
3	47°30'57.47"N	110°1'45.49"E	0.018	0.014	0.021
4	47°30'45.92"N	110°1'35.32"E	0.021	0.029	0.017
Threshing floor, arable farm and arboriculture EIA					
1	47°30'47.35"N	110°1'04.82"E	0.027	0.031	0.028
2	47°30'42.36"N	110°1'18.68"E	0.022	0.027	0.026
3	47°30'57.47"N	110°1'45.49"E	0.018	0.014	0.021
4	47°30'45.92"N	110°1'35.32"E	0.021	0.029	0.017

[14] 99th percentile (3-4 exceedance days per year). Updated 2021 guideline.
[15] 99th percentile (3-4 exceedance days per year). New 2021 guideline.

Based on these results, ambient air quality is very good across the Project site.

5.8 Noise and Vibration

(Par. 10) The client will avoid the release of pollutants or, when avoidance is not feasible, minimise and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts. Where historical pollution such as land or ground water contamination exists, the client will seek to determine whether it is responsible for mitigation measures. If it is determined that the client is legally responsible, then these liabilities will be resolved in accordance with national law, or where this is silent, with GIIP.
(Par. 11) To address potential adverse project impacts on existing ambient conditions, the client will consider relevant factors, including, for example (i) existing ambient conditions; (ii) the finite assimilative capacity of the environment; (iii) existing and future land use; (iv) the project's proximity to areas of importance to biodiversity; and (v) the potential for cumulative impacts with uncertain and/or irreversible consequences. In addition to applying resource efficiency and pollution control measures as required in this Performance Standard, when the project has the potential to constitute a significant source of emissions in an already degraded area, the client will consider additional strategies and adopt measures that avoid or reduce negative effects. These strategies include, but are not limited to, evaluation of project location alternatives and emissions offsets.

There are no known sources of significant vibration in the Project area.

The current level of noise in the Project area is generally at a very low level that reflects the isolated rural nature of Metagro Farm; the nearest settlement, Ulziit village, is 3km away, and the community of Murun is 16km away. Gers are also present within 5km of the project fence depending on the season.

Ambient noise monitoring was conducted by EcoTrend at a point representing the area for the establishment of a cattle slaughter and processing plant. A Reed instrument R8070SD monitoring device was used to measure the noise in the study area. The result obtained was compared to the standard MNS 4585:2016 which sets the permissible level of noise at 60 dBA (16-hour average) during the day (07:00 – 22:00) and 45 dBA (8-hour average) at night (22:00 – 7:00). In rural areas of Mongolia where there is no activity, the average noise level is 30 dBA.

Results show that the average nose level is 18.6 dBA lower than the permissible noise level of MNS 4584:2016 standard. The closest receptor is the household of one herdsman 2km away and will not be affected by the noise generated from construction or operations.

Table 17. Current noise levels in the Project site (cattle grazing and processing plants). Source: EcoTrend

#	Point name	Point location		Noise level, dBA			MNS 4585:2016
		X	Y	High	Low	Average	
1	N01	47 °30 ′6.8″	109 °58 ′43.1″	54.3	33.9	41.4	60

This baseline is consistent with previous results gathered by Green Assessment. Field measurements were conducted in 2 points representing the environment of the project area using a JIEC type 1015 portable meter. Results are shown below.

Table 18. Background noise levels in Project site areas. Source: Green Assessment

Sampling point	Coordinates		Equivalent noise level, Leq (15min) dB(A)	
			Reading 1	Reading 2
Permissible noise level of external environment, dB(A) MNS 4585:2016 (Day/Night)			**60/45 dB(A)**	
IFC noise level guidelines, dB(A) Residential; Institutional ;Educational Industrial; Commercial			**55/45 dB(A)** **70/70 dB(A)**	
Feedlot EIA				
1	47°30′ 04.76.26″ N	109 °58′ 37.64″ E	20	19
2	47°29′ 04.54.88″ N	109 °58′ 20.02″ E	22	23
Irrigated Farm EIA				
1	47°30'47.35"N	110°1'04.82"E	21	23
2	47°30'42.36"N	110°1'18.68"E	25	20
Threshing floor, arable farm and arboriculture EIA				
1	47°30'47.35"N	110°1'04.82"E	21	23
2	47°30'42.36"N	110°1'18.68"E	25	20

5.9 Traffic & Road Safety

Road quality, driving conditions, driver behaviours and training, and natural hazards contribute to challenging driving conditions in Mongolia; this is reflected in the high casualty rate which the WHO reported as 16.5 deaths per 100,000 population in 2016. This is significantly higher than the best performing countries in Europe which typically have a rate of <3 deaths per 100,000 population.

It is therefore important that all measures are put in place to maximise the safety of road movements which are related to Metagro's operations, with a focus on the vehicles, infrastructure and drivers.

The Project has an extensive fleet of on-site agricultural and operational vehicles; as at mid July 2023 there were 39 vehicles in the tracking log, most of which were due to have GPS and/or cameras installed as part of Metagro's safety and management systems.

Table 19. Inventory of Metagro Farm vehicles, July 2023. Metagro

Year	Operation	Equipment	Vehicle	GPS	Camera
2021	Spraying	Sprayer	CASEIH Patriot 3230	JC400	Camera
2022	Spraying	Sprayer	CASEIH Patriot 3230	JC400	Camera
2022	Spraying	Sprayer	CASEIH Patriot 3230	To install	To install
2021	Harvest	Combine	CASEIH Axial flow 7150	JC400	Camera
2021	Harvest	Combine	CASEIH Axial flow 7150	JC400	Camera
2021	Harvest	Combine	CASEIH Axial flow 7150	JC400	Camera
2022	Harvest	Silage Combine	New Holland FR500	To install	To install
2023	Harvest	Combine	CASEIH Axial flow 7150	To install	To install
2023	Harvest	Combine	CASEIH Axial flow 7150	To install	To install
2018	Harvest	Windrower	Macdon H9M155-Tovkhonkhan	JC400	Camera
2017	Harvest	Windrower	Macdon, Ensada 2017 M155-New		
New	Harvest	Windrower	Macdon, Ensada M155-New	To install	To install
2022	Service	Service Vehicle	Water tank truck HOWO, 25m3+15m3	JC400	Camera
2022	Service	Service Vehicle	Fuel tank truck HOWO, 10m3	JC400	Camera
2022	Service	Service Vehicle	Dump truck HOWO, 40	JC400	Camera
2022	Service	Service Vehicle	Dump truck HOWO, 40	JC400	Camera
2021	Service	Service Vehicle	Toyota LC76	FMU125	-
2021	Service	Service Vehicle	Toyota LC76	FMU125	-
2021	Service	Service Vehicle	Toyota LC76	FMU125	-
2021	Service	Service Vehicle	Toyota Hilux	FMU125	-
2014	Service	Service Vehicle	Hyundai Bongo	FMU125	-
1995	Service	Service Vehicle	Toyota Hino Cranetruck	FMU125	-
2022	Service	Service Vehicle	Tractor 50HP	-	-
2016	Service	Service Vehicle	Isuzu Truck	To install	-
2022	Service	Service Vehicle	Toyota Hilux	To install	-
2016	Service	Service Vehicle	Dongfeng Мод усалгааны машин	To install	To install
2017	Service	Service Vehicle	Hyundai Bongo 3	GPS	To install
2016	Service	Service Vehicle	Hyundai Bongo 3	To install	To install
2022	Service	Service Vehicle	Toyota Hilux	To install	To install
2022	Service	Service Vehicle	Toyota LC 79 Засвар	To install	To install
2022	Tillage	Tractor	CASEIH Magnum Steiger 500 Quadtra	7C400	To install
2022	Tillage	Tractor	CASEIH Magnum Steiger 500 Quadtra	7C400	Camera
2018	Tillage	Tractor	CASEIH Magnum Steiger 500	JC400	Camera
2022	Tillage	Tractor	CASEIH Magnum 3104 G4	To install	To install
2022	Tillage	Tractor	CASEIH Magnum 3104 G4	To install	To install
2022	Tillage	Tractor	New Holland 1404-B	JC400	Camera
2022	Tillage	Tractor	New Holland 1404-B	JC400	Camera
2021	Farm	Wheel loader	XCMG 5 ton	JC400	Camera
2023	Farm	Transportation truck	Sinotruck ZZ4252-V3247F1	To install	to install

There are some good processes in place to manage vehicle safety already for the Project. These include:

- Site management plan at the site location, with low posted speed limits
- Driving policy documents are in place, which needs to be monitored
- Impressive tracking software, to be monitored and actions taken for non-compliance.

However most of these systems apply primarily to Metagro-owned vehicles, which are used mostly within the confines of the agricultural site.

It is also important to minimise off-site and subcontractor traffic and road safety risk, because of the significant likely future traffic volumes involved in on-going construction work, the import and export of a projected 1,620 calves and carcasses per month, the regular import and export of agriculture-related products including seed, cereals, fodder, chemicals and fuels, and the movement and commute of site workers.

The Project area is accessible from the west via the major national sealed road A-501 (Eastern Highway) from Ulaanbaatar to Chinggis City. Vehicles then need to divert to a variety of unsealed dirt roads that lead to Metagro Farm from the main highway, over distances of up to approximately 16 km as shown below. The highway road speed limit is 80 km per hour, whilst there is no posted speed limit on the dirt roads.

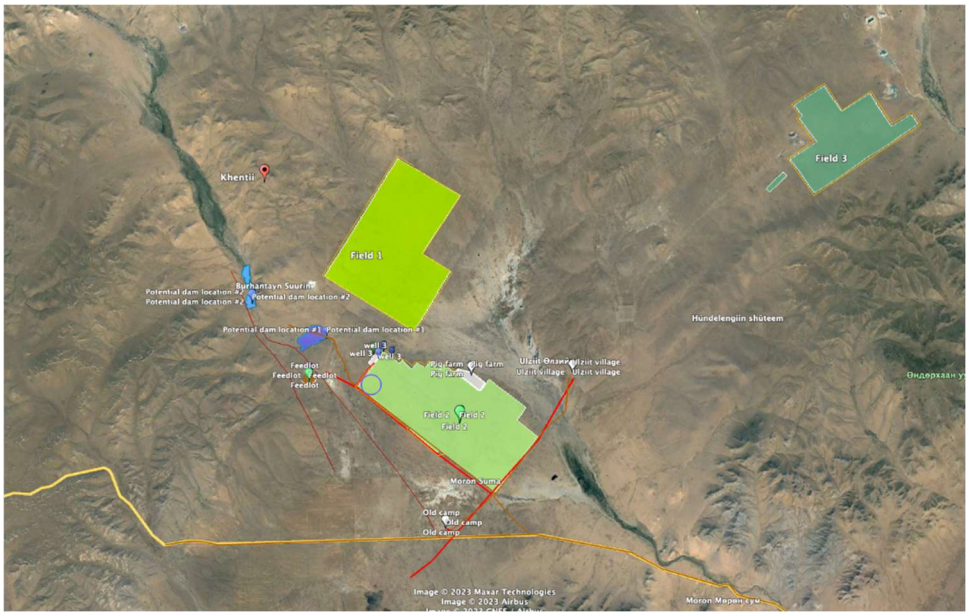


Figure 35. Farm project site location and Eastern Highway (yellow) unsealed roads (red)

In order to review this topic in more depth, a stand-alone Traffic and Road Safety report by national partners EcoTrend was undertaken and is appended as **Appendix K**

As part of this study a survey of vehicle movements at the intersection of the A-501 highway and the main dirt road to Metagro Farm was undertaken, see below.

Figure 36. Intersection of the national highway and the main dirt tracks leading to Metagro Farm

Table 20. Number of vehicles travelling through the intersection

	Vehicle type	Per hour	Per day (Daytime)	Purpose
1	Light vehicles (one way)	14	168	Local traffic
2	Trucks (one way)	3	36	Only one truck per hour comes to and from Metagro.

These initial numbers indicate that traffic flows were low at the intersection at the time of this survey. However based on the continuing growth of Metagro's operations and the anticipated number of livestock to be processed at the farm location it is assumed that vehicle movements will increase substantially.

As well as vehicle movements to and from the Eastern Highway to the unsealed track linking to the farm complex, trucks will also be travelling to Ulaanbaatar which is located approximately 290 km to the west of the farm complex site. The travel time between Ulaanbaatar and farm site location is around 5-6 hours, it is therefore recommended that formal rest breaks are adopted for all drivers involved in Metagro operations.

5.10 Biodiversity

PS 6 requires the Project to apply GIIP to the protection and conservation of biodiversity and ecosystem services; and to promote the sustainable management of living natural resources through the integration of conservation needs and development priorities into project design and implementation. GN 6 sets out specific expectations regarding the approach and methods to be adopted in meeting the requirements of PS 6 and specifies key Critical Habitats thresholds. PS 6, also reflects back on PS1 regarding the fundamental importance of a robust Environmental and Social Impact Assessment process to provide the information needed to enable conservation needs to be integrated with project design, construction, and operation.

PS 6 specifically outlines (Paragraphs 6 and 7) requirements to understand direct and indirect project-related impacts on biodiversity and ecosystem services. It also refers to the mitigation hierarchy and the need to seek to **avoid adverse impacts** before other steps in the hierarchy (**impact reduction, mitigation, restoration and offset**) are applied. PS 6 also accepts that predicting long term impacts on biodiversity is challenging and therefore advocates the use of **adaptive management practices** that can respond to changing conditions and the results of monitoring to achieve its objectives. Biodiversity management is to be integrated into the project ESMS through the use of appropriate biodiversity management and monitoring plans.

PS6 also requires an assessment to be carried out to determine whether the project could affect Natural or Critical Habitats. GN 6 specifies the thresholds that must be used to complete this assessment and the requirements that follow if presence of Natural or Critical Habitats is confirmed. Should a project be located within or have the potential to affect Natural or Critical Habitat, project-related direct and indirect impacts must be considered "*across the potentially affected landscape or seascape*". A No Net Loss (NNL) outcome is required for Natural Habitat affected by the project and a Net Gain (NG) outcome for all features with Critical Habitat affected by the project, whether directly or indirectly.

Where there are risks of impacts on Natural or Critical Habitats and Ecosystem Services, GN 6 (note GN9) requires the baseline to involve both field surveys undertaken by competent professionals and the involvement of external experts. Field surveys and assessments should be recent and multi seasonal, and data should be acquired for the direct project footprint across the project AoI.

GN14 states that the client should provide an accurate account of threats, including regional level threats that are relevant to the project site and its AoI. Pre-existing threats which the project might exacerbate should be used to inform the impact assessment.

GN15 states that, where there is significant uncertainty (e.g., baseline understanding is limited), the client should take a conservative and precautionary approach in ascertaining the significance of residual impacts.

GN18 states that large-scale and complex projects involving significant risks and impacts across multiple biodiversity values and Ecosystem Services should consider an ecosystem approach to understanding the environment.

GN26 states that, as part of the risks and impacts identification process, the client should develop and present a map of the Modified, Natural, and/or Critical Habitats in the landscape/seascape of the project AoI to inform the applicability of PS 6. This is expected at the baseline stage to allow for avoidance efforts.

GN 6 places considerable emphasis on the need to undertake effective stakeholder engagement and expert consultation regarding Project implications for Natural and Critical Habitat and for Ecosystem Services. GN12 states that "*stakeholder engagement and consultation is key to understanding biodiversity-related impacts and identifying appropriate mitigation responses*". The client should consider the differing values attached to biodiversity attributes by relevant local, national, and international stakeholders. Stakeholders that should be consulted include Affected Communities, governmental officials, academic and research institutions, recognised external experts for the biodiversity attributes of concern, and national and international conservation Non-governmental Organisations (NGOs), as appropriate.

GN9 also states that involvement of external experts in baseline assessment should take place for projects with potentially significant impacts on Natural and Critical Habitats and Ecosystem Services. GN17 identifies how consultation with regional biodiversity specialists can help the client understand its AoI and the ecological context of the project at a landscape/seascape-scale (see description on seascape analysis in the Paragraph 9.2).

GN41 state that if a project has the potential to result in significant conversion or degradation of Natural Habitats, relevant stakeholder groups must be engaged to determine their views as part of a rigorous, fair, and balanced multi-stakeholder dialogue. With respect to this requirement, clients must keep a record of such stakeholder engagement and consultation activities and demonstrate how viewpoints have been reviewed and integrated into the project design.

For Critical Habitats, GN58 requires that the client should be prepared to consult with experts and GN61 states that consultation with relevant stakeholders including established conservation organisations, governmental or other relevant authorities, academic or other scientific institutions, and recognised external experts, including species specialists, **is essential** in determining if a project site is located in a Critical Habitat. The aim is for stakeholder consultation to support understanding of the biodiversity values associated with the project AoI. Also, where Critical Habitat is determined, GN22 requires that for projects located in Critical Habitats (including legally protected and internationally recognised areas), clients must ensure that external experts with regional experience are involved in the Biodiversity and/or Critical Habitat Assessments. GN22 also states that if habitat is critical due to the presence of Critically Endangered or Endangered species, **recognised species specialists must be involved** (for example, including individuals from IUCN Species Survival Commission Specialist Groups). GN90 identifies the role of external experts to define NGs for Critical Habitat on an appropriate geographic scale.

GN15 requires the ESIA to spell out project-related direct, indirect, and residual impacts on species, ecosystems, and Ecosystem Services identified in the baseline studies. In addition:

GN15 states that where there is significant uncertainty, the client should take a **conservative approach** in ascertaining the significance of residual impacts.
GN16 requires that clients are expected to **fully exercise the mitigation hierarchy**. Both PS 6 and GN 6 places considerable emphasis on the avoidance of impacts on biodiversity and Ecosystem Services.
Landscape/seascape analysis is an essential component of the biodiversity assessment to meet PS 6/GN 6 requirements (GN17).
GN 6 provides recommendations for expert inputs in the assessment of impacts.
GN 6 states that where biodiversity offsets are proposed as part of the mitigation strategy, the client must demonstrate through an assessment that the ***project's significant residual impacts on biodiversity will be adequately mitigated*** to meet the requirements of Paragraph 17.

The territory of Khentii province has distinctive topographic features and climate conditions: divided into mountain taiga, mountain forest-steppe belt, dry steppe and desert steppe zone, which differ in terms of soil, plant and animal species. In terms of ecosystems, Khentii Province belongs to the Khentii Mountain District, the Mongolian Daurian Forest Steppe District, and the Middle Khalkh Steppe District, so it has rich biodiversity. Researchers have determined that more than 730 species of animals live in Khentii Province, including 376 species of vertebrates and 400 species of invertebrates.

Two on-site biodiversity surveys were conducted in June and October 2023 in order to characterise the biodiversity setting of the Metagro Farm site, and the findings are presented in this section.

5.10.1 Protected and Designated Sites

There is one nationally protected area within the vicinity of the Project; the 8,820 hectare Undurkhaan Uul National Park which was given special protection as a natural park by Parliament Resolution No. 57 of 23 May 2012. This protected area is approximately 44km east of the Metagro homestead and the major operational complexes; the closest distance between the national park and any of the Project site components is 6.5km from the boundary of Field 3, see figure below.

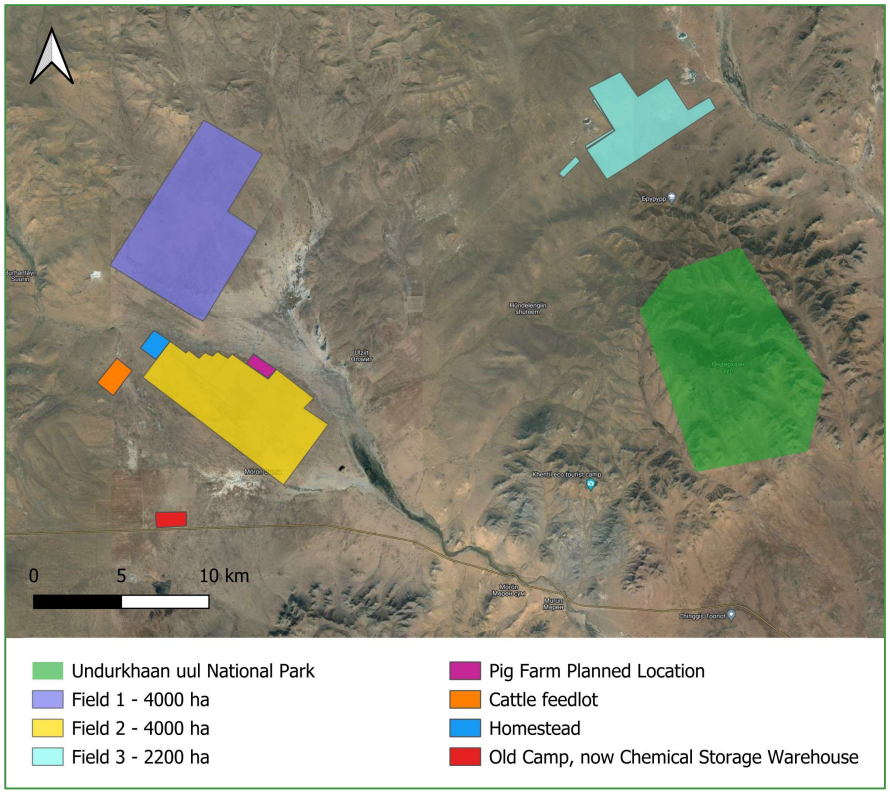


Figure 37. The Undurkhaan Uul National Park in relation to the main site components

The Eastern Mongolian Steppes UNESCO World Heritage site is a network of protected areas located 173 km from the Project AoI at the closest point, the Toson Khulstai National Park. Due to the limited coordinates provided by UNESCO World Heritage online site, it was difficult to determine the shape of the sites. Figure 38 illustrates the best representation of the UNESCO World Heritage sites in relation to the project site.

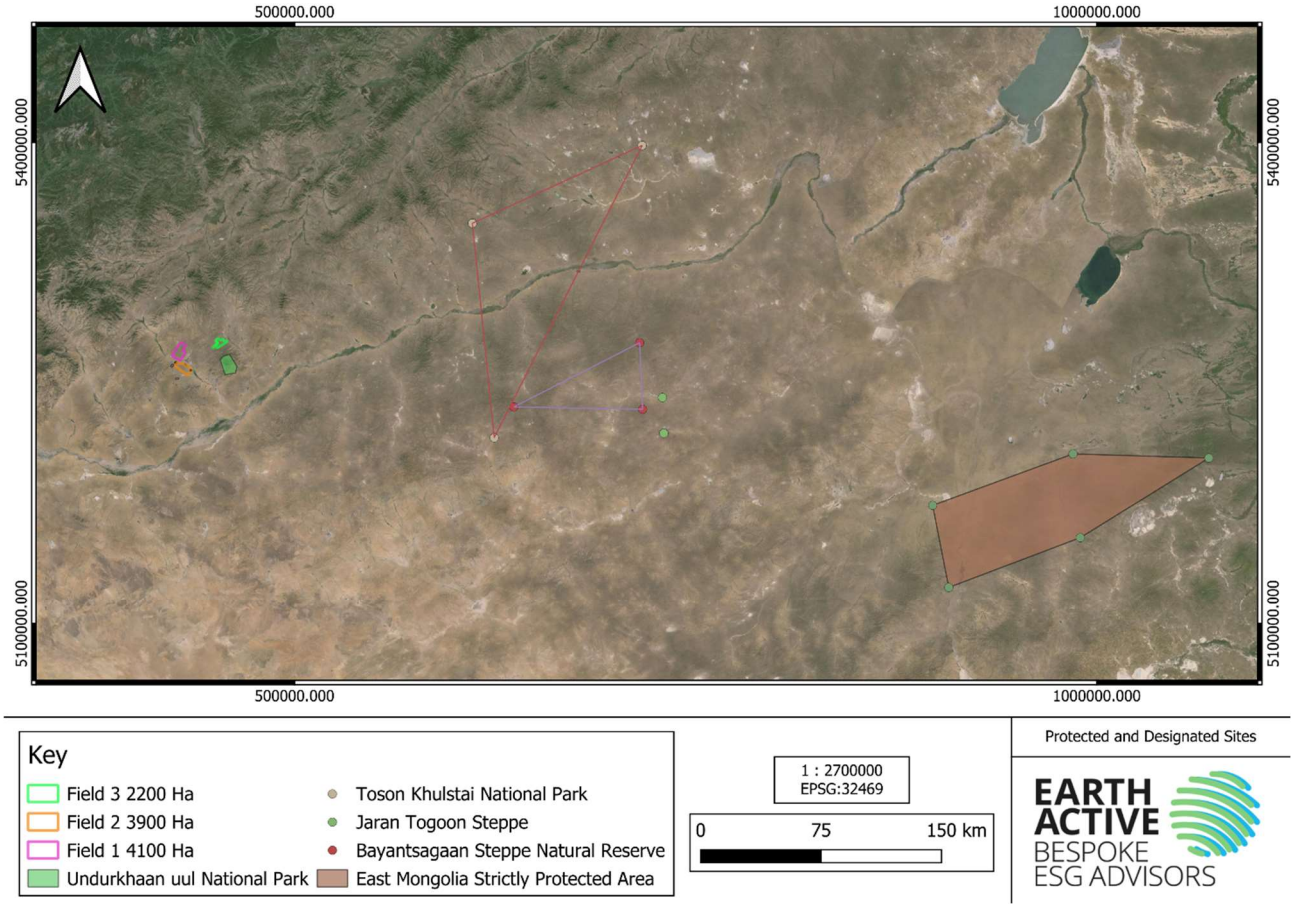


Figure 38. The Undurkhaan uul National Park and UNESCO world heritage site locations in relation to the main site components.

5.10.2 Habitats Present

The eastern Mongolia region primarily consists of vast semi-arid grasslands, inland wetlands, Central Asia mountain ranges, and long meandering rivers. Rich fauna and flora biodiversity in the region remains undisturbed in areas due to the remoteness and relative inaccessibility of habitats for humans (*Figure 39*). The Eastern Mongolian Steppes are a UNESCO World Heritage site and are a representative area of intact and pristine grassland.

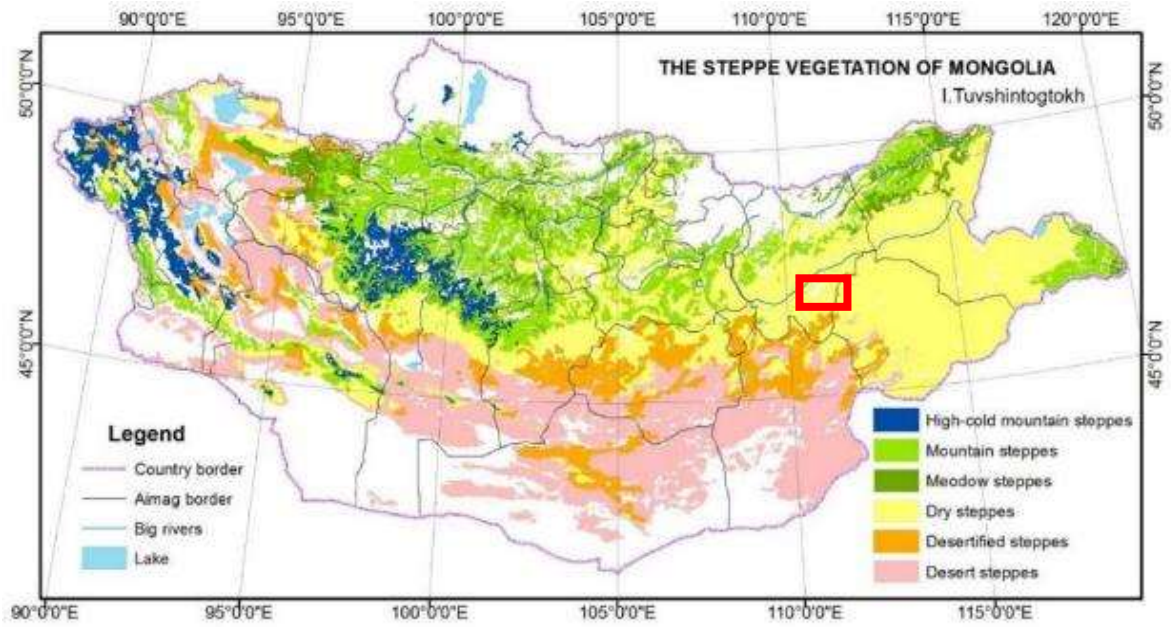


Figure 39. Distribution of Mongolian Steppes with the Project Site Location shown in the red box

Examples of the types of habitats seen on site are illustrated in the photos below.

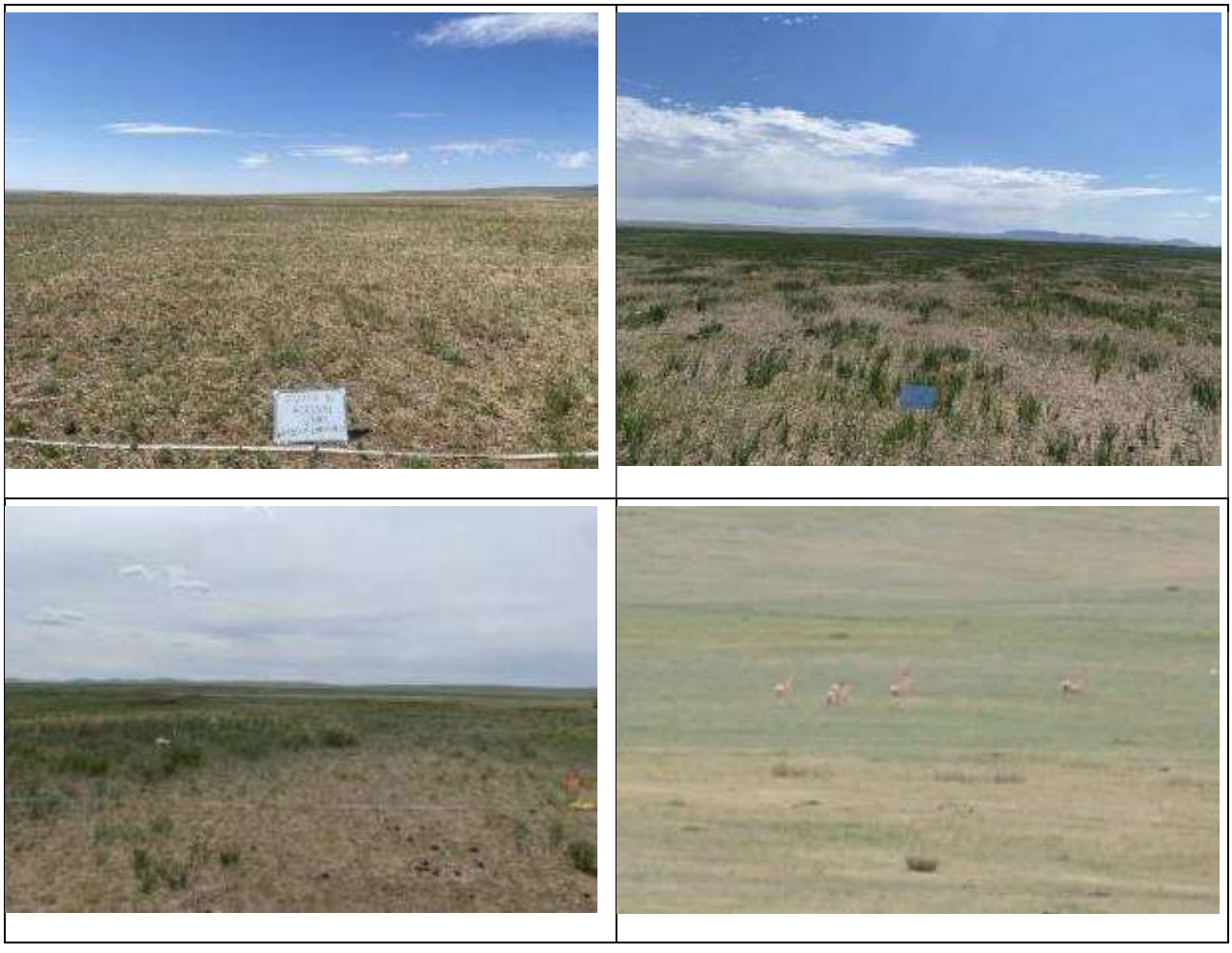


Figure 40. Illustrative habitats present on site

NDVI - The Normalised Difference Vegetation Index indicates the amount of vegetation on the ground. The index is calculated from the wavelengths of the near-red and violet-red channels, which are absorbed by plants and reflected from them. NDVI ranges from -1 to 1, where 1 represents very green vegetation, and 0 represents bare land with no vegetation. On the other hand, a value close to 0 indicates non-vegetated surfaces, such as water, snow, and clouds.

As of the first 10 days of July 2023, the vegetation condition is moderate, at around 0.3. This indicates low vegetation cover and slow growth.

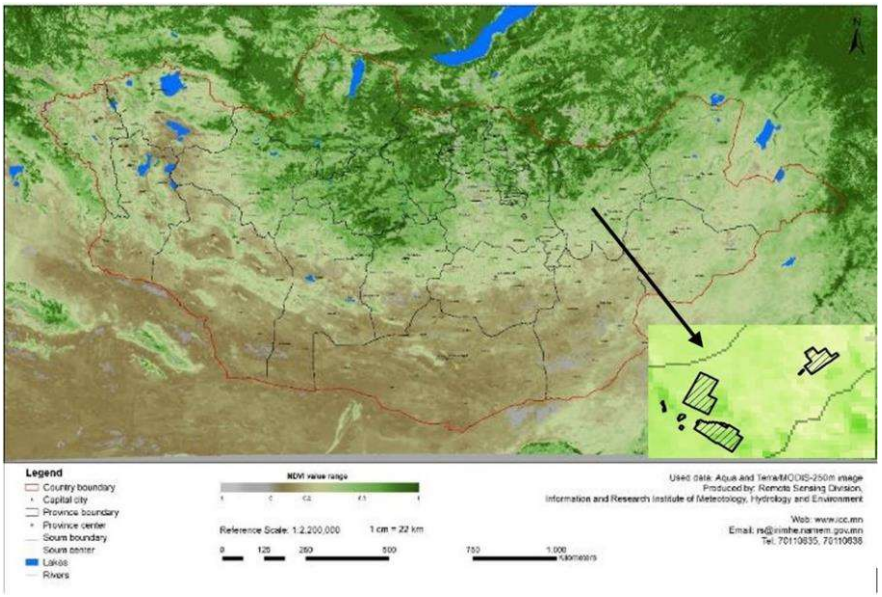


Figure 41. Regional vegetation map showing site location

There were no signs of drought observed in the 1st and 2nd fields of arable land, cattle feedlot, old camp and homestead areas. However, there were signs of slight and moderate drought observed in northern part of the 3rd field of arable land.

5.10.3 Natural and Modified Habitats

According to IFC Guidance Note 6 *"Habitats can be divided into natural habitats (which are land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions) and modified habitats (where there has been apparent alteration of the natural habitat, often with the introduction of alien species of plants and animals, such as agricultural areas). Both types of habitat can support important biodiversity at all levels, including endemic or threatened species".*

The steppes are home to the largest remaining intact temperate grasslands on earth and are characterised by treeless flat steppes, gently rolling hills, wetlands, and interlinkages with the Khyangan Mountain Range. However, habitats and species in areas of eastern Mongolia are subject to climatic and anthropogenic pressures from extreme weather and activities such as nomadic herding, farming, mining, and hunting. These pressures have led to significant issues with desertification and land degradation in the region. Whilst there are shrub and low-lying woody vegetation species across the grasslands, there are also forest resources in the region, however they are limited and have been diminished, and continue to be, due to logging, fires, pests, and disease.

To further investigate the historic land type of the proposed area of development false colour vegetation analysis techniques were utilised. These vegetation maps from as early as 2017 clearly demonstrate the areas of interest being agriculturally modified (Figure 42, Figure 43). Hence, the land can be confidently classified for these proposed developments as modified. June was selected as the month to analyse as this lined up with previous field surveys, and a conservative filter allowing only images that had less than 20% cloud coverage to be analysed was applied. The resolution is 10m.

Desk-based study of the wider Project landscape using the UNEP screening layer found it to be a mosaic of natural and modified habitats (Figure 44). Upon closer inspection of this layer (Figure 45), the Project AoI encompasses areas of "likely modified" and "potential modified" habitat. Field surveys confirmed that the dominant habitat within the Project AoI is semi-arid grassland characteristic of modified habitat due to previous agricultural practices, overgrazing and drought. Areas of the previously natural habitat grassland cover, over recent decades, has been subject to arable and animal farming. These include cultivation techniques, mechanical mowing, and animal grazing. In places it is evident that levels of overgrazing has occurred and has led to habitat degradation.

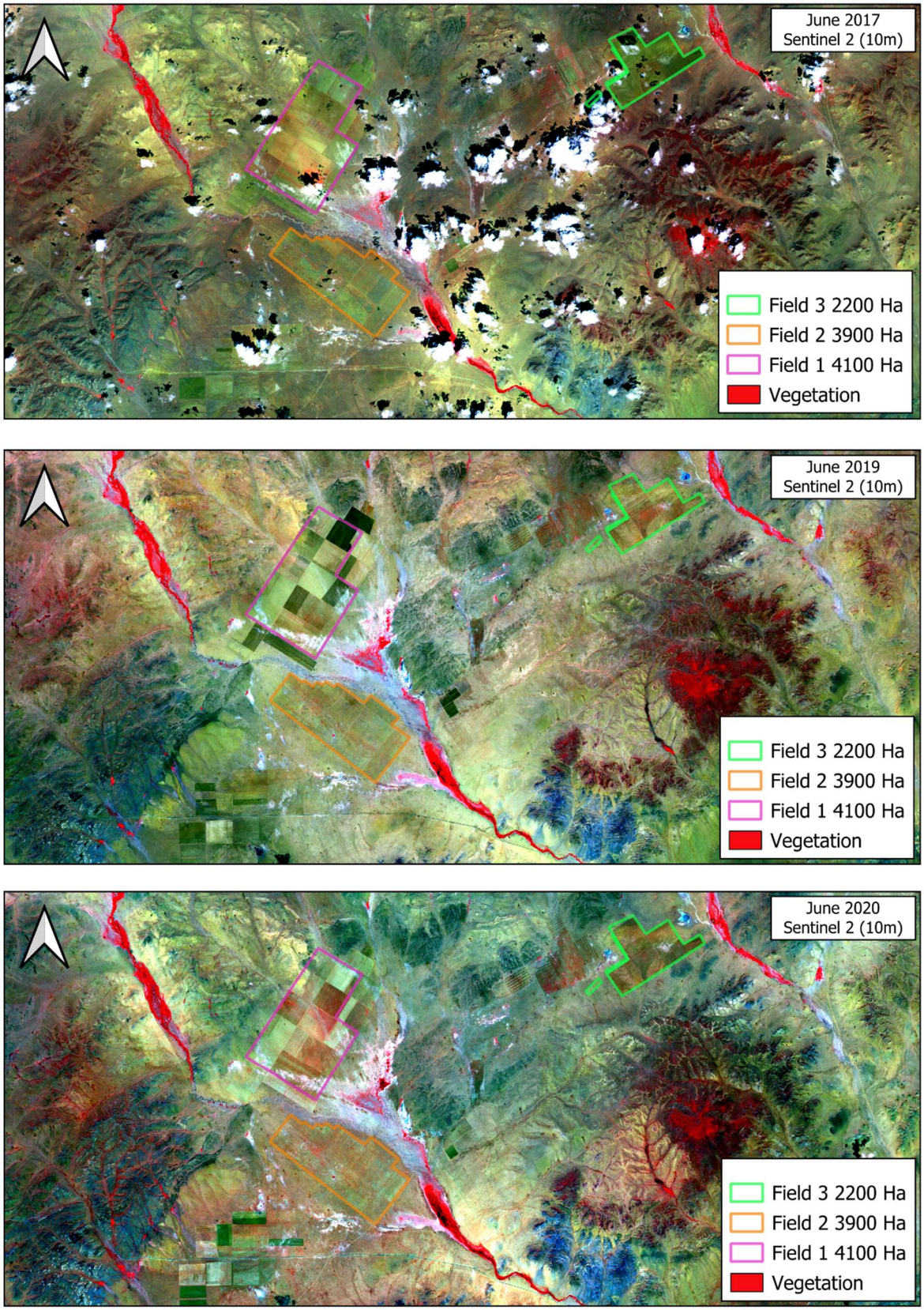


Figure 42. Sentinel Two false colour vegetation analysis; 10m resolution; <20% cloud coverage; June 2017, 2019, 2020.

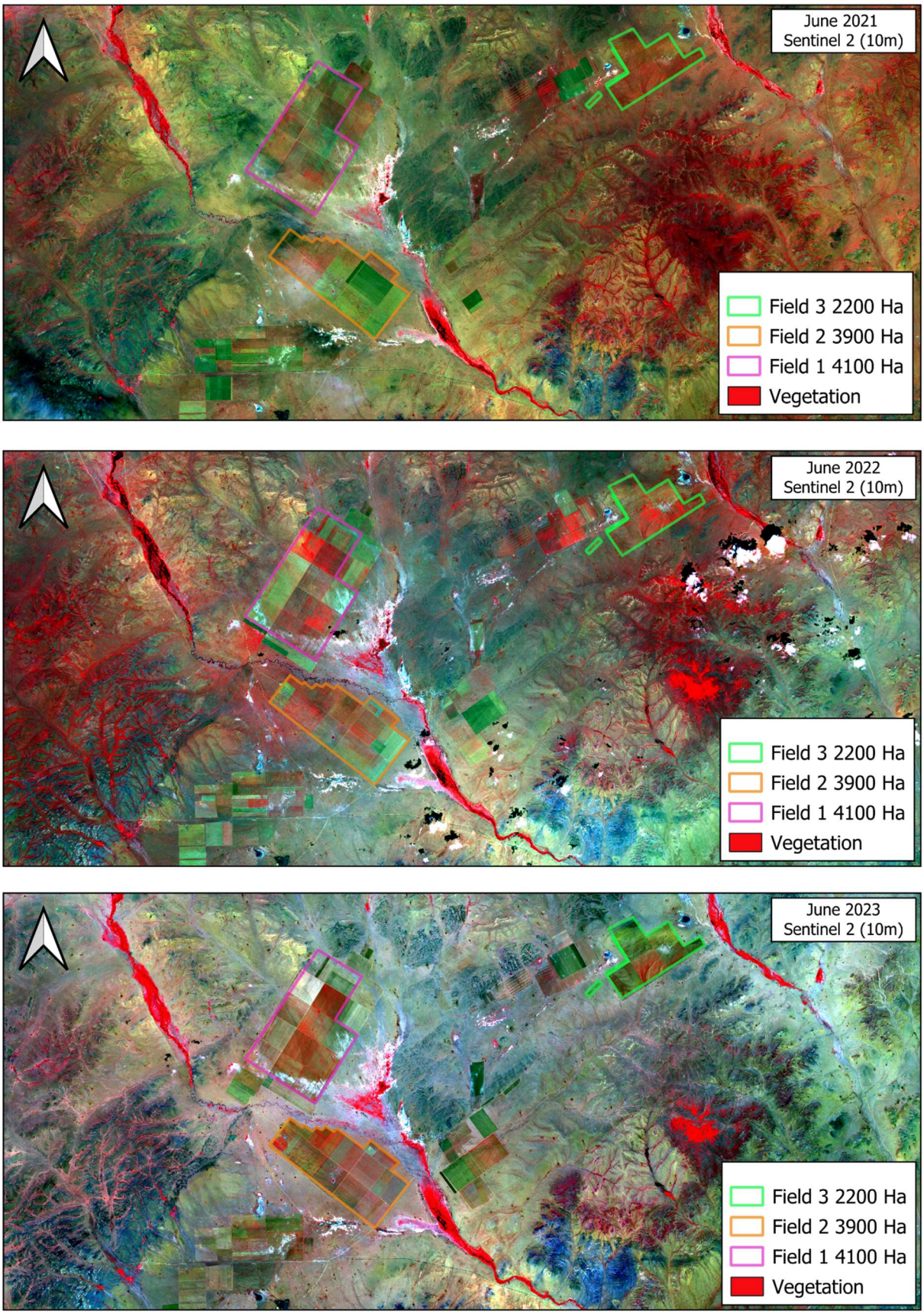


Figure 43. Sentinel Two false colour vegetation analysis; 10m resolution; <20% cloud coverage; June 2020, 2022, 2023.

Habitat degradation has also occurred from adverse climate events such as drought. Climate change, drought, strong winds, agricultural activities in the past, and overgrazing by excessive numbers of livestock in the area are the main causes of degradation. It was clear from field studies that these anthropogenic and climatic impacts have modified the nature of the habitats and the natural processes.

During the June-July 2023 ecological survey, the area was very arid and dry, and pastures were degraded. There was a high percentage of vegetation cover along the Murun River, with no recorded areas of barren land. In contrast, along the old camp, there was less vegetation cover and more barren land recorded.

During the October 2023 ecological survey, it was observed that rainfall events occurred following the first vegetation survey conducted in June-July 2023. Rainfall, alongside lower temperatures during the night, led to a seasonal variation in the condition of plants observed as yellow in colour with pasturelands regenerating quite well after the drier summer months.

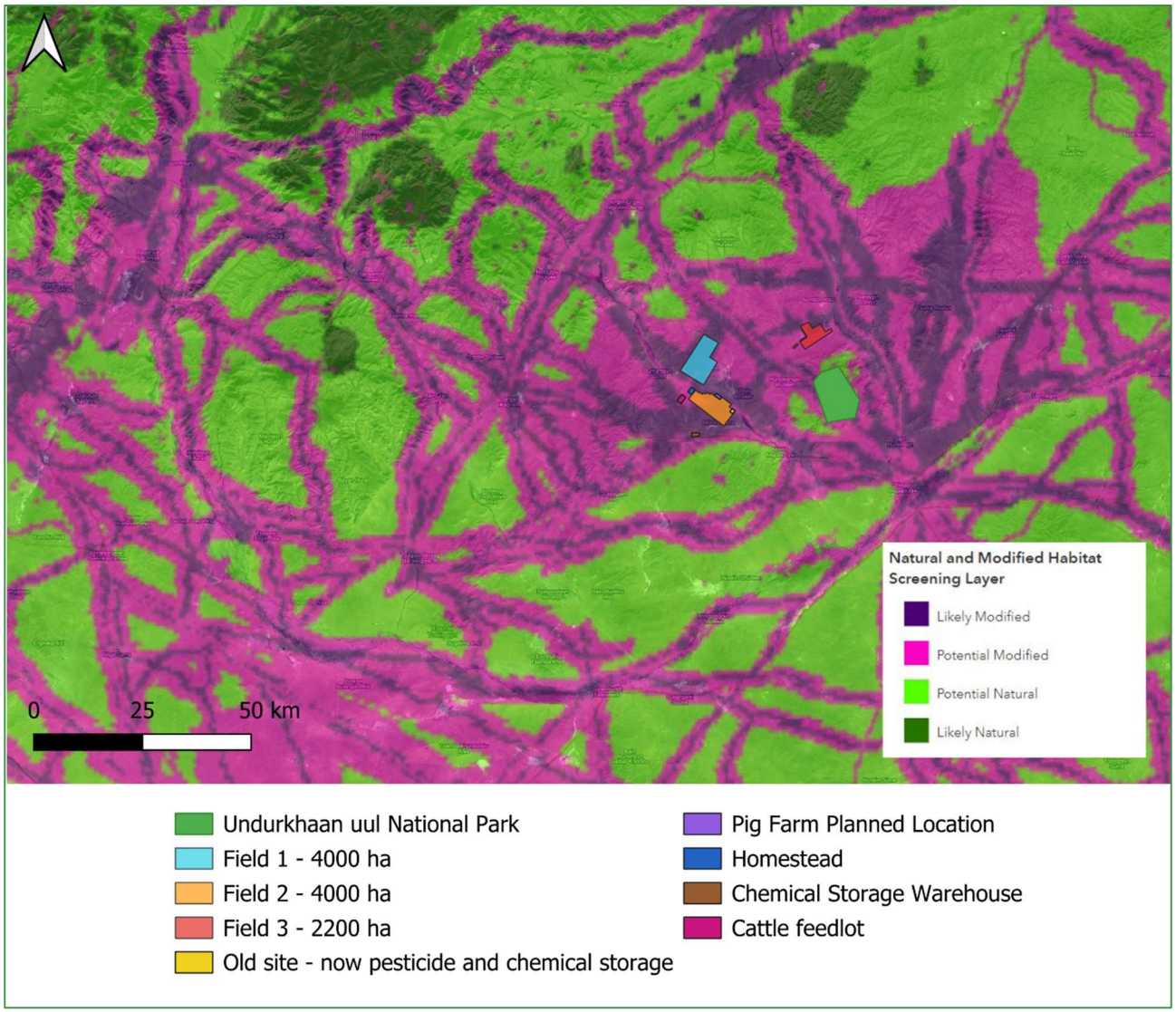


Figure 44. Natural vs Modified Habitat for the Project site and surrounding areas

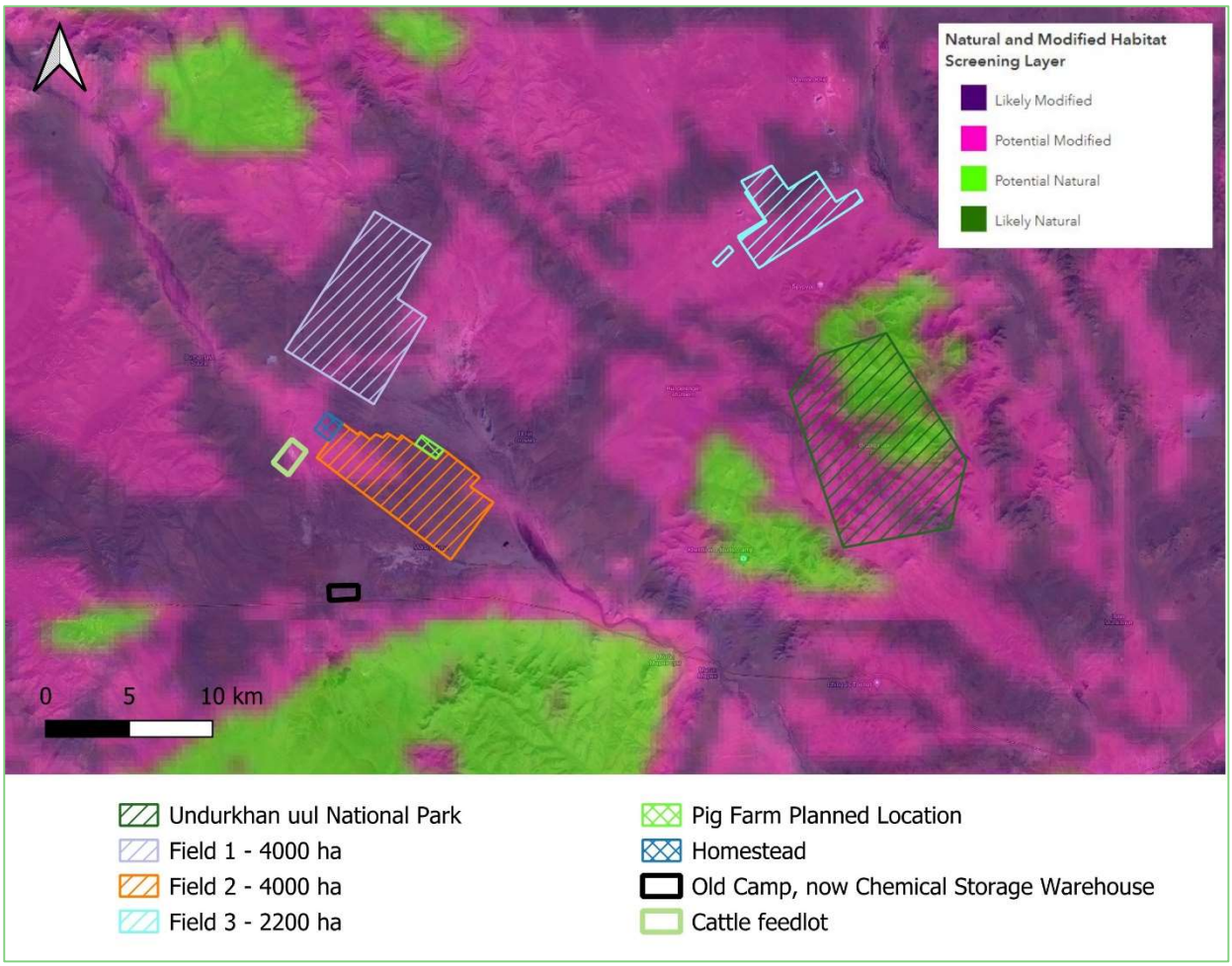


Figure 45. Natural vs Modified habitat of the Project site in closer detail

5.10.4 Flora

During the survey field work a total of 38 geobotanical recordings were undertaken as key locations (some geobotanical recordings were repeated), see figure below.

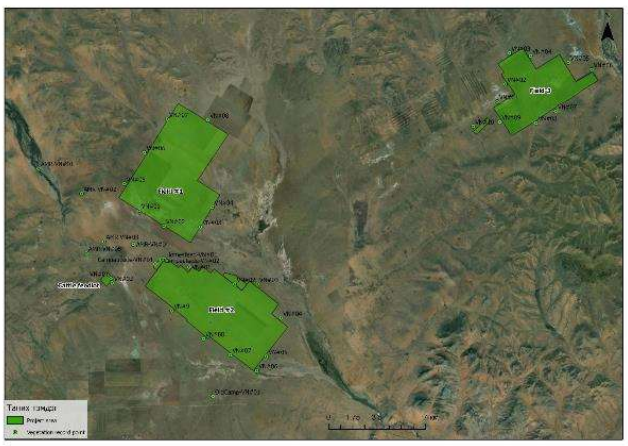


Figure 46. Geobotanical record (June 2023)

Figure 47. Geobotanical record (October 2023)

The vegetation surveys utilised industry recognised botanical survey techniques to assess 10m x 10m plots to determine plant cover and vegetation characteristics. This technique was used to calculate the percentage of vegetation cover per community according to the Drude scale.

On average, 12 to 18 plant species were recorded per 10 x 10 m plot of vegetation cover. A total of 57 species of plant species in the Project area and its vicinity were recorded during the field survey. To determine the floral community composition, 31 plots were selected and recorded. In most cases, vegetation cover was degraded, and vegetation cover was between 40-70%, sedge cover 10-30%, and barren land area 25-35%. During the surveys, very rare and rare floral species were not recorded in the AoI.

There were five vegetation communities distributed within the Metagro site area. Out of which, the most commonly distributed vegetation community were grass–forb, grass-carex, grass-forb-artemisa. Dominant species were: *Stipa glareosa, Stipa krylovii, Agropyron cristatum, Cleistogenes squarrosa, Carex duriuscula, Artemisa adamsii, Aretmisa frigida*, *Caragana pygmaea, Convolvulus ammanii, Haplophyllum dauricum, Potentilla sericea, Medicago ruthenica,* and *Saussurea amara*.

One (1) plant species that is listed as a rare plant species in the appendix to Mongolian Government Resolution No. 153 of 1995 was recorded during the surveys: (*Allium anisopodium* - Шувуун хөл /сарвуун/)

Vegetation condition along the nearby Murun river was 80-90% and noted as a key habitat area for fauna.

Species composition

Perennial and herb plants were observed to be dominant in the vegetation survey sites.

June 2023 survey result

The survey conducted around flora registered a total of 56 vascular plant species belonging to 47 genera and 21 families. During the survey, the area was very arid and dry, and pastures were degraded.

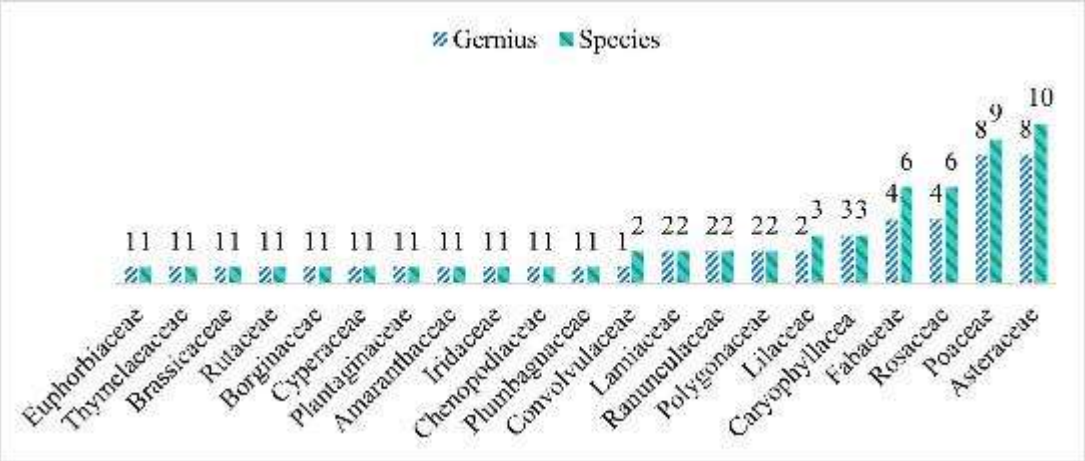


Figure 48. Taxonomy analysis of Metagro project site (as of June 2023)

October 2023 survey result

The survey conducted around flora registered a total of 54 vascular plant species belonging to 43 genera and 18 families. During the survey, the area was very arid and dry, and pastures were degraded. At the time of the survey, most of the plant species recorded had turned yellow.

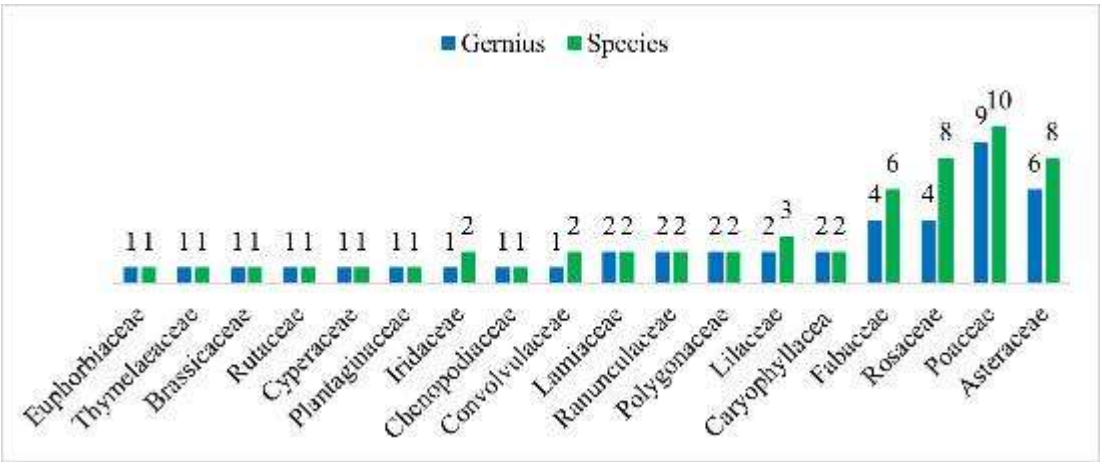


Figure 49. Taxonomy analysis of Metagro project site (as of October 2023)

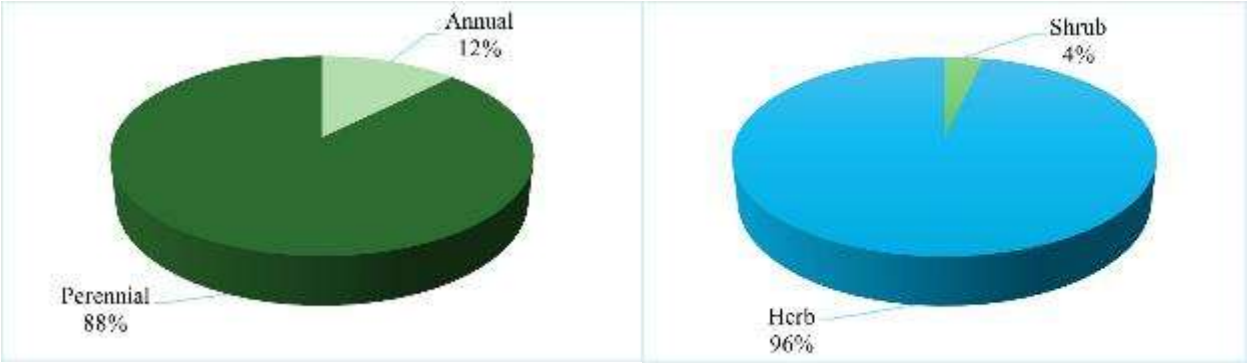


Figure 50. Analysis of the life forms (as of June 2023)

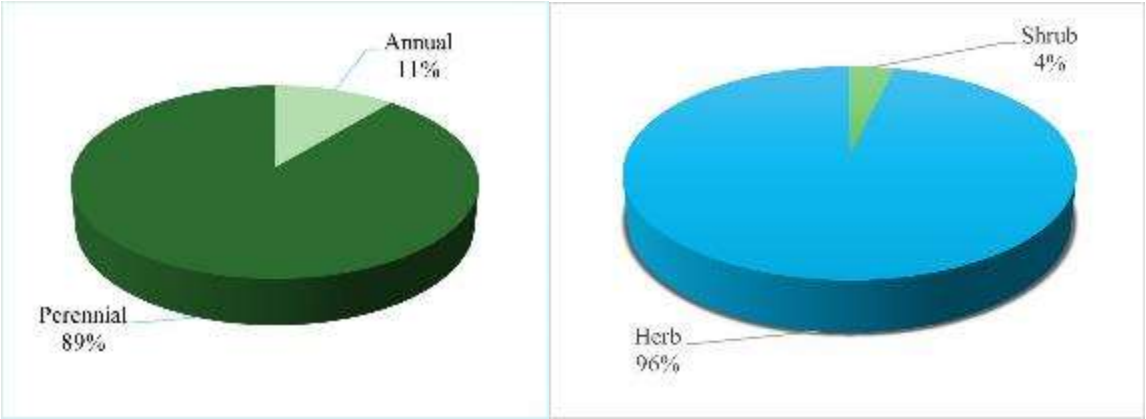


Figure 51. Analysis of the life forms (as of October 2023)

Species richness

Species richness is the number of species within a community or area. Species richness was greatest in the arable land and along the Murun river.

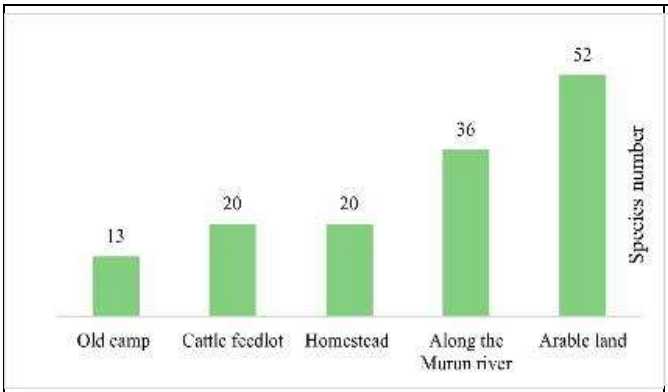


Figure 52. Species richness (as of June 2023)

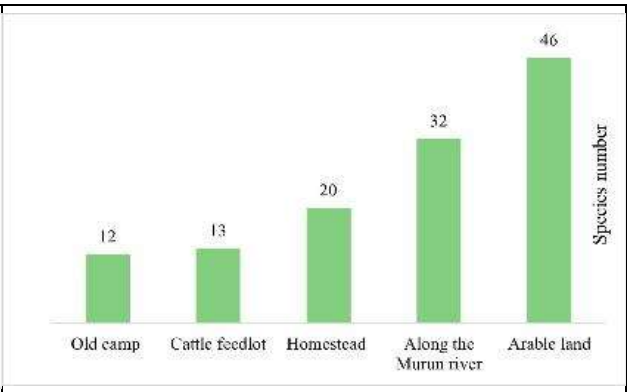


Figure 53. Species richness (as of October 2023)

Species diversity index

The species diversity of the group depends on the species richness, abundance and relative uniformity of the plant species. Determining the species diversity by Shannon's method, many species were evenly distributed around the arable land area and along the Murun River.

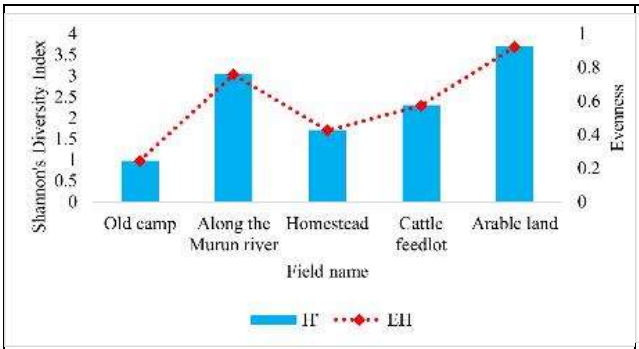


Figure 54. Shannon's diversity index of species (as of June 2023)

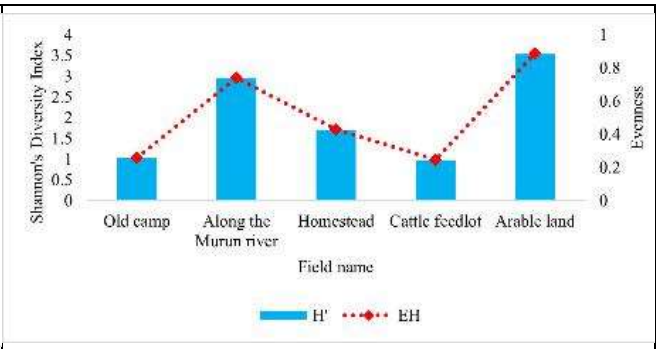


Figure 55. Shannon's diversity index of species (as of October 2023)

Vegetation Cover

Vegetation cover is the area of the ground surface covered by vegetation or other coverages including stones, litter (dried plants), or bare ground. Cover is expressed in percentage (%) of area.

Not only was there was a high percentage of vegetation cover along the Murun River, but also no barren land was observed. In contrast, along the old camp, there was less vegetation cover and more barren land.

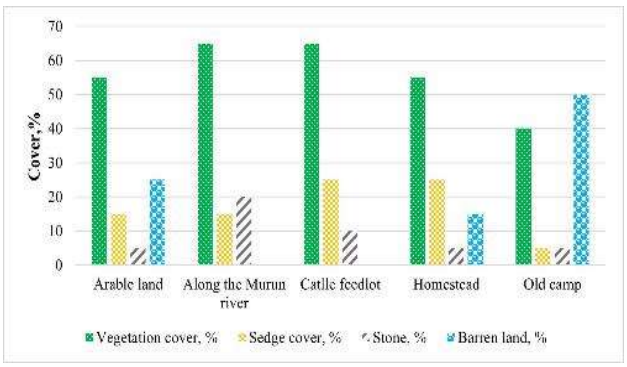


Figure 56. Vegetation cover (as of June 2023)

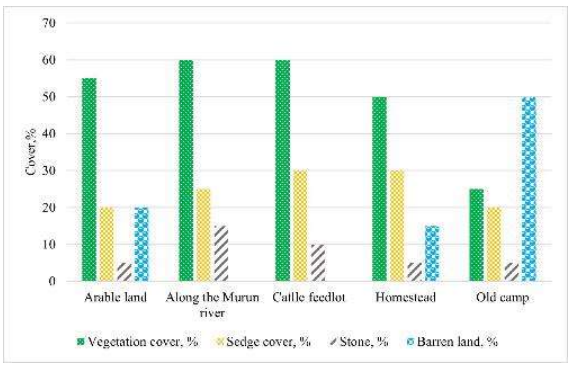


Figure 57. Vegetation cover (as of October 2023)

The list of flora surveyed is provided in **Appendix E**.

5.10.5 Fauna

The following figure shows fauna survey GPS tracks and observation points of wildlife recorded during the surveys around Metagro Farm in June and October 2023.

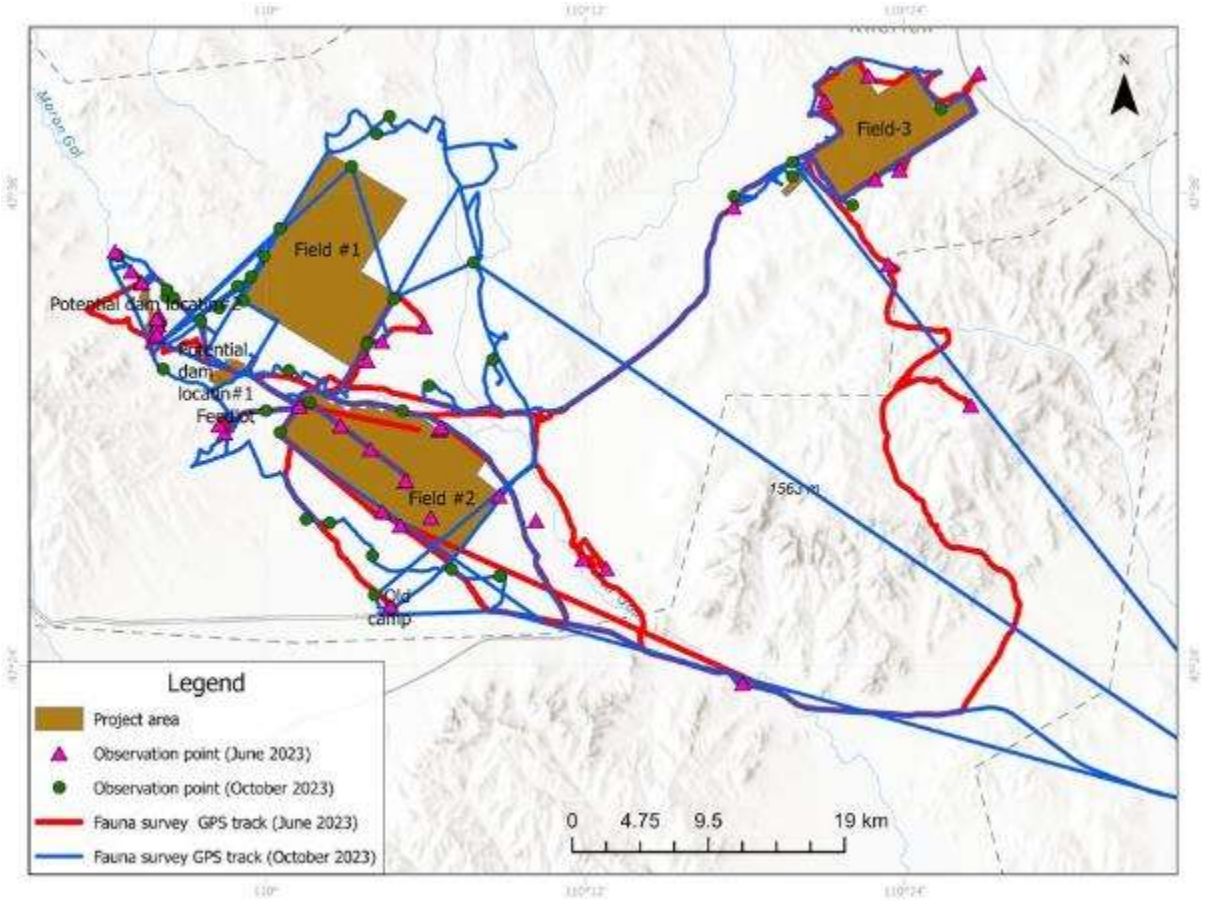


Figure 58. Fauna survey GPS tracks and observation points of wildlife

Mammals

June 2023 survey

During the field survey, 4 species of mammals; Mongolian gazelle (*Procapra gutturosa*), Bradt's vole (*Lasiopodomys brandtii*), Mongolian marmot (*Marmota sibirica*), and red fox (*Vulpes vulpes*), were recorded along the arable land and Murun river, and no mammals were recorded in the cattle feedlot and homestead area, per the summary table and figures below.

Table 21. List of mammal species identified by the June survey

No.	Latin name	English name	Arable land			Along the Murun river	Methods	
			Field 1	Field 2	Field 3		Point count	Wildlife signs
Least concern								
1	*Procapra gutturosa*	Mongolian gazelle	6	-	13	-	+	-
2	*Lasiopodomys brandtii*	Brandt's vole	Nest			-		+
Near Threatened								
3	*Marmota sibirica*	Mongolian marmot	-	-	-	5	+	-
Endangered								
4	*Vulpes vulpes*	Red fox	-	-	-	1	+	-

Figure 59. Procapra gutturosa (Mongolian gazelle)

Figure 60. Marmota sibirica (Mongolian marmot)

Figure 61. Vulpes vulpes (Red Fox

October 2023 survey

During the field survey, 2 species of mammals were recorded along the river, and no mammals were recorded in the cattle feedlot, arable land and homestead area.

Table 22. List of mammals identified in the October survey

No.	Latin name	English name	Arable land			Along the Murun river	Methods	
			Field 1	Field 2	Field 3		Point count	Wildlife typical signs
Least concern								
1	*Vulpes corsac*	Corsac fox			-	-	+	+
2	*Lasiopodomys brandtii*	Brandt's vole		Nest		-		+

Figure 62. Lasiopodomys brandtii (Brandt's vole)

Figure 63. Vulpes corsac (Corsac fox)

Reptiles

June 2023 survey

During the survey, no reptiles were observed. However, according to anecdotal evidence, two (2) species of snakes including the Siberian pit viper (*Gloydius Halys*) and the slender racer (*Orientocoluber spinalis*) might occur in the region.

October 2023 survey

No reptile species were observed during the field survey done in early October 2023.

Amphibians

June 2023 Survey

One species of amphibian, Mongolian toad (*Strauchbufo raddei*) was observed and recorded during the field survey done in later June and early July.

No.	Latin name	English name	Conservation status		Arable land - Field 3	Along the Murun river	Home stead	Methods
			Global	Regional				Point count
1	*Strauchbufo raddei*	Mongolian toad	LC	LC	2	5	1	+

Figure 64. Mongolian toad (Strauchbufo raddei) observed along the Murun river

October 2023 survey

No amphibian species were observed during the field survey done in early October 2023.

Birds

June 2023 survey

A total of 2,104 individual bird species belonging to 41 species were recorded during the June/July 2023 survey visit. The distribution of species and their respective counts varied across different locations. The most common species observed in the study area was the Mongolian lark (*Melanocorypha mongolica*).

The arable land displayed the highest number of birds at 1,382 individuals, comprised of 20 species. At the homestead and old camp there were 72 individuals recorded, comprised of 17 species, and at the cattle feedlot there were 43 individuals recorded, comprised of nine species. Along the Murun river 36 species, 607 individuals, were observed.

Table 23. Observed bird counts during the field work

No.	Observation Location	Bird Species	Total Number
1	Arable land	20	1382
2	Cattle feedlot	9	43
3	Old camp	5	24
4	Homestead	12	48
5	Along the Murun river	36	607

In the study region several abundant species were observed. Those species include *Melanocorypha mongolica, Eremophila alpestris*, *Passer montanus*, and *Calandrella branchydactyla* etc.

Table 24. Commonly observed bird species

No.	Latin name	English name	IUCN Red List status		Total number
			Regional	Global	
1	*Buteo hemilasius*	Upland Buzzard	LC	LC	5
2	*Anthropoides virgo*	Demoiselle Crane	LC	LC	12
3	*Melanocorypha mongolica*	Mongolian Lark	LC	LC	401
4	*Aegypius monachus*	Cinereous Vulture	LC	NT	4
5	*Eremophila alpestris*	Horned lark	LC	LC	407
6	*Calandrella branchydactyla*	Greater Short-toed Lark	LC	LC	405
7	*Passer montanus*	Eurasian Tree sparrow	LC	LC	326

8	*Passer domesticus*	House sparrow	LC	LC	334
9	*Petronia petronia*	Rock Sparrow	LC	LC	20
10	*Milvus migrans*	Black kite	LC	LC	6
11	*Oenanthe Oenanthe*	Northern Wheater	LC	LC	17
	LC-Least concern, NT- Near threatened				

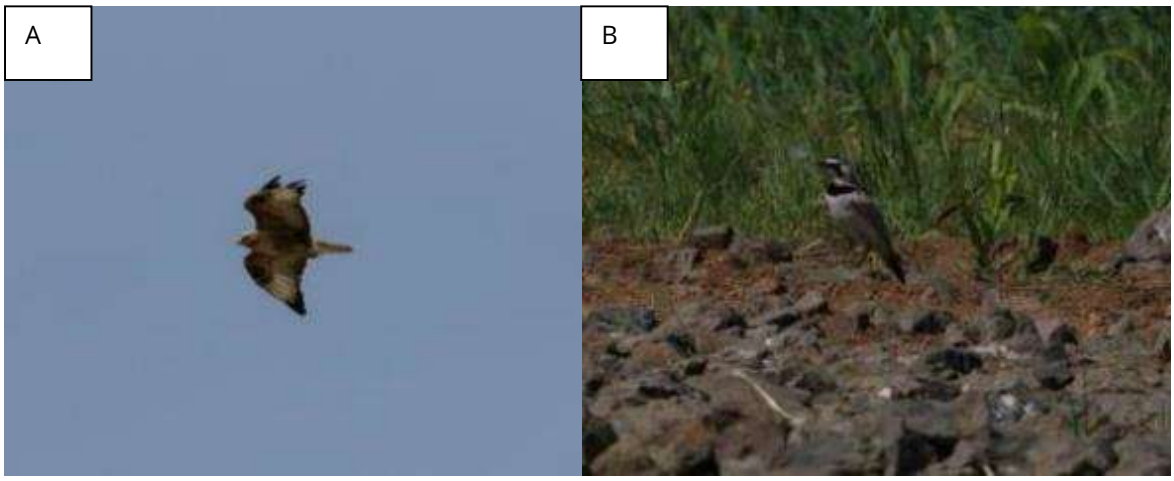


Figure 65. Most abundant bird species (A. Buteo hemilasius, B. Eremophila alpestris)

A rare bird species was observed and recorded in the survey area, which is classified as endangered according to the IUCN list, Steppe Eagle (*Aquila nipalensis*). No other CR, EN or VU species were recorded in this survey.

Figure 66. Steppe Eagle (Aquila nipalensis).

October 2023 survey

A total of 1,166 individuals belonging to 28 different bird species were observed in the October 2023 survey. The distribution of species and their respective counts varied across different locations. The most common species observed in the study site was Mongolian lark (*Melanocorypha mongolica*).

The arable land displayed the highest diversity of bird species, with 20 species observed but with a total count of 637 individuals. At the homestead and old camp revealed 13 bird species, with a combined count of 239 individuals. Cattle feedlot, 2 bird species were observed, also amounting to 119 individuals. Along the Murun river 11 species were observed, a total of 165 individuals.

Table 25. Observed bird counts during the field work

No.	Observation Location	Bird Species	Total Number
1	Arable land	13	637

2	Cattle feedlot	2	119
3	Old camp	7	32
4	Homestead	12	207
5	Along the Murun river	11	165

There were several abundant species in the study region which are detailed in the table below.

Table 26. Most abundant bird species

No.	Latin name	English name	IUCN Red List status		Total number
			Regionally	Globally	
1	*Buteo hemilasius*	Upland Buzzard	LC	LC	18
2	*Circus cyaneus*	Hen harrier	LC	LC	12
3	*Melanocorypha mongolica*	Mongolian Lark	LC	LC	401
4	*Aegypius monachus*	Cinereous Vulture	LC	NT	41
5	*Eremophila alpestris*	Horned lark	LC	LC	170

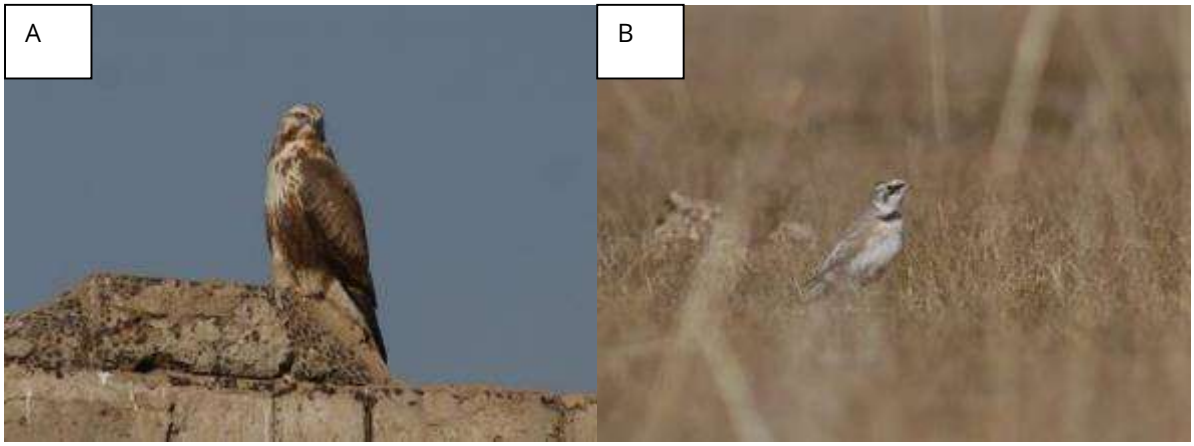


Figure 67. Most abundant bird (A. Buteo hemilasius, B. Eremophila alpestris)

A Pallas's fish eagle (*Haliaeetus leucoryphus*) was observed in the October survey and was also mentioned by the local community as being present.

The list of birds surveyed is provided in **Appendix E**.

5.11 Critical Habitat Assessment

GN42 states that for Natural Habitats, the client should implement appropriate ecological restoration strategies, including physical reinstatement, rehabilitation, and revegetation (or restoration) planning and methods, at the earliest possible stage in project planning GN42 also requires a defensible rationale for how No Net Loss (NNL) will be achieved to be provided. The level of confidence in the results of the analysis should be commensurate with the risks and impacts that the project poses to the Natural Habitat, which addresses requirements related to uncertainty. The required mitigation strategy is expected to be developed in the early planning phase of a Project.

PS 6 Paragraph 15 states that in areas of Natural Habitat, mitigation measures will be designed to achieve NNL of biodiversity where feasible. As indicated in GN43, NNL includes Natural Habitat and its associated significant biodiversity values, such as species or ecological features in the landscape/seascape that are threatened (red-listed), legally protected, or otherwise identified as important by stakeholders. This would be expected to include any features recognised in the EBSA designation that use terrestrial/freshwater/marine habitats for any part of their lifecycle (note GN 92). The project needs to Identify key species populations associated with Natural Habitat for which NNL will be demonstrated.

For Critical Habitats, if the conditions in paragraph 17 are met the project's mitigation strategy should be described in a BAP designed to achieve a Net Gains (NGs) of those biodiversity values for which the Critical Habitat was designated.

The NNL and NG requirements in PS 6 (IFC, 2012) apply to all impacts on Natural or Critical Habitat respectively, not just those identified as being of high significance in the ESIA. The approach needs to address the requirements of specific natural and critical habitat features, taking account of residual impacts and not just comprise general compensation. The actions needed to achieve NNL or NG for areas and features need to be set out in a BAP which should be in place before land disturbance or construction commence. Where biodiversity offsets are proposed as part of the mitigation strategy, the client must demonstrate through an assessment that the project's significant residual impacts on biodiversity will be adequately mitigated to meet the requirements of paragraph 17.

The critical habitat assessment was conducted by Earth Active and it sits as a standalone document which is submitted alongside this ESIA as Appendix I. It assessed whether the proposed Metagro agricultural development is within Critical Habitat according to the requirements of the International Finance Corporations (IFC) Performance Standard 6 (PS6). Critical Habitat describes a subset of both natural and modified habitat that deserves particular attention due to its high biodiversity value. This assessment utilises the numerical Critical Habitat thresholds and guidance of the IFC Guidance Note 6 (2016).

The assessment concludes that critical habitat is triggered under criterion 1 for the Mongolian marmot (*Marmota sibirica*).

In accordance with IFC PS6 projects are required to ensure there are no measurable adverse impacts on this species, or any reduction in its population size (no net loss). If Critical Habitat is identified, a net gain should be achieved for the features for which Critical Habitat thresholds have been met. Site based biodiversity management measures to achieve the avoid, reduce and restore components of the mitigation hierarchy are covered in the impact assessment. The project's net gain actions will need to be covered in a Biodiversity Action Plan (BAP) which will be completed within 4 months of the finalised CHA.

Critical Habitat is an approach for identifying areas of particularly high biodiversity value. Triggering Critical Habitat does not automatically mean that those Critical Habitat features will be adversely impacted by the Project. IFC PS6 requires that Critical Habitat is assessed and determined irrelevant of potential project impacts. All impacts, both positive and negative, are assessed in the biodiversity impact assessment of the ESIA in section 8.10.

5.12 Hazardous Materials and Waste Management

PS 3 para 12, The client will avoid the generation of hazardous and non-hazardous waste materials. Where waste generation cannot be avoided, the client will reduce the generation of waste, and recover and reuse waste in a manner that is safe for human health and the environment. Where waste cannot be recovered or reused, the client will treat, destroy, or dispose of it in an environmentally sound manner… If the generated waste is considered hazardous, the client will adopt GIIP alternatives for its environmentally sound disposal … when hazardous waste disposal is conducted by third parties, the client will use contractors that are reputable and legitimate enterprises licensed by the relevant government regulatory agencies and obtain chain of custody documentation to the final destination.
PS 3 para 13 The client will avoid or, when avoidance is not possible, minimise and control the release of hazardous materials. In this context, the production, transportation, handling, storage, and use of hazardous materials for project activities should be assessed. The client will consider less hazardous substitutes where hazardous materials are intended to be used in manufacturing processes or other operations.
IFC PS3 requires reference to the relevant EHS Guidelines (2007) and the Good International Industry Practice (GIIP) they detail to minimise and avoid pollution. An adequate waste management plan (WMP) should establish a clear strategy for solid wastes that will be generated including options for waste elimination, reduction or recycling or treatment and disposal before any wastes are generated. A Project specific WMP documenting the waste strategy, storage (including facilities and locations) and handling procedures should be developed and should include a clear waste tracking mechanism to track waste consignments from the originating location to the final waste treatment and disposal location. Additionally, the WMP will need to include details of the transport of hazardous materials at sea and as such, should abide by the International Maritime Dangerous Goods Code (IMDG) as prescribed in Section 3.4 of the IFC General EHS Guidelines.
Hazardous materials management Section 1.5 of the IFC EHS guidelines covers guidance for the storage and handling of any quantity of hazardous materials.

(Par. 13) The client will avoid or, when avoidance is not possible, minimise and control the release of hazardous materials. In this context, the production, transportation, handling, storage, and use of hazardous materials for project activities should be assessed. The client will consider less hazardous substitutes where hazardous materials are intended to be used in manufacturing processes or other operations. The client will avoid the manufacture, trade, and use of chemicals and hazardous materials subject to international bans or phase-outs due to their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer.
GN44. Where a project has the potential to release toxic, hazardous, flammable or explosive material, or where project operations could result in injury to plant personnel or the public as identified in the environmental and social risks and impacts identification process, the client should conduct a hazard analysis of its operations, and disclose information related to hazardous materials management in accordance with Performance Standards 1 and 4. Hazard analysis is often conducted in conjunction with Hazard Identification (HAZID) Hazard and Operability studies (HAZOP) Process Safety Management (PSM) and Quantitative Risk Analysis (QRA); it allows clients to systematically identify systems and procedures that could result in accidental pollutant release and quantify these risks to the extent possible.

The hazardous materials used at site with the potential to cause significant environmental impacts are agrochemicals including fertilisers, and fuels. Current facilities to store and handle these were inspected during the site visit in June 2023, see photos below, with further investments planned to achieve best practice standards.

Annual plans for the application of herbicides and pesticides are part of the Integrated Pest Management (IPM) system. It is reported that only pesticides approved in the EU are utilised, and none are WHO Hazard Classes IA or IB

Biological pest control methods are also being used, for example by the installation of roosting posts for birds of prey

The most prevalent agrochemical used to date is glyphosate – 53.7 tons in 2022, and 24 tons by mid-2023. A list of the 16 main agrochemicals used is given below.

Metagro is introducing regenerative agriculture technology in 2024 which will reduce the use of glyphosate and other pesticides in limiting the spread of weeds and diseases with the use of cover crops; 1,200ha will be planted with cover crops in 2024 with a gradual increase in the area under cover crop cultivation to reach 50% of the total area after approximately 5 years.

Table 27. Agrochemical Use in 2022 and 2023. Metagro

#	Pesticide name	Abreviation	CAS number	Type of pesticide	Specification	Country imported	Chemical formula	Used, 2022		Usage, 2023		Method to apply	Equipment to apply
	English							ha	ton	ha	ton		
1	Glyphosate potassium	RoundUp, 540	70901-12-1	Herbicide	Non-selective	China	C3H8NO5P	11,000.0	33.0	6,000.0	24.0	pre crop/ post harvest	CaseIH Patriot 3222
2	Quizalofop-P-ethyl 60	Quiz-P-Et	100646-51-3	Herbicide	Selective	China	C19H17ClN204	1,100.0	1.1	3,000.0	4.1	In crop application	CaseIH Patriot 3220
3	Glyphosate	RoundUp, 480	1071–83-6	Herbicide	Non-selective	China	C3H8NO5P	6,900.0	20.7	-	-	pre crop/ post harvest	CaseIH Patriot 3221
4	2,4-Dichloro-phenoxyacetic acid	2.4D	1928-43-4	Herbicide	Selective	China	C6H6Cl2O3	1,000.0	3.0	-	-	In crop application	CaseIH Patriot 3222
5	2,3-Dichloro-5-(chlorosulfonyl) benzoic acid	Dicamba	53552-95-7	Herbicide	Selective	China	C8H6Cl2O3	2,100.0	0.4	3,500.0	1.4	In crop application	CaseIH Patriot 3222
6	Fenoxaprop-P-ethyl	Fen-P-Et	113158-40-0	Herbicide	Selective	China	C18H16ClNO5	1,000.0	0.4	3,500.0	1.4	In crop application	CaseIH Patriot 3222
7	2,4-D 2-ethylhexyl ester 530 g	2.4D-Et-Es	1928-43-4	Herbicide	Selective	China	C16H22CL2O3	-	-	3,500.0	1.4	In crop application	CaseIH Patriot 3222
8	1-((2-(2,4-dichlorophenyl)-4-propyl-1,3	Propiconazole	60207-90-1	Fungicide	Selective	China	C15H17Cl2N3O2	-	-	200.0	0.8	In crop application	CaseIH Patriot 3222
9	NP(S)									10,000.0	0.4	With seed	With seed drill (Bourgalt)
10	Imazalil 100g/l + Tebuconazole 60g/	Тебу	107534-96-3	Fungicide	Seed	China	C16H22ClN3O	4,000.0	0.1	10,000.0	0.3	Seed treatment	Маэстро ПС18
11	Alpha-cypermethrin	Alpha-Cyp	67375-30-8	Insecticide	Non-systemic	China	C22H19Cl2NO3	700.0	0.1	200.0	0.3	In crop application	CaseIH Patriot 3222
12	NPK	NPK		Fertilizer		Uzbekstan	NPK	4,200.0	80.0	10,000.0	0.2	With seed	With seed drill (Bourgalt)
13	Urea	Urea		Fertilizer		Russia	CN4N2O	4,000.0	50.0	10,000.0	0.2	In crop application	Maschio Gaspardo Zena 32
14	Bromadiolone	Bromad	28772-56-7	Rodenticide	anticoagulant	China	C30H23BrO4	2,400.0	0.1	3,000.0	0.1	Seed treatment	Using 500 bait stations

Figure 68. Agrochemical storage and main site fuel tank at Old Camp, June 2023.

Projected annual fuel use is about 300,000 litres in 2023, based on the monthly data below. A high-specification self-contained above-ground fuel storage and dispensing unit is used to receive supplier deliveries, and transfer to Metagro's own fuel delivery tanker that fills up the agricultural machinery in-situ. The fuel station was located at Old Camp at the time of the site visit but it was intended to move it to the Homestead operational area for better logistical efficiency.

Table 28. Fuel Use in litres, 2023. Metagro

2023	Arable	Cattle	Construction	Forestation	Total
Jan	1,264	1,478			2,742
Feb	656	1,143			1,799
Mar	7,810	1,821			9,631

2023	Arable	Cattle	Construction	Forestation	Total
Apr	56,506	1,685	12,000	978	71,169
May	34,380	1,785		1,194	37,359
Total	**100,616**	**7,912**	**12,000**	**2,172**	**122,700**

Hazardous liquids (pesticides and fuel) will be managed and stored according to the following guidance.

- Bulk hazardous liquids will be stored in bunded above ground tanks (110% of total capacity) designed to prevent contamination of surface water, ground water and soils in the event of a loss of containment.
- Unitised hazardous liquid storage will be stored in a lockable covered and ventilated building with an impervious floor, internal bunding and leak protection.
- Use of pesticides restricted or banned by FAO or WHO shall be prohibited.
- Storage and use of hazardous materials shall be as directed by manufacturer, appropriate training will be given.

The photograph received in February 2024 of the new fuel station location shows that it does not have a secondary containment bund and it will therefore require retrofitting.

Figure 69. Relocated main fuel tank at Farming Complex, February 2024

The main waste management concern at Metagro Farm is the handling of animal wastes from the cattle feedlot and from the slaughtering and meat processing operations.

Cattle excrement (solid and liquid) is being recycled as far as practicable as fertiliser to use in the programme of farm soil improvement actions. Metagro's recent Waste Management Plan (undated) reports a total of 526 tons of organic waste was generated in 2023 from agriculture (96 tonnes) and animal husbandry (430 tonnes). This total of 526 tons of bio-organic waste was recycled on the fields as soil amendments and fertiliser.

The site wastewater collection and treatment system will handle liquid wastes from animal processing operations and areas contaminated by animal waste. This will adopt measures identified in the IFC EHS Guidelines for Meat Processing and Mammalian-Livestock Production and will have the following features.

- The site wastewater drainage system will collect all point sources of wastewater from activities associated with storage and handling of animal waste products including areas used for the storage of manure.
- Adequate design of slurry containment and lagoons to provide sufficient volume 9 to 12 months capacity) and prevent overtopping.
- Prevent water ingress into slurry storage areas.
- Contaminated surface drainage water will be prevented from running into surface water courses.
- As far as practical, solids will be removed from wastewater streams prior to treatment by grates and floor drains.
- Flow of effluent will be controlled by the construction of storage tanks where required for example of blood and animal rendering liquid wastes.
- A wastewater treatment plant designed for a flow of 88m3 of wastewater per day comprising the following elements:
    - Primary physical treatment, chemical treatment,
    - Secondary biological treatment via a 2-stage bioreactor, disinfection, and dewatering of sludge by mechanical equipment (filter-press, etc.).
    - Tertiary treatment of effluent by sand or activated carbon filters may be used for further polishing as needed.
    - Treatment systems will be designed to remove the high anticipated levels of phosphate and nitrogen compound typically found in animal processing waste streams
    - The final wastewater effluent will be disinfected according to the requirements of the MNS 4943:2015 standard given below. A compliance monitoring regime will be implemented.

Table 29. Quality requirements for treated wastewater. Metagro

Pollution indicators	Unit of measurement	Upper limit
Chemically required oxygen	mgO/l	50
Biochemically necessary oxygen	mgO/l	20
Impurities	mg/l	30
Fat	mg/l	5
pH	-	6-9

Solid wastes from the animal processing operations, and from livestock mortality, will mainly comprise biological wastes from animal processing. Waste minimisation measures will be included in waste management plans and may include measures to minimise the amount of biological waste produced.

Solid wastes be contained in appropriate storage areas prior to shipment off-site for further value-recovery and for final disposal. This will adopt measures identified in the IFC EHS Guidelines for Meat Processing and Mammalian-Livestock Production and will have the following features.

- The solid handling facility will comprise the facility to store and contain stomach contents, offal and other solids from the process of animal processing. These storage areas will have an impervious floor and run off will be prevented from entering surface water, ground water or soil by a containment systems.
- Liquid effluent from the solid waste storage facility will be drained to the waste water treatment facility

- Solid waste areas will be covered to prevent water ingress, infestations of pests and scavenging.
- Wastes for reuse will be segregated by end use type, transport and storage requirements, processing of waste material for same species feeding will be avoided.
- Cool manure surface to 15 °C with fans.
- Regular inspections of tanks and other containment structures
- Ensure that waste from feedlots is removed regularly
- Carcasses of diseased animals, will be segregated and securely stored.
- Administrative controls (e.g., record keeping, standard operational procedures and chain of custody management) will be implemented to limit the residency time for solid wastes to prevent putrefaction, and manage biological hazards, odour and pests.
- Solid Waste handling and final disposal will be subject to due diligence and chain of custody monitoring.
- If 'special risk materials are identified (materials with a risk of bovine spongiform encephalopathy (BSE), or transmissible spongiform encephalopathy (TSE)), they will be quarantined and incinerated at 850 °C.

5.13 Occupational and Community Health and Safety

Occupational

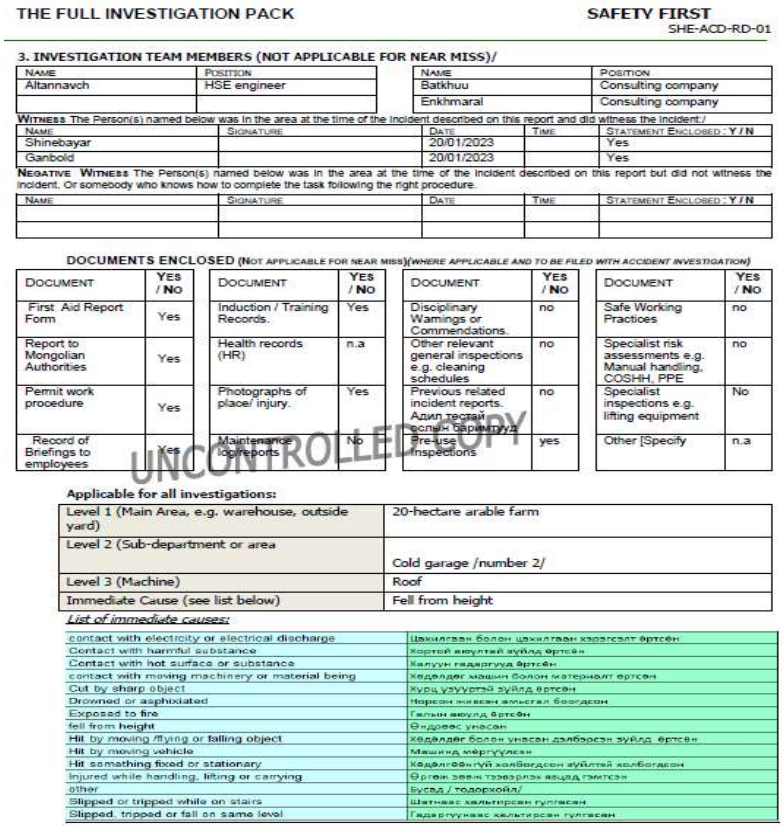
(Para 23) The client will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. The client will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice,14 as reflected in various internationally recognised sources including the World Bank Group Environmental, Health and Safety Guidelines, the client will address areas that include the (i) identification of potential hazards to workers, particularly those that may be life-threatening; (ii) provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) training of workers; (iv) documentation and reporting of occupational accidents, diseases, and incidents; and (v) emergency prevention, preparedness, and response arrangements.
(Par. 24) With respect to contracted workers the client will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the requirements of this Performance Standard, except for paragraphs 18–19, and 27–29. (Par. 25) The client will establish policies and procedures for managing and monitoring the performance of such third-party employers in relation to the requirements of this Performance Standard. In addition, the client will use commercially reasonable efforts to incorporate these requirements in contractual agreements with such third-party employers. (Par. 26) The client will ensure that contracted workers, covered in paragraphs 24–25 of this Performance Standard, have access to a grievance mechanism. In cases where the third party is not able to provide a grievance mechanism the client will extend its own grievance mechanism to serve workers engaged by the third party.

The new-build construction and subsequent operation of sophisticated facilities at Metagro Farm including slaughterhouse and meat processing units, the use of complex high-specification agricultural machinery and

the handling of hazardous agrochemicals create the need for robust Health and Safety systems. The management, permitting and supervision of construction contractors is also an essential requirement.

Employers are obliged to ensure the health, safety and well-being of its employees. In this context, there are various provisions to promote occupational health and safety. Employers are further responsible for providing adequate personal protective equipment (PPE), alongside the necessary instructions, training and supervision for workers to fulfil their tasks in a safe manner. Over the course of their employment, workers should undertake basic training in areas such as occupational health and safety; depending on the nature of their involvement in the Project, further training in areas such as traffic management and safe driving, emergency preparedness and response, waste management and disposal, and the handling of hazardous materials may be undertaken.

Metagro paused construction operations for 2 months at the Farm site and undertook a very detailed appraisal and upgrade of its Occupational Health & Safety (OHS) controls following a subcontractor fatality in January 2023 from a working-at-height incident during warehouse construction when 4 workers fell from an overloaded mobile crane basket on which a bracket then sheared. A full investigation programme was undertaken, as illustrated below.



THE FULL INVESTIGATION PACK — SAFETY FIRST — SHE-ACD-RD-01

3. INVESTIGATION TEAM MEMBERS (NOT APPLICABLE FOR NEAR MISS)/

NAME	POSITION	NAME	POSITION
Altannavch	HSE engineer	Batkhuu	Consulting company
		Enkhmaral	Consulting company

WITNESS The Person(s) named below was in the area at the time of the incident described on this report and did witness the incident:/

NAME	SIGNATURE	DATE	TIME	STATEMENT ENCLOSED : Y / N
Shinebayar		20/01/2023		Yes
Ganbold		20/01/2023		Yes

NEGATIVE WITNESS The Person(s) named below was in the area at the time of the incident described on this report but did not witness the incident. Or somebody who knows how to complete the task following the right procedure.

NAME	SIGNATURE	DATE	TIME	STATEMENT ENCLOSED : Y / N

DOCUMENTS ENCLOSED (NOT APPLICABLE FOR NEAR MISS)(*WHERE APPLICABLE AND TO BE FILED WITH ACCIDENT INVESTIGATION*)

DOCUMENT	YES / NO	DOCUMENT	YES / NO	DOCUMENT	YES / NO	DOCUMENT	YES / NO
First Aid Report Form	Yes	Induction / Training Records.	Yes	Disciplinary Warnings or Commendations.	no	Safe Working Practices	no
Report to Mongolian Authorities	Yes	Health records (HR)	n.a	Other relevant general inspections e.g. cleaning schedules	no	Specialist risk assessments e.g. Manual handling, COSHH, PPE	no
Permit work procedure	Yes	Photographs of place/ injury.	Yes	Previous related incident reports. Адил тестай ослын баримтууд	no	Specialist inspections e.g. lifting equipment	No
Record of Briefings to employees	Yes	Maintenance log/reports	No	Pre-use inspections	yes	Other [Specify	n.a

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Applicable for all investigations:

Level 1 (Main Area, e.g. warehouse, outside yard)	20-hectare arable farm
Level 2 (Sub-department or area	Cold garage /number 2/
Level 3 (Machine)	Roof
Immediate Cause (see list below)	Fell from height

List of immediate causes:

contact with electricity or electrical discharge	Цахилгаан болон цахилгаан хэрэгсэлт өртсөн
Contact with harmful substance	Хортой зүйлтэй зүйлд өртсөн
Contact with hot surface or substance	Халуун гадаргууд өртсөн
contact with moving machinery or material being	Хөдлөөт машин болон материалт өртсөн
Cut by sharp object	Хурц үзүүртэй зүйлд өртсөн
Drowned or asphixiated	Нэрсэн хийсэн алинтай боогдсон
Exposed to fire	Галын аюулд өртсөн
fell from height	Өндөрөс унасан
Hit by moving /flying or falling object	Хөдлөөт болон унасан дэлбэрсэн зүйлд өртсөн
Hit by moving vehicle	Машинд мөргүүлсэн
Hit something fixed or stationary	Хөдлөөгүй холбогдсон зүйлтэй холбогдсон
Injured while handling, lifting or carrying	Өргөн зөөж тээвэрлэх явцад гэмтсэн
other	Бусад / тодорхойл/
Slipped or tripped while on stairs	Шатнаас хальтирсан гулгасан
Slipped, tripped or fall on same level	Гадаргуунаас хальтирсан гулгасан

Figure 70. Extract of Metagro OHS Investigation Pack

Metagro executive management and the police/labour authorities were directly involved in reviewing the incident and ensuring improvement actions. For example:

- the fatality happened prior to Metagro having in-house OHS officers; instead contractor's OHS supervisors were responsible for inspections and control. Metagro therefore immediately recruited two OHS officers.
- an 11 member OHS Committee was set up in March 2023.
- the Metagro safety culture was significantly strengthening and awareness-raising on OHS leading/lagging indicators was implemented across the workforce.

Metagro therefore now has robust OHS Policies, Workplace Risk Assessment, Manuals of Procedures, OHS Guidelines for Contractors and Sub-Contractors, and a spreadsheet-based monitoring and reporting function, part of the dashboard of which is reproduced below. No other significant accidents had been recorded at the time of the site visit in June 2023, since the incident in January.

Indicator	Owner	Unit	2024 Target	2022 Actual	Monthly follow up						
					Jan Actual	Feb Actual	March Actual	April Actual	May Actual	June Actual	July Actual
Accident -own personal	Oyun	nb/100FTE	n.a	0	0	0	0	0	0	0	
Incidents - own personel	Rentsen	nb/per month	n.a	n.a	0	0	1	0	1	0	2
Near Miss - own personel	Altannavch	nb/per month	n.a	7	n.a	n.a	n.a	n.a	n.a	n.a	1
Fatality- contractor	Oyun	nb	n.a	1	0	0	0	0	0	0	
Accidents - contractors	Oyun	nb	n.a	0	1	0	0	0	0	0	
Incidents - contractors	Rentsen	nb	n.a	0	0	0	0	0	1	0	
Near Miss - contractor	Altannavch	nb/per month	n.a	0	0	0	0	0	0	0	
Breaches of security	Oyun	nb	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0	
Hazard reporting	Altannavch	nb	n.a	44	2	3	3	4	5	7	
Hazard closing	Rentsen	nb	n.a	33	2	2	3	3	4	5	
Traffic/Road related accident (not involved person)	Oyun	nb / FTE	n.a	3	0	0	0	0	0	0	
Property damage incident	Altannavch		n.a	2	0	0	0	0	0	0	
Fire incident	Rentsen	%	n.a	0	0	0	0	0	0	0	
Safety audit	Altannavch		n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	

Without employee accident by days	577
By hours	13848
last accident date	12/01/21
Today	07/01/23

Without contractor accident by days	165
By hours	3960
last accident date	01/17/23
Today	07/01/23

Figure 71. Extract of Metagro OHS Integrated Incident Register

The responsibilities of the Metagro OHS team include: provision of training (induction session, daily OHS talks); workplace risk assessments; oversee the safety performance of Metagro's and contractors' workforce; enforce work-permit system; oversee traffic safety; and ensure the use of PPEs. The team also manage the Integrated Incident Register, above, and prepare investigation report and root-cause analysis as required.

Community

(Par. 5) The client will evaluate the risks and impacts to the health and safety of the Affected Communities during the Project life cycle and will establish preventive and control measures consistent with good international industry practice (GIIP), such as in the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines) or other internationally recognised sources. The client will identify risks and impacts and propose mitigation measures that are commensurate with their nature and magnitude. These measures will favour the avoidance of risks and impacts over minimization.

(Par. 20) Where the Project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with The Project in a manner appropriate to prevent and mitigate any harm to people and/or the environment. [...] (Par. 21) [...] The client will document its emergency preparedness and response activities, resources, and responsibilities, and will provide appropriate information to potentially Affected Community and relevant government agencies.

IFC PS 1 GN 81 The emergency preparedness and response requirements of Performance Standard 1 refer to (i) the contingencies that could affect personnel and facilities of the project to be financed, (ii) the need to protect the health and safety of project workers (as noted in Performance Standard 2) and (iii) the need to

protect the health and safety of the Affected Communities (as noted in Performance Standard 4). The client should address emergency preparedness and response in an integrated way .... Where the consequences of emergency events are likely to extend beyond the project property boundary or originate outside of the project property boundary (e.g., hazardous material spill during transportation on public roadways), the client is required to design emergency preparedness and response plans based on the risks to community health and safety identified during the risks and impacts identification process.

IFC PS 1 GN82 Effective emergency preparedness and response plans help clients prepare for the best outcomes while assuming the worst possible scenarios. They should define clearly assigned responsibilities for the assessment of the degree of risk to life, property, and environment, with procedures on who and with whom to communicate regarding different types of emergencies. The level of planning and communication should be commensurate with the potential impacts.

The main community health and safety risk associated with the Project is considered to be the hazard to people and local livestock from the significant future traffic impacts from Metagro's full-scale operations. Metagro uses a 3rd party GPS tracking system for monitoring its agriculture equipment and service vehicles, providing vehicles' location, distance, engine hour, fuel level, speed, and camera monitor. However this system does not currently cover the regular transportation fleet that will move staff, animals, animal products, feed, and related agricultural supplies to and from the Metagro Farm.

During operations, additional community risks may occur from the use of agrochemicals and their potential effects on air and water quality, and interaction of workers at the facility with the local community, such as the spread of communicable illnesses, respiratory infections and sexually transmitted infections (STIs).

5.14 Animal Welfare, Health and Food Safety

Metagro already controls its overall cattle feedlot operation in accordance with its *Feedlot Operations SOP* (5 pages, 2023) and *Biosecurity SOP* (8 pages, 2023). The business concept of the cattle feedlot and key aspects of the biosecurity programme are highlighted below:

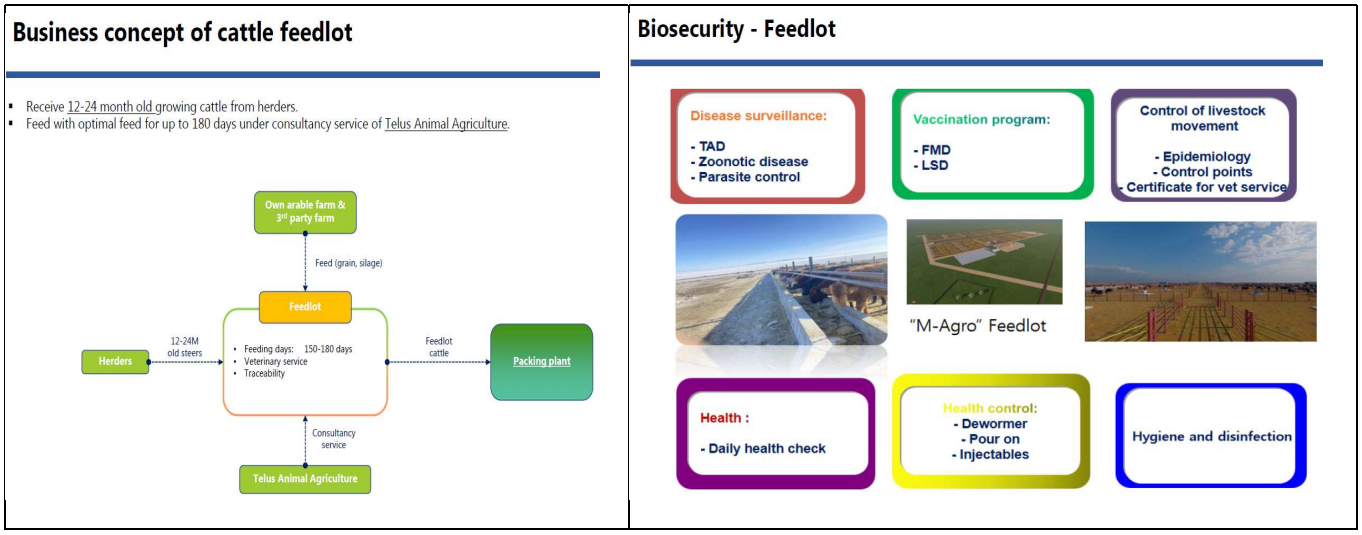

Figure 70. Metagro feedlot and biosecurity programme. Metagro

Food safety impacts and management measures will outlined in the IFC EHS Guidelines for Meat Processing and the Hazard Analysis Critical Control Points (HACCP) (ISO 2005) and Codex Alimentarius (FAO 2005) will be adopted where necessary as identified as appropriate. This will include:

- Demarcation and respect of clean and dirty zoning.
- Maintenance of cooling chain.
- Implement tracing process for animal parts to facilitate of removal of diseased carcasses.
- Facilitate effective veterinary inspections
- Full adoption of HACCP prerequisites

Welfare

Metagro is now preparing its specific procedure to manage and promote high standards of animal welfare within its business. A draft *Animal Welfare Policy* (6 pages, November 2023) has been created by the Business Development Manager and distributed to Metagro's veterinarians for comments. The contents include:

1. General
2. Principles to be followed for ensuring the well-being of animals (
3. Factors contributing to the welfare of animals
4. Transportation
5. Reception
6. Welfare assessment
7. Prohibitions

The contents are in line with sector-related standards, e.g. the World Organization for Animal Health' (WOAH[16]) *Terrestrial Animal Health* Code (TAHC) twenty-eighth edition, 518 pages 2019, and relevant IFC guidelines[17]. Apart from being an essential component of good animal husbandry practices (GAHP) in general the policy's implementation in particular provides another opportunity for Metagro to advance improved attention to animal welfare in Mongolia; beyond that which is currently practiced in the country.

After incorporation of relevant suggestions by Metagro's veterinarians, the *Animal Welfare Policy* should be disseminated and adopted throughout the enterprise.

Animal health

An *Animal Health Policy* document is also currently being prepared by Metagro's Business Development Manager and a draft will be available by the first quarter of 2024. Discussions with the local FAO office for expert advice is underway.. The policy is being developed with due attention to FAO's *Codex Alimentarius*. It too will be distributed to relevant Metagro staff for further attention and comment.

A major component of the animals' diet on the Metagro feedlot was to have been wheat produced on site, but though the quantity of the current year's harvest was somewhat lower than expect, the quality was higher. Accordingly, Metagro decided to sell their production for the manufacture of flour and purchased other (cheaper) wheat for their feedlot operations. With the feedlot currently at 74% of capacity (as of November 2023), all silage requirements are currently produced on-site, and premixes are imported mainly from Russia

Data on the processed animals is accumulating on the Company's Telus Agriculture (Animal Research Management) system and has started providing valuable information (not previously available) on the particular characteristics of fattening. Information from meetings with Metagro staff, and visits to the site in Khentii province by IFC and others, is now being complemented by data collected by the Telus system. This indicates, for example, that:

- During the early November snow fall and cold spell, only three animals were lost within the feedlot operations (with 3,700 animals on site),

[16] Formerly, the OIE.
[17] Good Practice Note; Improving Animal Welfare in Livestock Operations. IFC, 2014, 36 pages.

- Average daily weight gains of animals within the feedlot were 9% better than expected (1.2kg rather than 1.1kg)

Future information is likely to confirm, for example, whether the traditional practices of a targeting larger animals (prevalent in the east of the country) is better than smaller (maybe faster growing) animals from the west of Mongolia. There is no readily-available data from among traditional livestock production practices in Mongolia with which to compare the above. However, many cattle were reported to have died nearby (under similar circumstances earlier in the year). And more will be expected to have died, when national statistics become available.

Moreover:

- reduced levels of livestock mortality,
- improved weight gain, and
- improved productivity

are generally accepted as good indicators of improved animal welfare and health. The accumulation of more data on livestock performance in the feedlot through the next few months should demonstrate Metago's' superior animal health standards compared to the traditional livestock production system in Mongolia, in which most animals lose weight and mortality rate increases substantially in wintertime.

Food safety

Finished livestock from the feedlotting operation continue to be dispatched to Ulaanbaatar for slaughter at Trust Trade slaughterhouse in Nalaikh.

Construction of the company's on-site slaughter facility has recently been completed and the plant is expected to be commissioned in spring of 2024. Based on a modular design, the new facility will provide for the collection of most by-products; edible (blood, viscera, etc.) and inedible (hides, bones, etc.). Proposed treatments include rendering (bones) and preparation of blood meal, but it is not clear how and to what extent, the by-products (offals) will be processed on-site. The slaughter facility will be HACCP[18] certified.

Data from the Company's Telus Agriculture (Animal Research Management) system indicates that dressing percentages[19] (during slaughtering operations) have already increased by two percentage points (to 52%). This represents a significant improvement in the efficiency of meat production operations.

While meat distribution via supermarket chains and restaurants predominates currently in Mongolia, Metagro is now launching its own brand of *'fresh'* (chilled, not previously frozen) meat. This too, is a major advance in the sector where almost all production has previously been based on *'frozen'* meat. Avoiding freezing offers innumerable advantages – related to quality over quantity – which Metagro is keen to take advantage of; it also contributes to energy savings.

5.15 Supply Chain

(Par. 27) […] The client will monitor its primary supply chain on an ongoing basis in order to identify any significant changes in its supply chain and if new risks or incidents of child and/or forced labour are identified, the client will take appropriate steps to remedy them.
(Par. 28) Additionally, where there is a high risk of significant safety issues related to supply chain workers, the client will introduce procedures and mitigation measures to ensure that primary suppliers within the supply chain are taking steps to prevent or to correct life-threatening situations.

[18] Hazard Analysis and Critical Control Points
[19] The yield of bone-in carcass from the live animal.

(Par. 29) The ability of the client to fully address these risks will depend upon the client's level of management control or influence over its primary suppliers. Where remedy is not possible, the client will shift the project's primary supply chain over time to suppliers that can demonstrate that they are complying with this Performance Standard.

Metagro's requires agricultural inputs for its operations including: fodder materials, seeds, fertilisers and agrochemicals as shown in the supply chain map below. The main sources for these agricultural inputs include within Mongolia, as well as China and Russia.

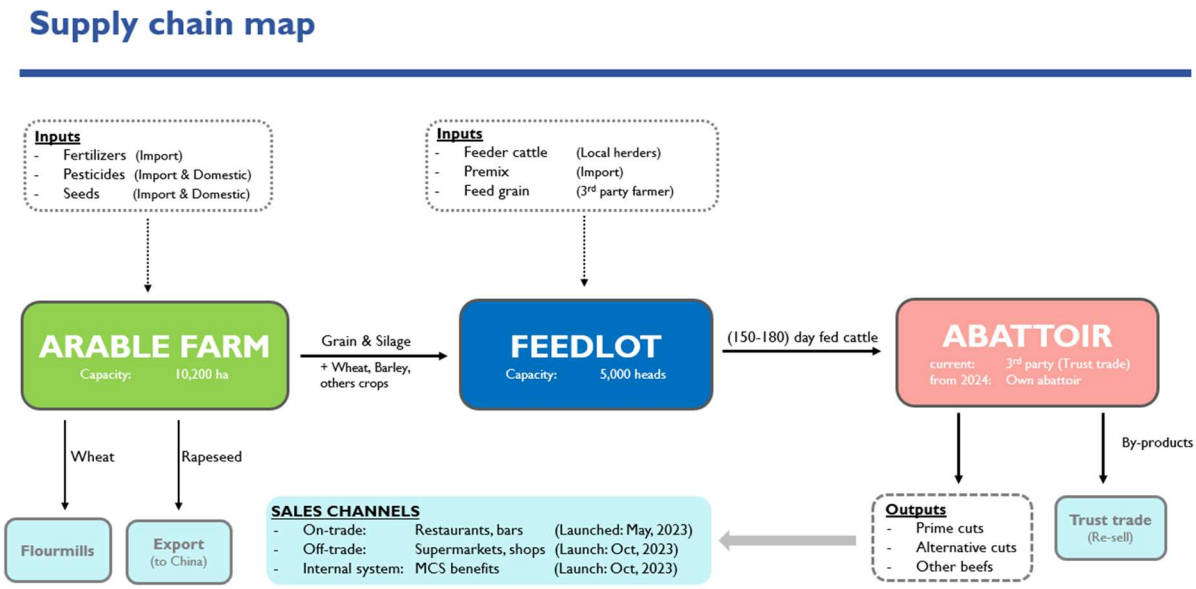

Figure 72. Metagro's Supply Chain Map

Metagro's supply chain is dynamic: illustrated by the business decision to sell some of the 2023 harvest for profit because of its high quality and to purchase additional cheaper third-party grain and fodder materials for the feedlot.

However the key business-critical supply chain input to Metagro's operation is a sufficient, quality source of young calves for the feedlot operations, from the surrounding region in Mongolia, as illustrated below:

Cattle procurement area and Availability

- Total number of cattle in Khentii, Dornod and Sukhbaatar provinces (2022): 1,176K head
- Potential number of cattle to be sold for food purpose: 193K head
  - On average **20%** of total cattle sold for food purpose (2002-2022)

- After stabilizing operation, **~4.2%** of total cattle sold from the eastern-three provinces required to be purchased at our feedlot to fit our demand.

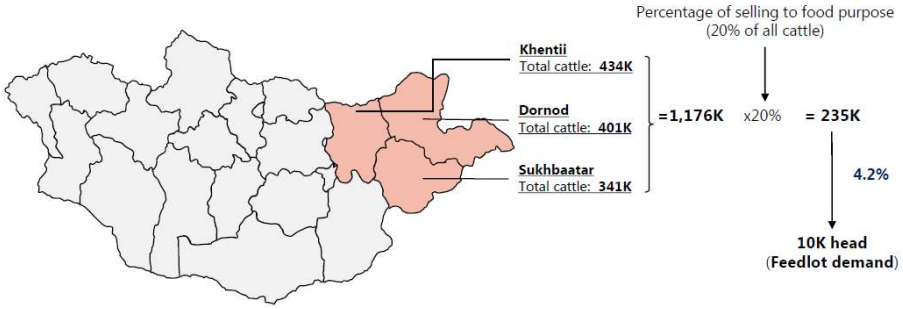

Figure 73. Cattle availability in Khentii. Metagro

As expected in the enterprise's first year of operations, animals in the feedlot are young stock procured from Khentii and neighbouring provinces. This system (with Metagro's prices based directly on the liveweight) has not been too difficult despite the fact that – traditionally – prices are based on the age of the animals (and only indirectly on their weight). Herders normally expect to get 25% more for three to four year cattle, compared to the one to two year olds sought by Metagro.

Currently, Metagro's particular requirements for the purchase of cattle from herders include:

- Age: between 12-24 months (castrated);
- Weight: not less than 160 kg;
- Must be included in scheduled vaccination;
- Not transported and transferred from quarantined zone;
- Not infected by infectious and acute infectious disease;
- No injury, wound, abscess and lump;
- Must be involved in annual veterinary examination;

Conformance with these requirements is undertaken prior to purchase, and is verified upon reception at the feedlot.

After initial establishment of feedlotting operations procurement of new animals is expected to be based increasingly on the products of Metagro's service of artificial insemination (AI) of herders' animals.

- However of the 5,000 doses of AI procured the Metagro, only 90 have been used by mid November 2023; only one herder agreed to this service, after several other expected users withdrew from the programme.
- The AI project, though small in scale so far, achieved an 89% success rate; which compares highly favourably with prior herder experiences of success rates as low as 20%.

6. Socio-Economic Baseline

This section presents the social baseline conditions in the Project Area.

In overview, Mongolia's semi-nomadic and nomadic herders make up approximately 30% of the country's population. Eighty percent of the land area in Mongolia is covered by grassland, giving home to about 67 million horses, cattle, sheep, goats, and camels. Half of the country's population of 3.4 million depends on livestock production, which contributes more than 20% of the country's GDP. Nomadic pastoralism is a way of life in Mongolia. For centuries, herders have roamed the grasslands "following our animals," as the herders' adage goes, building, packing, and rebuilding their traditional gers, or tents.

Extension of existing farmland, and implementation of new land to be irrigated could disproportionally affect herders who traditionally use these lands for grazing. Growing tensions between farming and herding communities are symptomatic of broader socio-economic, political and security patterns, but they also exemplify the increasing social fragmentation experienced by many countries where traditional narratives of statehood and citizenship are at odds with social realities of marginalisation and exclusion.

6.1 Area of Influence

(Par. 8) Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project's area of influence. This area of influence encompasses, as appropriate:

- The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated, or managed (including by contractors) and that are a component of the project (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

(Par. 9) In the event of risks and impacts in the project's area of influence resulting from a third party's actions, the client will address those risks and impacts in a manner commensurate with the client's control and influence over the third parties, and with due regard to conflict of interest.

(Par. 10) Where the client can reasonably exercise control, the risks and impacts identification process will also consider those risks and impacts associated with primary supply chains. [As defined in Performance Standard 2 (paragraphs 27–29) and Performance Standard 6 (paragraph 30)]

To determine social impacts and risks, the Project Affected Area (PAA extends beyond a 5km perimeter to include receptors that could be affected even though they are not in the Project's immediate vicinity, namely: Ulziit village, Kherlen Sum, Murun Sum, and Chinggis City, see the figure below. Ways in which these locations could be affected by the Project are examined further in this section.

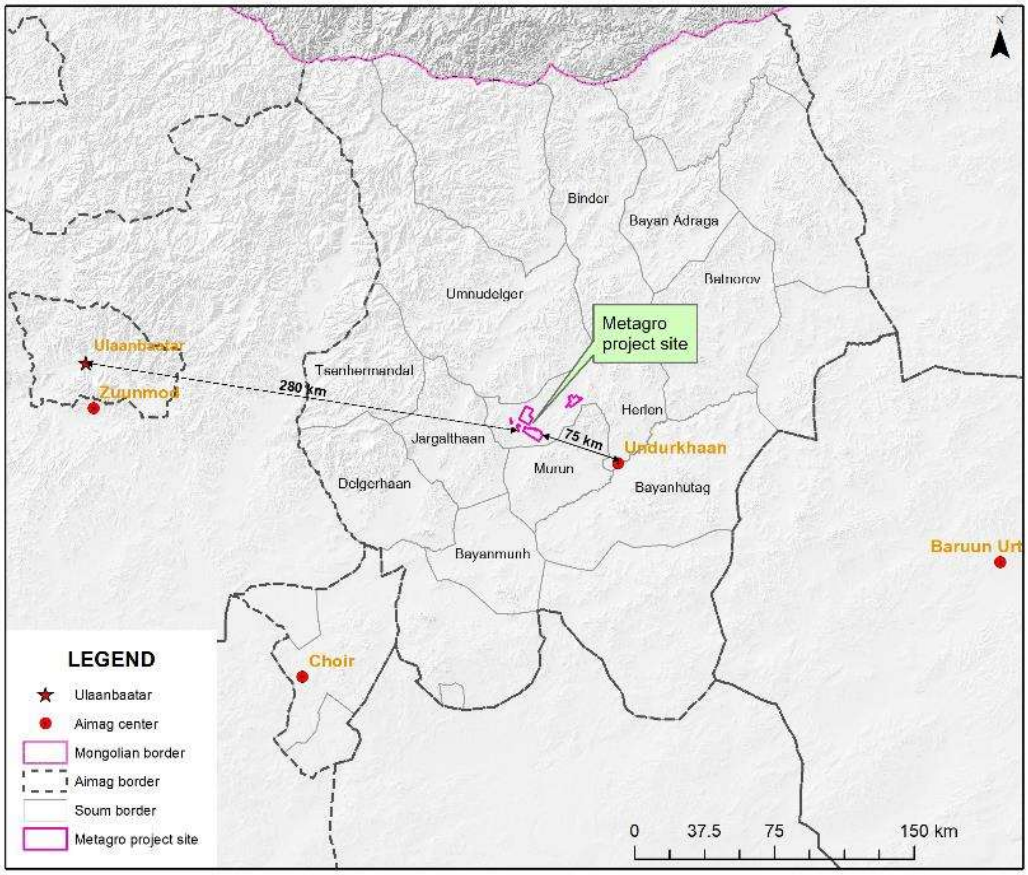

Figure 74. Site location and geography of Khentii aimag

The data in this Section focuses on the provincial level (Khentii aimag), as well as Ulziit village and immediate Project surroundings, however Kherlen soum, Murun soum, and Chinggis City are also part of the Project's social Area of Influence. Information was mostly collected from secondary data sources as this ESIA did not include household surveys.

6.2 Administrative Structure

Mongolia is divided into 21 *aimags* (provinces). The aimags are headed by Governors, appointed by the Prime Minister, and Local Assembly Chairmen, elected in local government elections. Government institutions at the aimag level mirror those at the national level. The Governor is the central body at all levels of local Government. The Governor is proposed by the respective *hural* (local self-governing body, assembly). Governors are representatives of the State and directly report to their respective higher-level Governors.

Aimags are divided into 339 *soums* (districts), which are further subdivided into 1,639 *baghs* (sub-districts, the smallest administrative units). While soums always have a permanent settlement as administrative centre, many baghs do not.

The Project site is located in Kherlen soum within Khentii aimag. Khentii aimag is divided into 18 soums and 89 baghs, with a total territory of 80,325 km^2, and a population density of 1 person per 1 km^2. Kherlen soum spans 3,809 km^2 with eight baghs, and Murun soum covers 2,196 km^2 and five baghs.

6.3 Ulziit Village

The community nearest to the Project is Ulziit village. It has a total area of 145,665 ha, of which 122,000 ha are agricultural land, 20,000 ha are farmland, 3,400 ha are hay land, and 265 ha are settlement land. Ulziit

was established in 1976 as Ulziit Soum Chandgana agricultural farm for grain cultivation and fine wool sheep breeding, and consists of three administrative baghs: Nomgon, Chandagana and Zotlog.

Figure 75. Aerial view of Ulziit village from the west, 2023-08-19. Ecotrend

The population of Ulziit village is 1,086, comprising 165 settled village households and 167 herder households. Villagers have their own homesteads and are mostly self-employed. In the centre of the village, there is a secondary school, a kindergarten, a hospital, a cultural centre, and a bank branch. Ulziit is also connected to a network of mobile phone operators. The village hospital (currently has 20 inpatient beds and 12 medical staff.

Figure 76. View of kindergarten, hospital and secondary school in Ulziit village. Ecotrend

6.4 Nomadic Herders

Herder movements are typically dictated by weather conditions and the quality of the pastureland for their animals. It is generally uncommon for herder households to live at the same location year-round. Starting in October, herders and their livestock begin moving to winter camps where they remain for the winter. When the weather gets warmer (anytime between March and May), most herders leave the winter camp. Outside the winter period, the herders and their livestock move every 5 to 7 days in search of good pasture, and intermittently return to the winter camp to store hay and other animal feed for the approaching winter. During summer and autumn, when pastures grow, herders transfer their gers to more favourable grazing locations than those in the winter and spring pastures.

While herders frequently return to similar areas for summer grazing, ultimately, the decision where to settle depends on the weather and grazing conditions. The most important parameters for choosing the summer camp are rangeland yields and water points.

In Khentii aimag, 35.6% of all households are nomadic herders (9,097 households) and 48.8% of all households have livestock (3,313 households). The average herder household has 3 or 4 family members.

Approximately 25.5% of the herders in Khentii aimag have completed secondary school and 6.4% have tertiary education (48.0% of them women). Some 17% of herder household children under the age of three attend a preschool education institution and 36% of children between 6-18 years of age attend school. In Khentii aimag, 97.5% percent of all herders have mobile phone and 56.7% use the internet.

In 2022, Nomgon Bagh, Ulziit village counted 125 herder households and 202 individual herders, of which 124 were women and 78 were men. Total headcount of their herd livestock was 116,116 animals sharing a pastureland of around 121,700 ha.

There are roughly a dozen herder gers (traditional tent-like dwellings) in the Project's immediate vicinity, depending on the season, as nomadic herders move between their summer camps and winter camps. Several of these local herders were interviewed as part of the ESIA stakeholder engagement (see Section 7).

Figure 77. A herder ger and livestock stockade near the Metagro site. EcoTrend

6.5 Demographics

Khentii Aimag

As of 2022, approximately 79,634 people live in Khentii Aimag; 50.6% are men and 49.4% are women. The population increased by 0.26% from the previous year, and 13.5% since 2010. More than half of the total population in Khentii Aimag live in Kherlen soum (24,418 people or 30.66%), Bor-Undur (8,897, or 11.17%), Umnudelger (5,893, or 7.4%), Batnorov (5,717, or 7.18%), and Binder (4,179, or 5.25%) soums.

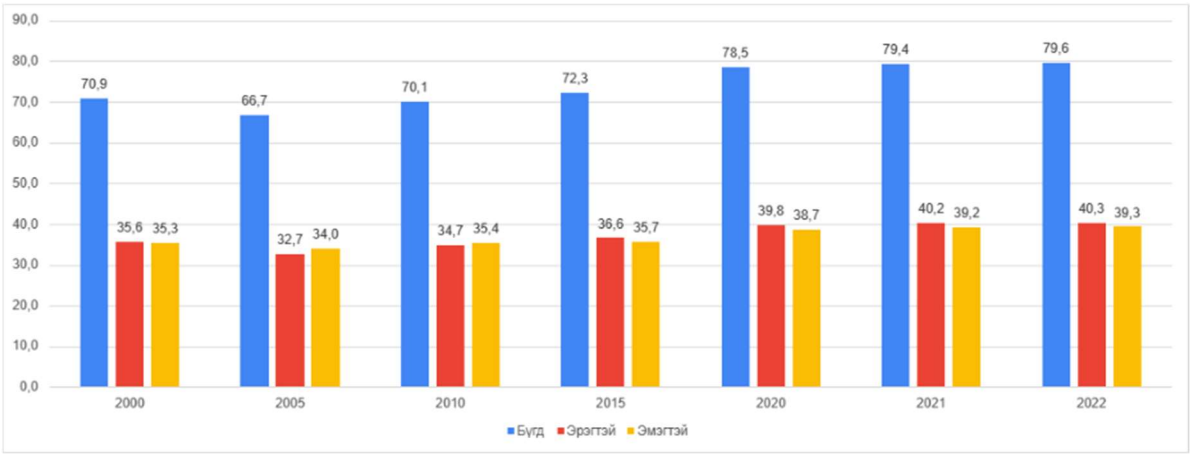

Figure 78. Population of Khentii Aimag, in thousand people, 2000-2022

Source: 2022 Statistical Compendium of Khentii Province, 2023 / Note: red – male; orange – female, blue – total

Kherlen soum

As of 2022, there were 24,418 people living in 7,492 households in Kherlen soum. Roughly 51.9% of the soum population are women (12,684) and 48.1% (11,170) are men.

Table 30.*Population and number of households in Kherlen Soum, 2018-2022*

Year	2018	2019	2020	2021	2022
Total population	23,671	23,765	24,036	24,115	24,418
Total number of households	7,552	6,987	7,070	7,269	7,492
1st Bagh	1,217	994	1,023	1,055	1,104
2nd Bagh	1,336	1,297	1,306	1,306	1,306
3rd Bagh	1,450	1,392	1,415	1,449	1,526
4th Bagh	1,461	1,356	1,383	1,415	1,483
5th Bagh	1,306	1,184	1,186	1,228	1,239
6th Bagh	146	139	141	173	172
7th Bagh	328	323	316	332	336
8th Bagh	308	302	300	311	326

Source: NSO, www.1212.mn

In terms of age structure, there are 8,237 (33.9%) people aged 0-14, 13,934 (57.1%) aged 15-59, and 2,197 (9%) aged 60 and over. In 2022, 1,136 children were born in Kherlen soum, of which 585 were girls.

In terms of mortality rates, out of 125 deaths in 2022, 39 were due to cardiovascular diseases, 14 were due to injuries, poisoning and other external causes, 12 were due to digestive diseases, 8 were due to respiratory diseases, and 26 were due to tumours.

Table 31. Birth and death rate, Kherlen Soum, 2017-2022

Year	2018	2019	2020	2021	2022
Births	1204	1326	1299	1272	1136
Deaths	97	129	105	141	125

Source: NSO, www.1212.mn

Migration

As at 2022, there was no out-migration from Khentii aimag while, in contrast, 991 people migrated into Khentii aimag, an increase of 11.6% (103 persons) from the previous year.

6.6 Ethnicity and Religion

According to the 2020 Population and Housing Census, 89.1% of Khentii Aimag's population are Khalkh, 7.1% are Buriad, 1.1% are Uriankhai, 0.7% are Kazakh, 0.7% are Dariganga, 0.5% are Durvud, 0.3% are Bayad, and 0.1% are Zakhchin.[20] There are 3 religious temples in Kherlen Soum, all of them Buddhist.

6.7 Vulnerable Groups

In Khentii Aimag in 2022 there are an estimated 80,000 inhabitants of which:

- 3,501 people with physical disabilities, of which women account for 39.8%
- 2,536 single-parent families, 83.8% of which are women, and including 1,360 single mothers with children under the age of 18
- 2,207 senior citizens living alone in separate households, an increase 23% compared to the previous year
- 1,083 orphans.

6.8 Land Tenure and Use

Approximately 73.4 % (114,736.7 ha) of the land in Khentii Aimag is used for agriculture. The table below presents other types and expanses of land usage.

Table 32. Land use of Khentii aimag, 2019

Land use	Area (hectares)
Agricultural land	114,736.7
Land in urban area/under settlements	906.8
Special purpose land	25,270.5
Forest area	14,337
Water bodies / resources	685.8
Land under road network	474.8
Total area	**156,411.6**

Source: Department of Land Relations, Construction and Urban Development of Khentii Province, khentii.gazar.gov.mn

6.9 Infrastructure

As indicated by the World Bank's Index of Quality of Overall Infrastructure [21], the quality of infrastructure in Mongolia required improvement. Mongolia's infrastructure index has been improving, but at 3.26 in 2017, is still below the medians for the world and the East Asia & Pacific. It is also significantly below its two larger neighbours, China and Russia.[22]

Roads

Few roads in Mongolia are paved (13.2%)[23] and the same is true in Khentii Aimag, including Ulziit village. Most are earthen or gravel roads. Mongolia experiences dry and strong winds most of the year which causes quick road deterioration. Rutting takes longer to develop on earth roads than gravel roads, which prompts drivers to use other parallel (earth) roads.

[20] *2020 Population and Housing Census*

[21] https://tcdata360.worldbank.org/indicators/h2cf9f9f8?country=MNG&indicator=535&viz=line_chart&years=2007,2017

[22] World Economic Forum Global Competitiveness Index. 2017

[23] ADB, Regional Road Development and Maintenance Project Report, 2017

All aimags in Mongolia and approximately one third of all soums are connected by national highways or paved roads to the capital city and/or aimag centres. Inter-city buses run between all aimag centres and some soum centres and Ulaanbaatar. Kherlen soum in Khentii aimag has paved road connections: 115.5 km of roads were commissioned in Khentii Aimag in 2022 alone, which is 21.2% of the total roads put into operation nationwide.

Water supply and sewerage

In the centre of Ulziit village, there are two deep wells for fresh water sources and two reservoirs with a capacity of 10m^3. Approximately 120 households, four enterprises and five public organisations are supplied with water from the central drinking water well. The central reservoir has a capacity of 300 m^3 but its operation has been stopped due to insufficient operational requirements.

Khentii-US LLC is solely responsible for clean water and sewerage, and provides services to residents of the community through 15 water distribution points.

Power Supply

All aimags are connected to the country's integrated power grids. Approximately 98.5% of all households in Khentii aimag are connected to electricity supply networks, with 48.8% of households connected to the centralised electricity system, 40.7% using renewable energy devices, 8.4% using small generators, and 0.1% using diesel generators.

Ulziit village is connected to the Central Energy System of Mongolia. There is a 35/6kV substation in the centre of the village fed from two ATP substations, as shown below.

Figure 79. Ulziit village substation. Ecotrend

Housing

Out of 25,525 households in Khentii aimag, 65.8% live in gers, 33.4 percent live in houses, and 0.8 percent live in other types of housing. Out of a total of 2,778 households living in houses, 78 households live in detached houses and 518 households live in shared housing.

Table 33. Number of households by type of housing, 2010-2022

Type of apartment	2010	2020	2021	2022
Ger	11,810	14,909	16,413	16,804
House	7,212	8,696	8,538	8,526
Others	125	301	190	196
Total	**19,147**	**23,906**	**25,141**	**25,526**

Source. Department of Statistics of Khentii Aimag. Living Environment and Social Indicators of the Population, 2020-2022

In 2020, a total of 2,761 households had access to sanitation, 2,638 households had access to centralised and/or autonomous water supply systems. Some 21,145 households had no access to modern sanitation. In Kherlen soum, 1,078 households had access to sanitation and 1,032 to centralised and autonomous systems, while 5,909 households had no access.[24]

6.10 Agricultural Economy

Most of Mongolia is pastureland (126 million hectares), followed by arable land (about 1 million hectares). Nationwide in 2022, a total of 621,600 hectares were cultivated; 61.9% of this total cultivated area was under grain, 20.0% technical plants, 11.8% cultivated fodder, 3.4% potatoes, 2.3% vegetables, 0.5% fruits and berries, 0.1% medicinal and other plants.

In 2021, the share of agriculture to the total GDP of Khentii aimag accounted for around 60%, industry for 15.5% and service sector for around 24.3%.[25]

In 2022, 31,700 ha of land was cultivated in Khentii aimag (of which 951.7 ha were irrigated) by some 596 households and 64 enterprises producing a total of 19,757 tons of crops.

On average, herder households in Khentii aimag had 483 heads of livestock. Pasture land density for Khentii aimag is 176 heads of livestock per 100 ha, higher than the national average of 114 animals per 100 ha. [26]

A total of 5,076,500 head of livestock were registered in Khentii aimag at end of 2022, of which 554,800 are registered in Kherlen soum. [27]

6.11 Employment and Livelihoods

As of 2022, a total of 35,200 people were employed in Khentii aimag. The agricultural sector accounts for 58.24% of the total number of workers in the province.

Table 34. Employment in Khentii aimag (thousands), 2010-2022

Indicator	2010	2015	2020	2021	2022
A person of working age	42.6	49.2	47.8	47.9	45.8
of which employees	24.9	30.5	31.9	35.7	35.2
Economically active person	25.9	35.4	33.0	37.0	36.4
Registered unemployed	1.0	0.6	0.4	0.5	0.3
Employment rate, %	58.5	56.7	57.7	67.9	69.0
Unemployment rate, %	4.2	14.0	4.0	3.6	3.4

Source: 2022 Statistical Compendium of Khentii Province, 2023

As of 2021, 19.8% of all operational enterprises in the aimag had a lack of manpower[28] with the greatest shortage being in Kherlen soum where nearly half of all enterprises lacked manpower. According to the same report, 66.4% of the workforce is not willing to work on a permanent basis, 39.8% are not fit for work, and 37.5% are not willing to work in rural areas.

[24] NSO, www.1212.mn
[25] www.1212.mn
[26] Agricultural sector in 2022. NSO, 2023.
[27] Khentii aimag statistical compendium 2022. Department of Statistics of Khentii aimag, 2023.
[28] www.1212.mn. Khentii Aimag Department of Statistics. 2021 enterprise inventory report.

Wages and salaries

According to the NSO, the average monthly salary of employees varies by sector and type of economic activity. In 2021, the average pay in mining and quarrying sector was about 3.0 million tugrug per month, whereas the lowest paid economic sector is the hospitality and catering service industry, where the average pay is 0.8 million tugrug.

In Khentii aimag, the average monthly salary is lower than the national average. At both the national level and regional level, men are paid higher than women.

Table 35. Monthly average wages and salaries, by sex, 2021-2022, in thousand tugrug.

	Sex	2021	2022
National average	Total	1,279.4	1,503.8
	Male	1,390.1	1,642.82
	Female	1,163.1	1,360.52
Agriculture, forestry, fishing and hunting	Total	1,002.8	1,152.3
	Male	1,023.1	1,175.7
	Female	975	

Source: www.1212.mn

6.12 Poverty

A recent study[29] found that herder households were particularly likely to be poor in Khentii. Livestock development is hampered by the degradation of pastures, the lack of water, the lack of veterinary services and the decrease in the price of meat. The incidence of poverty is directly linked to the level of per capita livestock among herders.

According to a World Bank/NSO Report, poverty declines with a higher number of per capita livestock. As of 2020, 36% of people in Khentii province were unable to buy enough food to meet their daily basic needs. The poverty rate is 4.2%, which is 1.5 times higher than the national average. Inequality among the poor population of Khentii aimag is relatively high compared to other provinces.

[29] Adam Smith International (2015). Integrated Report: an integrated analysis of economic, political and social issues that support or hinder growth and poverty reduction in Mongolia

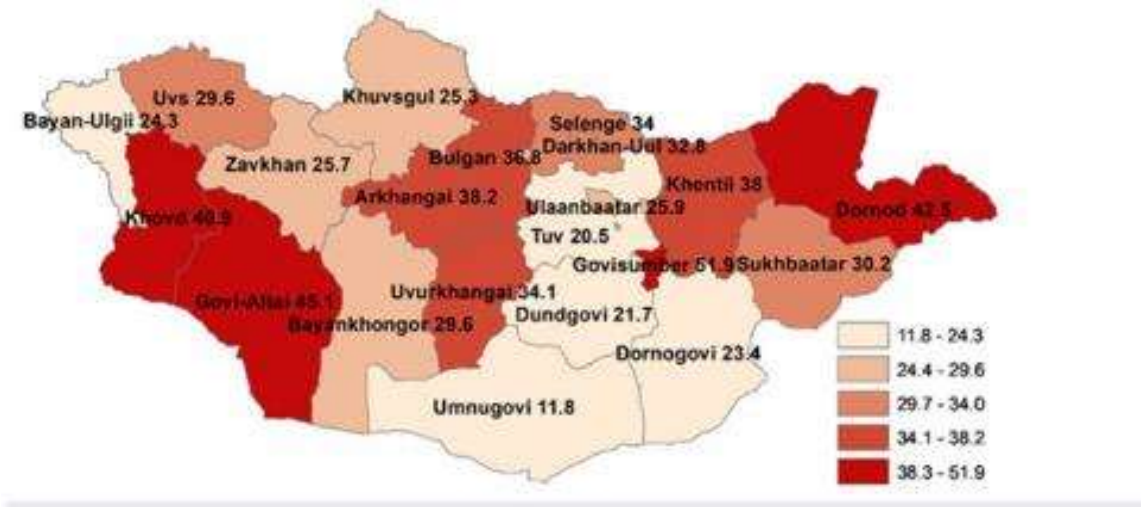

Figure 80. Aimag level poverty headcount

Source: Household Socio-Economic Survey Report 2018, NSO

6.13 Education

As of 2020, 93.8% of people in Khentii aged ten and older received some form of education, while the remaining 6.2% have had no education. Out of 59,936 educated citizens, 15.9% have higher education, 4.0% are technical professionals, and 3.5% are specialised professionals. The educational institutions in Khentii aimag are summarised below:

Table 36. Number of educational institutions in Khentii aimag, 2010-2022

Educational Institutions	2010	2015	2020	2021	2022
Kindergarten	28	34	36	36	36
Secondary schools	26	26	26	26	27

Source: 2022 Statistical Compendium of Khentii Province, 2023

Kherlen soum has five schools with 297 staff and 6,958 students, and 14 kindergarten schools providing preschool education to 2,213 children .

6.14 Health

Life expectancy, births and mortality

In Khentii aimag, life expectancy for women is 76.9 years and 70.6 for men. [30]

There were 65,095 live births in 2022, with a ratio of 105.4 boys per 100 girls. The birth rate per 1,000 people was 16.3 compared to the national average of 19.6. Maternal mortality for 100 000 live births in Khentii aimag is 77 (2022), higher than average for all aimags (42.8) and the national average (35.1). [31]

Mortality is mainly caused by non-communicable diseases. The leading causes of mortality in 2020 were circulatory diseases (33.7%), cancer (29.5%), injuries, poisonings and other consequences of external causes (9.5%), digestive diseases (7.6%), and respiratory diseases (3.7%). In 2022, a total of 5,029 infectious diseases were registered in Khentii Province, of which 4,697 (93.4%) were Covid-19, 95 (1.9%) were sexually transmitted infections, and 69 (1.4%) were tuberculosis.

Health care services

[30] *Health Indicators 2022. Centre for Health Development and WHO*
[31] *Health Indicators 2022. Centre for Health Development and WHO*

Mongolia's health care system consists of state-owned, private, and mixed ownership organisations which oversee public health, medical care, pharmaceutical supply, medical and health education, research, and training. Soum Health Centres (SHC) and Village Health Centres (VHC) provide maternal and child health care services, prevention, and control of communicable and non-communicable diseases, monitoring the health of elderly and disabled people, palliative, and emergency care. Moreover, soum and family health centres provide home care services for children under 5, pregnant women, the elderly, and people with a disability.

The following tables show the types and numbers of health care organisations in Khentii Aimag, along with general indicators of the robustness of health services available. Out of a total of 100 health service institutions, 83 are located in Kherlen soum, and one in Ulziit village.

Table 37. Health sector organisations, Khentii Aimag

Indicator	2015	2019	2020	2021	2022
Total	**70**	**82**	**86**	**107**	**100**
Family Health Centre	4	4	4	4	4
Village Health Centre	2	0	0	0	4
Soum Medical Centre	17	21	21	21	17
Inter-soum Hospital	2	0	0	0	
Rural General Hospital	1	1	1	1	1
Aimag General Hospital	1	1	1	1	1
Central and specialised hospital	0	0	1	1	0
Inpatient Private Hospital	2	0	0	0	0
Outpatient Private Hospitals	15	17	20	23	14
Sanatorium	3	5	2	3	3
Drug supply organisations	2	2	2	4	3
Private pharmacies	18	27	31	46	50

Source: National Statistics Office, www.1212.mn

6.15 Cultural Heritage

(Par. 6) [...] The client will identify and protect cultural heritage by ensuring that internationally recognised practices for the protection, field-based study, and documentation of cultural heritage are implemented.

(Par. 8) [...] The client will develop provisions for managing chance finds through a chance find procedure which will be applied in the event that cultural heritage is subsequently discovered. The client will not disturb any chance find further until an assessment by competent professionals is made and actions consistent with the requirements of this Performance Standard are identified.

Tangible cultural heritage in Mongolia is protected by Mongolia's Law on the Protection of Cultural Heritage. According to this law, historical and cultural immovable monuments are classified as state, local, and institutional. There are 13 state-registered and 23 provincial-registered historical, religious and cultural heritage sites in Khentii aimag. All are significantly distant from the Project as highlighted below.

Table 38. Nearest protected cultural heritage sites

Protection Level	Sites Protected	Name of Nearest to Metagro Farm	Soum	Direction & distance from Metagro
State	13	Tombs of the Hunnu period	Jargalthaan	Southwest 23 km
Provincial	23	Salbar mountain scripts	Murun	Southeast 15 km
		Ruins of the Baruun zuun herem	Murun	Southeast 30 km

People local to the Metagro site have a tradition of worshiping the Great Ulziit Mountain, which is approximately 6km northwest of Metagro Farm and where hunting is also prohibited.

Figure 80. Ikh Ulziit Mountain, worshiped by local people, viewed from the south

Along the country roads in Khentii province and throughout inner Mongolia, there are occasionally ovoos: shrines or cairns fashioned from rocks, wood, and strips of colourful fabric. According to traditional Mongolian shamanism, each ovoo is symbolic of a deity or ancestral spirit. Leaving an offering is an integral part of the tradition surrounding ovoos, which means they are often surrounded by miscellaneous items such as incense, candy, money, milk, alcohol and in some cases, slaughtered animals.

Figure 81. Ovoo about 1km north of Metagro's homestead , on the bluff overlooking Murun river

No archaeological study was conducted on the land owned by Metagro[32], since government and cultural authorities did not indicate the possibility of cultural assets being present.

6.16 Indigenous People

(Par. 8) The client will identify, through an environmental and social risks and impacts assessment process, all communities of Indigenous Peoples within the project area of influence who may be affected by the project, as well as the nature and degree of the expected direct and indirect economic, social, cultural (including cultural heritage), and environmental impacts on them.

There are no people meeting the IFC definition of Indigenous People living in or around the Metagro Project site.

Mongolian legislation does not recognise Indigenous People or ethnic minorities, and Mongolia is not a signatory of the C169 Convention on the Indigenous and Tribal Peoples Convention. As such, there is no specific branch of government designated to be responsible for addressing ethnic minority and Indigenous People concerns. The rights of ethnic groups are guaranteed by the Constitution of Mongolia stating that: "*no person may be discriminated on the basis of ethnic origin, language, race, age, sex, social origin or status, poverty, occupation or post, religion, opinion or education.*" (Article 14.2)

Stakeholder Engagement(Par. 26) Clients should identify the range of stakeholders that may be interested in their actions and consider how external communications might facilitate a dialogue with all stakeholders [...]
(Par. 27) The client will develop and implement a Stakeholder Engagement Plan that is scaled to the Project risks and impacts and development stage and be tailored to the characteristics and interests of the Affected Communities.
Where applicable, the Stakeholder Engagement Plan will include differentiated measures to allow the effective participation of those identified as disadvantaged or vulnerable.
When the stakeholder engagement process depends substantially on community representatives, the client will make every reasonable effort to verify that such persons do, in fact, represent the views of Affected Communities and that they can be relied upon to faithfully communicate the results of consultations to their constituents.
(Principle 5) The client will take account of, and document, the results of the Stakeholder Engagement process, including any actions agreed resulting from such process.

(Par. 35) Where there are Affected Communities, the client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance. [...] The client will inform the Affected Communities about the mechanism in the course of the stakeholder engagement process.
(Principle 6) For all Category A and, as appropriate, Category B Projects, the EPFI will require the client, as part of the ESMS, to establish effective grievance mechanisms which are designed for use by Affected Communities and Workers, as appropriate, to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance.

[32] *Slaughterhouse environmental baseline study. Ecotrend LLC, 2023.*

6.17 ESIA Scoping

The ESIA scoping process included stakeholder engagement, with the following aims:

- Ensure that legislative requirements are met
- Identify sources of information and expertise
- Register stakeholder concerns and expectations
- Collect data for initial stakeholder identification and analysis

A list of the stakeholders engaged, and the topics discussed are listed in **Appendix D**.

Engagement during the scoping site visit included a combination of formal meetings, one-on-one discussions and group meetings.

6.18 Disclosure and Consultation

(Par.29) [...] The client will provide Affected Communities with access to relevant information on: (i) the purpose, nature, and scale of the Project; (ii) the duration of proposed Project activities; (iii) any risks to and potential impacts on such communities and relevant mitigation measures; (iv) the envisaged stakeholder engagement process; and (v) the grievance mechanism.
(Principle 5) To facilitate Stakeholder Engagement, the client will, ... make the appropriate Assessment Documentation readily available to the Affected Communities, and where relevant Other Stakeholders, in the local language and in a culturally appropriate manner.

(Par.30) When Affected Communities are subject to identified risks and adverse impacts from a Project, the client will undertake a process of consultation in a manner that provides the Affected Communities with opportunities to express their views on Project risks, impacts and mitigation measures, and allows the client to consider and respond to them. [...] The client will tailor its consultation process to the language preferences of the Affected Communities, their decision-making process, and the needs of disadvantaged or vulnerable groups. If clients have already engaged in such a process, they will provide adequate documented evidence of such engagement.
(Principle 5) For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process. The client will tailor its consultation process to: .... and the needs of disadvantaged and vulnerable groups. This process should be free from external manipulation, interference, coercion, and intimidation.

Disclosure and consultation are required elements of the ESIA. For Metagro, it will involve the following:

- Documentation of consultation within the ESIA report
- Disclosure of a non-technical summary of the draft ESIA report
- Notifying affected stakeholders of the risks or impacts that might adversely affect them
- A response by the Project to comments from concerned stakeholders
- Providing affected communities with opportunities to discuss Project risks and impacts, proposed mitigations, and monitoring measures
- Providing affected communities with access to a grievance mechanism to voice concerns or complaints about topics discussed in the ESIA or the Project in general

The ESIA team prepared a Stakeholder Engagement Plan (SEP) to guide disclosure and consultation associated with this ESIA Report, including stakeholder identification and analysis. The SEP is available as a separate document and will be implemented following ESIA report finalisation. The SEP is a live document that will be updated regularly at all phases of the Project.

6.19 Prior Engagement

In 2022, prior to the ESIA process, Metagro held informal engagements with local stakeholders to share information about the Project and to dispel preconceived notions about Metagro's long-term plans: people were sceptical that Metagro would stay for the long-term due to the local history of agricultural companies planting rapeseed and leaving after 2-3 years.

In June 2022, the company organised a meeting with the local community where they presented information about the Project and listened to people's views on cooperation opportunities. In October 2022, Metagro assembled some 100 senior citizens of Ulziit village to celebrate Elderly Day.

In March 2023, Metagro organised a job fair in Chinggis City and Ulziit village to highlight job opportunities in farming. Job vacancies were announced including those of driver, contracted worker, cook, assistant cook, accountant, storeman/storekeeper, mechanical engineer, mechanical repairman, and project coordinators. Over 100 people from Khentii aimag attended the event and submitted applications, and 10 people were offered jobs.

Figure 81. Job fair in Khentii Aimag, March 2023, Metagro.

The company reports regularly to local administrations including the Kherlen soum *Hural* (Citizens' Representatives Assembly) Bagh Public Meeting. In April 2023, Metagro hosted Kherlen soum's newly elected *hural* members at the homestead and presented information on Project development activities.

In March 2023, Metagro helped organise the East Region Farmers Conference jointly with the Mongolian National Union of Farmers, Khentii Aimag Governor's Office and Khentii Aimag Food and Agriculture Department, Approximately 90 people participated including farmers from Khentii, Dornod, and Sukhbaatar aimags, representatives from MOFALI, and researchers and teaching staff from the Mongolian University of

Live Sciences, where they discussed climatic features during cultivation and shared views on agricultural technology.

In April 2023, Metagro also supported the first local campaign to support herdsmen, hosting around 80 herders and staff from soums' agriculture units from Khentii and Sukhbaatar aimags. it also hosted the Cattle Breeders Conference 2023, a consultation with a group of local cattle breeders and herders to discuss Project plans and opportunities for collaboration, leading to the identification of herders who are willing to supply cattle to Metagro and the subsequent signature of contracts with those herders.

By 2022, Metagro had hosted 19 events and 152 participants at the Project homestead. As of November 2023, the number rose to 62 events and 728 participants.

Figure 82. Herders attending the First Campaign to support herders. Metagro. April 2023.

6.20 Community Investments

At a corporate level, MCS Group contributes to communities in Khentii aimag and elsewhere through its various community development initiatives such as rehabilitation of public sanitary facilities, waste management and recycling programmes, and revitalisation and restoration of historical and cultural monuments and public spaces, amongst others.

Metagro also has a cooperation agreement with Khentii aimag administration (signed April 2023) to help develop a forest belt of 5km on both sides of the main paved road from the Khentii aimag main gate to aimag centre. There is also an Afforestation MoU (2022) and a cooperation agreement with Kherlen sum (2022).

Metagro has a formal collaborative agreement with Ulziit village dated August 2022, which outlines several support measures and contribution commitments from the Project to the village, including sponsorship of public festivals, donations to the school and vocational training camp, awards for senior farmers, information sessions on animal health, and waste management support.

Metagro has also occasionally provided emergency relief to local people, such as giving feed for the livestock of local herders struggling with an exceptionally harsh winter, assisting with management of animal carcasses in the Ulziit village waste disposal area, and donation of a local ger during a recent fire in spring 2023.

Metagro has reportedly spent nearly 780 million MNT (US$226,000) on community project contributions since June 2022.

6.21 Stakeholder Feedback

(Par. 31) For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation (ICP) process that will build upon the steps outlined above in Consultation and will result in the Affected Communities' informed participation. [...] The client will document the process, in particular the measures taken to avoid or minimise risks to and adverse impacts on the Affected Communities and will inform those affected about how their concerns have been considered.
(Principle 5) The client will take account of, and document, the results of the Stakeholder Engagement process, including any actions agreed resulting from such process.
For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process. The client will tailor its consultation process to: .... and the needs of disadvantaged and vulnerable groups. This process should be free from external manipulation, interference, coercion and intimidation."

(Par. 34) Clients will implement and maintain a procedure for external communications that includes methods to (i) receive and register external communications from the public; (ii) screen and assess the issues raised and determine how to address them; (iii) provide, track, and document responses, if any; and (iv) adjust the management program, as appropriate. [...]
(Exhibit I, page 31) Stakeholder Engagement refers to IFC Performance Standards provisions on external communication, environmental and social information disclosure, participation, informed consultation, and grievance mechanisms.

Based on the findings of the ESIA Scoping Report and the SEP, stakeholders generally perceive Metagro as a highly positive project with the potential to improve local quality of life. For the same reason, Metagro is also under intense scrutiny and pressure to succeed. The Project is seen as a groundbreaking farming-livestock initiative that holds significant potential for socio-economic growth for all of Mongolia, now and for future generations. For many stakeholders, Metagro also holds the promise of raising Mongolia's profile on the world stage. The prevalent attitude is, if MCS Group cannot succeed with this endeavour, no one else will.

A range of stakeholders from governmental authorities to local herders were consulted, as show in the consultant team itinerary of May-June 2023 (**Appendix F**) and in the minutes of stakeholder meetings (**Appendix G**).

Smaller farming operations see Metagro as a world-class model for better farming and livestock practices, from which they can learn and grow. At the same time, they feel threatened by Metagro's ability to gain broad public support through E&S initiatives (particularly community contributions) that small operations cannot afford to emulate but that communities will come to expect.

Metagro is operating in a rural area where people's expectations for benefits and a better quality of life are high. Local communities do not yet see Metagro's broader vision for the agriculture sector and the local/national economy, and cannot yet conceptualise potential adverse impacts and risks. They are currently highly focused on jobs, community development contributions, and donations.

During the scoping site visit, community members in Ulziit expressed their hope that Metagro will offer the village some procurement and small business opportunities (e.g., housing for workers), and will undertake improvements to public services such as the hospital and school, to encourage workers and other people to settle there. The Metagro cattle feedlot and arable farm are established on the former Soviet-era Chandgana collective farm that was set-up by the Government of Mongolia in 1976. The mindset from the Chandgana era may still be deeply ingrained in local communities (i.e., more paternalistic approach to stakeholder

relations). The collective's way of managing relationships may lead to preconceived notions and specific expectations from Metagro.

Aside from the community development investments already undertaken by MCS, requests from local institutions include equipment for the health centre in Ulziit Village and creation of a Women's Development Center (e.g., family counselling) in Chinggis City, and financial support for archaeological works planned by the new museum in Chinggis.

Metagro noted that herders are having some difficulty adjusting to the Project's collaborative concept and working towards common objectives, since herders have traditionally worked independently (unlike former farm collectives). During consultations, local herders have also expressed expectations that Metagro will contribute hay/fodder to help them cope with dwindling pastureland in the area. Herders also said they were supportive of Metagro as a local farming project. They say they are very interested in selling cattle to Metagro if the price is competitive, and are anxious to learn more.

Metagro reported during June 2023 field surveys that there are 18 herders living around or near fields: Field 1 – 11 herders; Field 2 – 5 herders; Field 3 – 2 herders. Selected herders were interviewed during the surveys, as shown below.

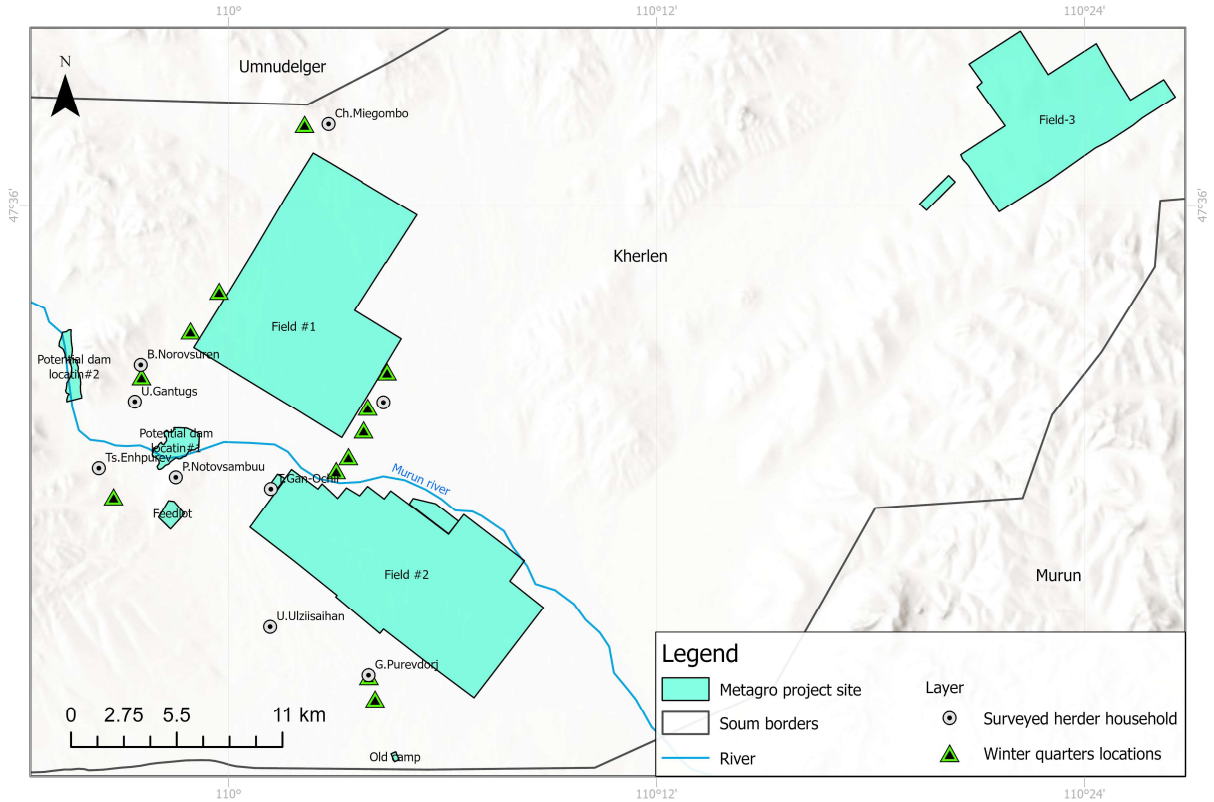

Figure 83. Surveyed herder households and registered winter quarters locations. EcoTrend

7. Environmental and Social Management System Status

(Par. 5) The client, in coordination with other responsible government agencies and third parties as appropriate, will…establish and maintain an Environmental and Social Management System appropriate to the nature and scale of The Project and commensurate with the level of its environmental and social risks and impacts. […]

GN8. A management system that meets the requirements of Performance Standard 1 should be in place at the level of the client's organization where the funds from IFC's investment will be utilised (i.e., at the corporate or at the activity-specific level).

7.1 Current ESMS Development

The purpose of the ESIA is to assess and predict potential adverse social and environmental impacts and risks, and to develop suitable mitigation measures. The IFC standards prescribe the development and implementation of an ESMS for the ongoing management of the impacts and risks identified in the ESIA.

Metagro has committed to implementing an ISO 14001 compliant ESMS for their operations. At present, however, it does not yet have a complete, IFC-aligned Environmental and Social Management System (ESMS), although, it does have some key elements in place. This ESIA identified which ESMS components are in place at Metagro, and which are missing. The missing or incomplete components (based on ESIA findings) are included as action items in the ESAP.

The ESIA team also assessed whether the current ESMS components are generally aligned with IFC standards and good practice, however, this assessment was not as comprehensive or methodical as it would be for an Environmental and Social Due Diligence (ESDD) assessment (different assignment/scope). The comprehensive assessment and ongoing improvement of the ESMS (e.g., as part of self-evaluations and external audits) are prescribed as action items in the ESAP.

Metagro refreshed its self-assessment of its ESMS using the IFC Self-Assessment Tool, as at 1Mar2024. A complete overview of Metagro's current ESMS self-assessment results is given in **Appendix M** and summarised below. According to the results of this exercise, Metagro scored an average of Level 2.9 out of 5 (with Level 5 being the highest possible score). The highest score was for External Communication at Level 4. The lowest score was for Emergency Preparedness and Response at Level 1.8. It is also noted that Metagro have not had an independent assessment of their ESMS to date.

	1. Policy	2. Identification of Risks and Impacts	3. Management Programs	4. Organizational Capacity and Competency	5. Emergency Preparedness and Response	6. Stakeholder Engagement	7. External Communication and Grievance Mechanisms	8. Ongoing Reporting to Affected Communities	9. Monitoring and review
Highest score	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Company Self Assessment Score	2.9	2.3	2.4	2.8	1.8	3.3	4.0	3.7	2.5
Independent Assessment Score	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 84. Results of ESMS Self-Assessment as at March 2024,, Metagro

7.2 E&S Team

Metagro's E&S performance is managed by a Health, Safety and Environment (HSE) unit of three full-time staff and headed by an HSE Manager reporting directly to the CEO. There is currently no social management unit or function in place at Metagro.

Metagro also has an Occupational Health & Safety (OHS) Committee of 11 members, set up in March 2023. Two fire safety groups (8 staff in each group) were formed in October 2023 to help ensure emergency preparedness in case of fire, including steppe fire. All members of fire safety groups are responsible for taking preventive actions, conducting inspections and audits, and delivering training.

Contractor oversight is the purview of the HSE unit, as is Community Safety, Health and Security (CSHS).

Internal HSE monitoring and auditing are done by the MCS Group HSE team (for example, preventive audits for fire safety). MCS Group also audits the OHS and HR functions.

7.3 Reporting to Affected Communities

(Par. 36) The client will provide periodic reports to the Affected Communities that describe progress with implementation of the Project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities and on issues that the consultation process or grievance mechanism have identified as a concern to those Communities. [...] The frequency of these reports will be proportionate to the concerns of Affected Communities but not less than annually.

The Detailed Environmental Impact Assessment report for the 'Irrigated Farming Project' was presented in a General Public Meeting at Nomgon bagh of Kherlen sum, Khentii aimag (August 22, 2023). Approximately 44 residents attended the meeting. Metagro also presents regular reports to the local administrative authorities. Some Project reporting is also undertaken as part of Metagro's ongoing engagement activities with local communities and herders (see Section 8).

7.4 E&S Policies, Procedures and Plans

(Par. 6) The client will establish an overarching policy defining the environmental and social objectives and principles that guide The Project to achieve sound environmental and social performance. [...] The policy will provide a framework for the environmental and social assessment and management process.... {it will specify that the project] ... will comply with the applicable laws and regulations of the jurisdictions in which it is being undertaken, including those laws implementing host country obligations under international law ... [and will] ... be consistent with the principles of the Performance Standards.... The policy will indicate who, within the client's organization, will ensure conformance with the policy and be responsible for its execution... The client will communicate the policy to all levels of its organization.

Most of Metagro's E&S policies, procedures and plans when reviewed in June 2023 were adopted from the MCS Group level. Those at the Project-level include those listed below.

ESG Policy
OHS Policy
Labor policy and procedures
- Code of Ethics
- Code of conduct

- Training and development policy
- Labor and working conditions policy
- Employment policy for employees with disabilities
- Internal labour rules
- Compensation policy
- Garden camp policy
- Office policy
- Work and Life balance procedure
- Allowance policy
- Payroll and benefit procedure

Standard operation procedure on managing grievances
Community grievance management procedure
Community HS management plan
Environmental management plan
M-Agro Environmental Management Plan 2022 and 2023
Waste management procedure
Trip safety procedure
CSHS procedure

- Workplace inspection procedure
- HSE procedure for contractors
- Control of contractor procedure
- Workers medical screening procedure
- Procedure for hazardous job work permits
- Industrial accident investigation procedure
- Fire safety procedure

Emergency preparedness plan
Chemical safety management procedure
Contamination containment plan
OHS standard operating procedures
Cattle feedlot SOP
Cattle biodiversity SOP

Metagro refreshed its self-assessment of its current ESMS using the IFC Self-Assessment Tool on 1Mar2024, as summarised in **Appendix M,** although the in-development ESMS has not been subject to external review.

8. Environmental & Social Impacts, Risks and Mitigations

PS Par. 5) The client, in coordination with other responsible government agencies and third parties as appropriate, will conduct a process of Environmental and Social Assessment.....appropriate to the nature and scale of The Project and commensurate with the level of its environmental and social risks and impacts. [...] (Par. 7) The client will establish and maintain a process for identifying the environmental and social risks and impacts of The Project. [...] The process may comprise a full-scale environmental and social impact assessment, a limited or focused environmental and social assessment, or straightforward application of environmental siting, pollution standards, design criteria, or construction standards. [...] (Par. 19) The process of identification of risks and impacts will consist of an adequate, accurate, and objective evaluation and presentation, prepared by competent professionals. [...]

This section presents the potential E&S impacts and risks of the Project in both construction and operation phases, along with proposed mitigation measures to avoid/address them. The analysis focuses on adverse impacts and their effects, rather than opportunities.

8.1 Area of Influence (AoI)

In determining the likely environmental effects of the Project, a perimeter of 5km around the landholding has been defined, known as the Project Affected Area (PAA) was typically used as the AoI. The PAA encompasses the area where potentially significant environmental impacts may occur considering the physical extent of the proposed works and the nature of the baseline environment. Where a wider AoI was considered this is reported as such.

For example, to determine social impacts and risks, the PAA extends beyond this 5km perimeter to include receptors that could be affected even though they are not in the Project's immediate vicinity, namely: Ulziit village, Kherlen Sum, Murun Sum, and Chinggis City. Ways in which these locations could be affected by the Project are examined further in this section.

8.2 Approach for Impact and Risk Identification and Assessment

The ESIA categorises the significance of Project impacts as follows:

- **Negligible:** The receptor will not be affected in any way by a particular activity or where the predicted effect is deemed to be "imperceptible" or indistinguishable. Change is within the range that is common for the group/area/institution. The community is familiar with the impact.
- **Minor:** The receptor will experience a noticeable effect, but the impact magnitude is minimal or not affected in an observable or quantifiable way, and/or the receptor is of low sensitivity, vulnerability, or importance. Minor change from baseline. Impact is local, rare, affects few groups/people, and/or lasts a short period of time.
- **Moderate:** Potential impacts are less adverse on particular environmental components and/or not irreversible. Medium change from baseline. Substantial area or number of people affected. Impact lasts over the medium term. Change may be occasional and take place at the regional level.
- **Major:** Signifies an effect that is severe and that affects the integrity, diversity and sustainability of the environment. Such an effect substantially or immediately alters the quality of the environment. Major

change that persists over years or creates a lasting impact. Impact may take place at a regional or national level.

This ESIA defines 'impact and risk' as follows:

- **Impact** = Something that will definitely occur as a result of the Project
- **Risk =** Something that might possibly occur as a result of the Project

The ESIA classifies risks based on their **Likelihood** (probability that the risk will occur) and **Consequence** (magnitude of negative effects that the risk will cause if it occurs) and uses the formula *Likelihood x Consequence = Risk Score* to attribute an overall rating.

Risk Likelihood

To pinpoint a risk's Likelihood, the ESIA considers the following indicators:

Table 39. Risk likelihood

Label	Probability	Description
Almost certain	80%~100%	Expected to occur in most circumstances or often
Likely	10%~80%	Probably occur in most circumstances but unlikely to occur often
Possible	1%~10%	Might occur at some time, unlikely to occur
Unlikely	0.1%~1%	Unlikely to occur but should be considered as possible
Rare	< 0.1%	So extremely remote that it should not be considered as possible except in exceptional circumstances.

Risk Consequence

To assess a risk's Consequence, the ESIA considers the following indicators:

- **Intensity** (level of disruption to the environmental or social receptor):
  - Low: No or minimal change
  - Average: Noticeable change;
  - High: Significant change to the environment
- **Duration:**
  - Short term: the effect disappears promptly
  - Temporary: for a limited time only
  - Permanent: lasting throughout the life of the Project or its component
- **Spatial extent** (distance and area covered by the disruption):
  - Limited (within Project site)
  - Local
  - Regional
- **Harm to people:**
  - Minor: inconvenience / minor injuries and incapacitation
  - Moderate: severe injuries
  - Major: fatality and multiple severe injuries
  - Catastrophic: multiple fatalities
- **Remediation requirements** (delays and costs to the Project)**:**
  - Minor: Delay of less than a day, < $100,000 to remediate
  - Moderate: Delay of 1 day to 1 week, $100,000 - $1 million to remediate
  - Major: Delay of 1 week to 1 month, $1 million - $10 million to remediate
  - Catastrophic: Delay of more than 1 month, over $10 million to remediate

Risk Scoring

Once the levels of Likelihood and Consequence are determined, the ESIA scores the overall level of each risk using the following table and the formula shown below:

Table 40. Risk scoring approach

Likelihood		Consequence				
Level		1	2	3	4	5
		Slight	Low	Medium	High	Extreme
5	Almost Certain	Medium	High	High	Very High	Very High
4	Likely	Medium	Medium	High	High	Very High
3	Possible	Low	Medium	Medium	High	High
2	Unlikely	Low	Low	Medium	Medium	High
1	Rare	Low	Low	Low	Medium	High

Likelihood x Consequence = Risk Score	
Very High	Score 20-25
High	Score 10-16
Medium	Score 5-9
Low	Score 0-4

Mitigation of Impacts and Risks

Once impacts and risks are identified and assessed, the ESIA proposes measures to address them based on the Mitigation Hierarchy shown below. Mitigation measures focus on either reducing the likelihood of occurrence or on decreasing the magnitude of the consequences to reduce the residual risk to a level acceptable to stakeholders and Project proponents.

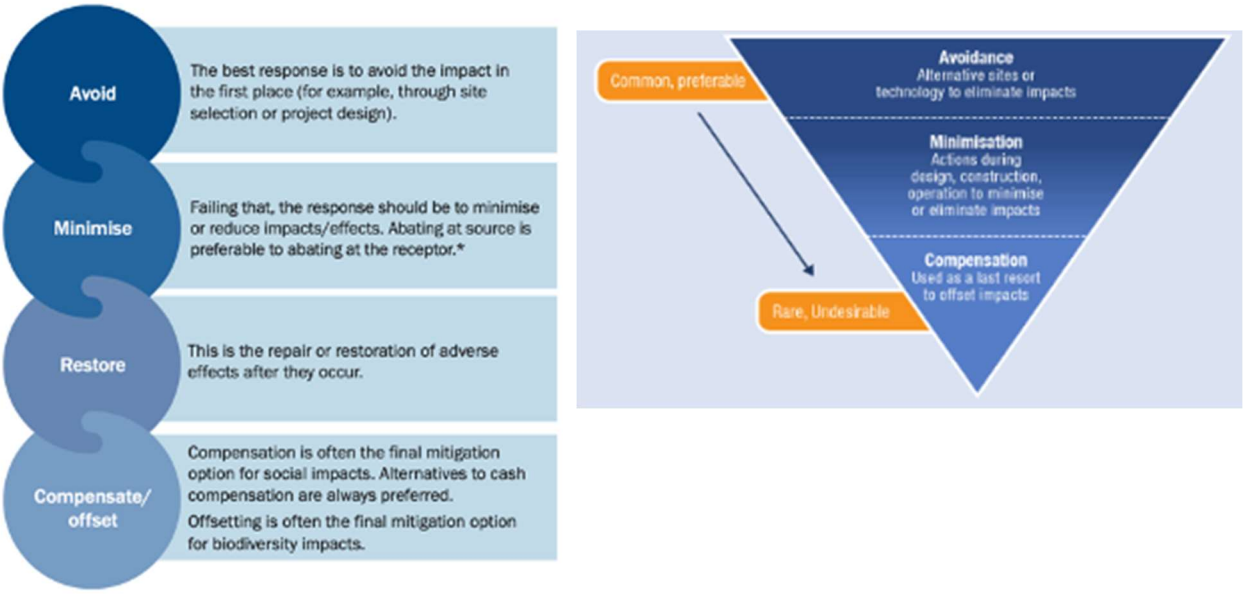

Figure 85. The risk mitigation hierarchy

8.3 Impact and Risk Identification and Assessment

This section describes the Project's E&S risks during the construction and operational phases. Each identified risk is assigned a score based on its likelihood and consequence. The table below presents the Project's overall E&S risk score, based on the likelihood and consequence of each identified risk category. Only risks with a score of Medium, High and Very High are considered for mitigation and monitoring in the Management Plan (**Section 10**). They are described and analysed more extensively further in this section.

Table 41. Rating of risks identified in Metagro operations, prior to mitigation

Likelihood		**Consequence**				
Level		**1**	**2**	**3**	**4**	**5**
		Slight	**Low**	**Medium**	**High**	**Extreme**
5	**Almost Certain**					
4	**Likely**			**Hazardous Materials & Waste Management** **Benefits sharing**	**Water Resources** **Traffic and Transport** **Biodiversity**	
3	**Possible**		**Air Quality**	**Occupational & Community Health & Safety** **Climate Change** **Animal Welfare, Health and Food Security** **Worker Influx / Local Hiring** **Local Agriculture Sector Competition**	**Supply Chain** **Stakeholder Management** **Grievance Management**	
2	**Unlikely**	**Noise and Vibration**			**Geology and Soils** **Security & Human Rights**	
1	**Rare**					

8.4 Geology and Soils

There is negligible perceived risk to the underlying geology from Metagro's operations.

The soils at the site are sandy, well drained, and there are thus two prevalent risks:

- soil erosion by aeolian action in a windy setting, through causes such as poor farming practices, soil desiccation and loss or removal of soil cover
- soil contamination from inappropriate use or handing or application of hazardous materials, especially agrochemicals.

Metagro is strongly focused on enhancing the soil quality and condition at the site and intends to make use of the latest soil and carbon conservation methods. The company is using no-till farming which is an

agricultural technique for growing crops without disturbing the soil through tillage. No-till farming decreases the amount of soil erosion tillage causes in certain soils, especially in sandy and dry soils. Other possible benefits include an increase in the amount of water that infiltrates into the soil, soil retention of organic matter, and nutrient cycling. These methods may increase the amount and variety of life in and on the soil and are expected to be beneficial in an area with very limited rainfall and light soils. Moreover, it reduces greenhouse gas emission.

To reduce the threat from wind erosion, Metagro is creating buffers by extensive planting schemes around all the perimeters of its fields.

Metagro is also implementing good practice standards in hazardous materials management, which will reduce the risk of inadvertent soil contamination.

It is therefore considered that robust steps are being implemented by Metagro with respect to this potential risk and the mitigation measure below meets the GlobalG.A.P. Integrated Farm Assurance Smart principles and criteria for soil and substrate management.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Unlikely**
Consequence	**High**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks to geology and soils are:

Table 42. Mitigation measures for the potential impacts and risks to geology and soils

Mitigation ID	Mitigation Measure
GS-1	Development of a **Soil Conservation and Management Plan** for Operation for preventing physical and chemical degradation of soils, such as pollution, erosion or compaction from agricultural activities. The Management Plan will include monitoring of soil erosion annually (tons per hectare per year) based on topography and slope; ground cover; exposed and bare soil.

8.5 Water Resources

The threat to water resources has been considered to be a major Project risk due to:

- the possible implementation of widespread groundwater abstraction and'/or damming of the Murun River to provide large quantities of irrigation water to Metagro Farm.
- the potential contamination of surface waters (the Murun River and nearby ponds / water bodies / springs) and also shallow groundwater by agricultural chemicals, and by effluents and wastewaters from the livestock operations.
- the presence of multiple very shallow community wells in the vicinity of Metagro Farm (and a total of 72 wells recorded in the Ulziit community database) as well as the regular use of the Murun river for livestock watering. This emphasises that there are multiple highly sensitive receptors to any degradation in quality or quantity of water or groundwater.

Metagro is currently operating a 100 ha trial plot of centre-pivot irrigation and is continuing to evaluate options for extending agricultural irrigation across parts of its landholdings to improve crop yields. Indeed the availability of groundwater and surface water resources was an important consideration in choosing to site the operations on the former Chandgana Farm in Khentii. Detailed technical studies have been performed to determine available water resources, and very large water volumes of 5.9Mm^3/yr (annual abstraction) and 38Mm^3/yr (groundwater resource) are mentioned; but at the present time it is not clear that these studies have

1. Established the long-term sustainable / replenishable groundwater resource
2. Considered the large network of community wells, or the potential community impact of any future groundwater level declines

However prior studies and reviews were based on the understanding that Metagro may be contemplating the irrigation of many thousands of hectares; and indeed many of their business presentations and the technical reports have been focused on the maximum availability of water resources. To clarify this matter, in email correspondence on 25 & 26 January and 1 March 2024, Metagro confirmed that it is only planning to expand irrigation capacity to 400ha per the general layout below, for the foreseeable future until at least 2027.

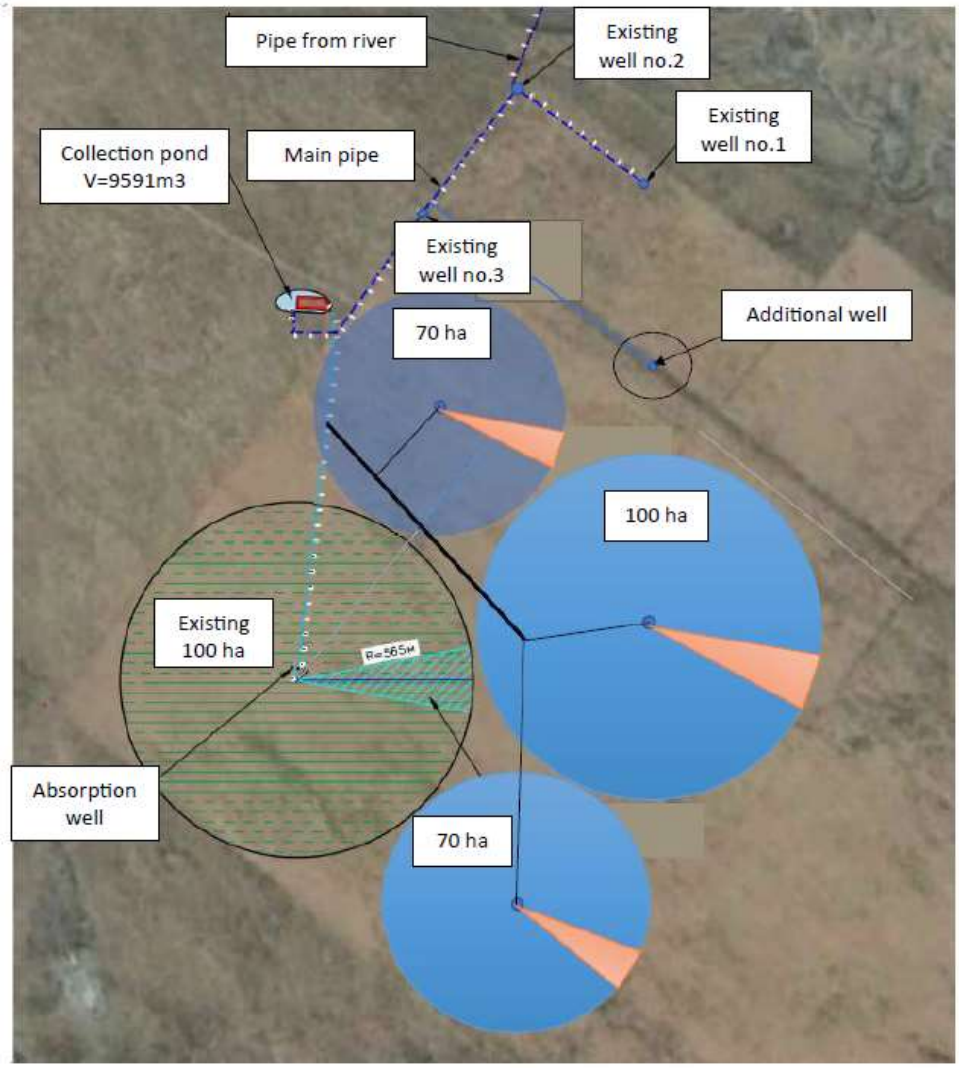

Figure 86. Metagro's planned irrigation expansion to 400ha

It is the EBRD that is leading the studies and business case to evaluate damming of the Murun river for surface water supply, and whilst Metagro would be the primary beneficiary of this scheme the risk mitigations for this project are considered to be the responsibility of the EBRD. As of February 2024, there is no update on whether this proposed dam may proceed – but given the recently confirmed much reduced irrigation water ambitions of Metagro, the business case for this dam no longer seems credible.

With respect to the potential for the pollution of groundwater and surface water, Metagro is using good international industry practice in the design of its facilities and infrastructure including typical waste handling and waste management safeguards. Nevertheless robust monitoring and compliance testing should be implemented to provide appropriate safeguards. In particular, indicative agrochemicals should be tested in groundwater and surface waters to provide assurance that Metagro is not impacting these sensitive receptors.

Impact and Risk Assessment

Impact Significance	**Major**
Likelihood	**Likely**
Consequence	**High**
Risk without Mitigation	**High**
Risk after Mitigation	**Medium**

Mitigation

The mitigation measures for the potential impacts and risks to water resources are:

Table 43. Mitigation measures for the potential impacts and risks to water resources

Mitigation ID	Mitigation Measure
WR-1	The development of a **Water Resources Sustainability Review** report through appropriate technical and field studies to derive the sustainably available irrigation water supply available to the project. This will include: • a computation groundwater model to assess localised aquifer drawdown • water usage minimisation options • irrigation technologies review with respect to water conservation • water recycling and reuse options
WR-2	A **Groundwater Management Programme** will be developed for the Project, to include: • annual follow up on groundwater pumping rates from the different abstractions • groundwater levels monitored and reported monthly to notice any unexpected changes in the groundwater levels in each abstraction • groundwater quality and possible changes in the quality in the Project area reported • regular checks to identify and detect any leakage along the main water distribution lines. The outcome of the programme shall be an annual or biannual review report discussing at least: • groundwater level changes in different pumping areas • amount of water pumped from each borehole • report on water usage (drinking water, irrigation etc.); and • groundwater quality in the Project area, focusing on possible changes in

	groundwater quality.
WR-3	A **Groundwater and Surface Water Quality Monitoring Plan** to include: • Groundwater and surface water quality monitoring shall be carried out at representative sampling locations, including the most at-risk community water wells, the Murun River, and other at-risk surface water bodies. • The following parameters will be monitored in all samples; pH, EC, Cl, NO3, NH4, odour, colour, turbidity, indicative agrochemicals, indicative hydrocarbons Waters will be sampled at least annually.
WR-4	The **irrigated area will not exceed 400ha**, as stated by Metagro in correspondence 25 & 26Jan24 & 1Feb24. Any further expansion will need to be explicitly authorised by IFC and will be dependent on the findings of the Water Resources Sustainability Review, Groundwater Management Programme, and Groundwater and Surface Water Quality Monitoring Programme, above

8.6 Climate Change and GHGs (Operation Only)

Par 5. The client, in coordination with other responsible government agencies and third parties as appropriate, will conduct a process of environmental and social assessment [...]

Par 7. The client will establish and maintain a process for identifying the environmental and social risks and impacts of the project [...] The risks and impacts identification process will consider the emissions of greenhouse gases, the relevant risks associated with a changing climate and the adaptation opportunities, and potential transboundary effects, such as pollution of air, or use or pollution of international waterways.

GN19 [...] including any changes anticipated to occur in the foreseeable future (including projected variability in climatic and environmental conditions due to potentially significant climate change or that would require adaptation measures that could occur over the life of the project.

GN32. Changing weather patterns due to climate change, including climate variability and extremes, may affect projects in a variety of ways [...] potential effects associated with change in climatic conditions are related to possible changing patterns in demand for goods and services provided by the projects to be financed.

GN33. A project's vulnerability to climate change and its potential to increase the vulnerability of ecosystems and communities to climate change should dictate the extent of climate change considerations in the risks and impacts identification process [...]

GN34. Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts and is located in an area of recognised climate risk, the client should consider incorporating certain aspects related to climate into its baseline analyses, using climatologic data and accounting for projected variability in climatic and environmental conditions that could occur over the life of the project. The client should use the most current climatologic data in the design of project's infrastructure, and for other relevant studies, such as, for example, pollutant fate and transport models, and water resources impact studies.

GN35. Specific identification of risks associated with climate change should be conducted for projects located in recognised climate sensitive areas [...]The identification process should (i) identify potential direct and indirect climate-related adverse effects that may affect the project during its life-cycle, (ii) identify potential direct and indirect climate-related adverse effects that may be exacerbated by the project, and (iii) define monitoring program and mitigation and adaptation measures, as appropriate

Par 7. [...] the client will consider alternatives and implement technically and financially feasible and cost-effective options to reduce project related GHG emissions during the design and operation of the project [...]

Par 8. For projects that are expected to or currently produce more than 25,000 tonnes of CO2-equivalent annually, the client will quantify direct emissions from the facilities owned or controlled within the physical project boundary, as well as indirect emissions associated with the off-site production of energy used by the project [...]

GN22 of GN 6 states that the client will not intentionally introduce any new alien species (not currently established in the country or region of the project) unless this is carried out in accordance with the existing regulatory framework for such introduction. Notwithstanding the above, the client will not deliberately introduce any alien species with a high risk of invasive behaviour regardless of whether such introductions are permitted under the existing regulatory framework. GN23 of GN 6 states that where alien species are already established in the country or region of the proposed project, the client will exercise diligence in not spreading them into areas in which they have not already been established. GN100 requires that the introduction of any alien species as part of the client's operations should be assessed for compliance with the existing host country regulatory framework for such introductions.

GN101 requires that clients should take all preventive measures designed to reduce the risk of transportation or transmission of invasive alien plant or animal species, pests, and pathogens through their activities. In areas where invasive species are known to pose a significant risk to Natural and Critical Habitats, surveys and reviews for such invasive species should be included in the client's pre-construction baseline, and the potential spread of such species should be monitored throughout the life of the project. In these situations, a dedicated MP should be developed (for example, Invasive Species, Pests, and Pathogens MP).

GN103 states that with respect to the international shipping of goods and services, clients are expected to comply with appropriate obligations developed in the framework of the International Convention for the Control and Management of Ships' Ballast Water and Sediments Convention (the Ballast Water Management Convention).

GN104 states that in many cases, invasive species will have already been established in the region in which the project is located prior to the project being initiated. In these cases, the client is responsible for taking measures to prevent the species from further spreading into areas in which it has not already been established. The situation should be monitored as part of the overall ESMS, and the client should seek effective mitigation measures in coordination with local and national authorities.

The principal risks associated climate change during the operational phase are tied to the climatic physical risks, primarily relating to shifts in the temperature and rain patterns, including droughts, floods, and other natural disasters, possibly affecting agricultural productivity, animal welfare and the availability of water and energy.

Risks

- The climatic projections expect extreme weather conditions to worsen as a result of climate change, including: higher temperatures, more intense storms, less predictable rainfall and snowfall patterns, more pronounced droughts.
- The agriculture sector is very sensitive to changes in climatic conditions, with heat stress being a major reason for decreased agricultural productivity and yield. The rising temperatures present a range of risks, including greater soil desiccation and resultant vulnerability to loss of soil cover by wind erosion; increased parasites and pathogens, such as ticks, which warmer climate could help survive more easily and expand their range; the introduction of invasive species to the area.
- Increased temperatures in the project area also increase the risks of droughts and wildfires. The Khentii region of Mongolia has been reported to be at risks of these natural hazards in historical periods with projections for increases in the future (World Bank, 2023). This creates increasing threat of loss of crops, reduction of soil fertility, death of livestock, and damage to farm facilities.
- Increase in intense precipitation events exacerbates the risk of flooding, though it is noted that Metagro's main fields and operational areas are outside the immediate flood zone of the Murun River.

- Increase in storm intensity including strong winds and dzud in the project location increases the risk of crop and livestock loss. Dzud will directly impact the availability and quality of livestock feed, cause crop losses and increase livestock mortality rates.
- There is also a general risk of commodity price increases due to crops and animal losses suffered from droughts, floods, reduced agriculture yield, increased insurance premium and cost of labour, all of which would increase cost of production and negatively impact profit margins.

Metagro's team of agronomists and advisors are fully aware of the importance of maintaining agricultural productivity for the long-term, including consideration of climate change impacts. Detailed soil conservation, soil improvement and soil moisture retention strategies are included in their multi-year planning horizon.

Implementation of climate-related mitigation measures will also contribute to the reduction of GHG emissions in the operational phase of the project.

Metagro has also presented documents highlighting strategies to reduce 20,899 tons of CH_4 emissions over the next 10 years of the project's operation. However, it has not yet conducted a current and future baseline GHG emission study of the project site to benchmark this reduction against.

The identified mitigation measures will enable the GlobalG.A.P. Integrated Farm Assurance Smart principles and criteria for Greenhouse gases and climate change and Energy efficiency to be met.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks of climate change are:

Table 44. Mitigation measures for the potential impacts and risks of climate change

Mitigation ID	Mitigation Measure
CC-1	During the operation phase, good agricultural practices such as the **no-tillage technique**, crop rotation, planting of cover crops, will all be employed to enable proper soil management and preserve soil quality, whilst also boosting agricultural yield and allowing for adequate supply of livestock feed.
CC-2	The use of **adaptive and resistant crops** will be considered as they are more vibrant and resilient to unfavourable climatic conditions and pests, thereby requiring fewer pesticides, herbicides, and fertilisers.
CC-3	Periodic **biodiversity monitoring** will be conducted to provide insight into the current biodiversity and monitor any changes to detect the presence of invasive species early on and any pest, parasite, or disease they could introduce to the project site.
CC-4	Development of an **Emergency Preparedness and Response Plan**, see action OHS-3
CC-5	Metagro will conduct a **baseline GHG emission study** to quantify and estimate its emissions. It will develop a GHG quantification methodology and reporting framework to

	handle resource efficiency and track its emissions, and prepare Quarterly and Annual GHG emissions reports to track progress and set targets.
CC-6	For the reduction of business GHG emissions, **energy saving strategies** will be reviewed through monitoring of energy use and evaluation of renewable energy sources such as solar / wind / on-site biogas, and adoption of fuel-efficient farming practices.

8.7 Air Quality

Construction machinery, diesel generators and Project vehicles release exhaust emissions containing carbon monoxide (CO), sulphur dioxide (SO_2), oxides of nitrogen (NOx), and particulate matter (PM). These emissions can deteriorate the ambient air quality in the Project site, along the roads leading to it, as well as the nearest settlements.

Construction activities are a source of temporary potential air quality impacts, primarily from activities including earth excavation, site clearance, and vehicle transit on unsealed roads. However, risks related to an increase in the levels of gaseous pollutants and particulate matter during the construction phase will be restricted within the project boundary, limited to the construction areas and its periphery.

As existing transport infrastructure consists primarily of unsurfaced roads and tracks around the farm, dust emissions in a dry climate on sandy soils are an on-going threat to air quality. The level and distribution of dust emissions will vary depending on duration and location of activity, weather/wind conditions, effectiveness of suppression measures but is unlikely to cause widespread changes to local air quality.

Based on the IAQM Guidance (2014), the magnitude of impacts to air quality from construction-related activities and traffic operations is negligible if human receptors are located more than 100m from the road. Local gers (nomadic herder housing) are generally not adjacent to the farm track, and also can be ready relocated slightly if issues occur. The nearest main human population is Ulziit village which is 3km from the nearest field boundary and >10km distant from the cattle feedlot operations, so outside any area of concern.

Air quality risks during the operational phase will come from the 5,000-head cattle farm, as a source of gaseous emissions mainly consisting of ammonia due to manure/animal waste. Ammonia and other odours may be generated primarily due to denitrification of manure and can be released directly into the atmosphere at any stage of the manure handling process. Sensitive receptors are Metagro staff/homestead residents and farm workers directly involved in the daily farm operations.

- These operation phase air quality impacts are expected to be of low risk, localised, and confined to the Project site. This negative impact is of low significance and can be minimised with mitigation.

Impact and Risk Assessment

Impact Significance	**Minor**
Likelihood	**Possible**
Consequence	**Low**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks to ambient air quality are:

Table 45. Mitigation measures for potential impacts and risks to ambient quality

Mitigation ID	Mitigation Measure

AQ-1	An **Air Quality Management Plan** will be developed and implemented to minimise emissions from construction and operation activities, including odours from the cattle feedlot operations, and dust from site wide operations and vehicle movements on dirt tracks Specific mitigation measures to be included in the dust management component, may include: • Operational controls on manure spreading to minimise generation of odour • dust suppressant water sprays on unpaved roads • clean and maintain a sufficient level of humidity in pens and livestock yards • reduce fugitive dust by minimising surface areas with exposed soil surfaces, and by planting hedges or erecting fences to minimise wind turbulence

8.8 Noise and Vibration

The environmental impact anticipated in the project is the increment in ambient noise level due to various project activities. The static sources of this impact during site preparation and construction include construction equipment such as concrete mixers, generators, pumps, and other heavy machinery. It is expected that construction activities will involve noise generation ranging from 90 dB(A) to 120 dB(A) [33]. Vehicle movements may generate nuisance level noise emissions. Given that noise from road traffic areas is currently low and negligible at night, increased traffic level and associated noise levels are likely to result in infrequent and short duration nuisance noise impacts. This is a short-term impact felt mostly around the construction site and its peripherals. Workers in close proximity to machines are the main sensitive receptors and are prone to exposure to high levels of noise of machinery. This may result in annoyance, fatigue, temporary shift of threshold limit of hearing, permanent loss of hearing, and hypertension.

The levels of noise and vibrations are anticipated to be within tolerable limits, short term and localised. The sound pressure level generated by a noise source decreases with increasing distance from the source due to wave divergence. In view of the above and the fact that construction will be 3km away from the nearest settlement, noise impacts to human residential receptors are estimated to be negligible during the construction phase of the Project and can be highly mitigated.

Off-site noise generation during the operation phase will come from transport vehicles and haulage services. Therefore, impact in terms of increment in ambient noise and vibration level is not anticipated during this phase.

The nature of the project is not associated with the generation of disturbing noise and/or vibration.

Potential environmental impacts related to noise and vibration during the construction and operational phase is classified as of minor significance as it will have minimal to negligible effects to human and environmental receptors.

Impact and Risk Assessment

Impact Significance	**Minor**
Likelihood	**Unlikely**
Consequence	**Slight**
Risk without Mitigation	**Low**

33 ANSI (2018). https://blog.ansi.org/2018/10/how-loud-is-construction-site-noise/#gref

Mitigation

No additional mitigations measures for the potential impacts and risks of noise and vibration are considered necessary.

8.9 Traffic and Road Safety

Traffic and road safety will be affected by various Project-related activities during the construction and operational phases. Appropriate steps are required to minimise the risks to road users, to communities, to livestock herds, to transportation drivers, and to the reputational image of Metagro from traffic and transport incidents, as discussed in more detail in the separate report in **Appendix K**.

A Traffic Management Plan has been prepared for the Metagro site but there are some gaps in provision which may result in detrimental road safety performance.

An indicative plan has been developed identifying traffic management arrangements around the farm buildings at the farm site. This includes the identification of pedestrian crossing areas and a 10kph posted speed limit.

The number of vehicle movements to and from the Metagro site are unknown, It is assumed as operations expand the number of vehicle movements will increase. Existing access arrangements to the site location are substandard with poor advanced destination signage on the Eastern Highway. In addition, access to the Metagro site is achieved through a 16km section of unpaved track. The routing of vehicle operations through an unpaved road section is likely to result in challenges to road safety, vehicle reliability, infrastructure constraints and delays in distribution operations. Added vehicles on local roads pose a risk to herder livestock that graze freely in pastureland surrounding the Project.

Distribution vehicles operating from Metagro site and travelling to and from Ulaanbaatar have been out-sourced to a private company through a tender process. The tender has stipulated requirements for vehicle provision, driver experience, insurances and other areas of operation. Vehicle checks have been identified, route planning, journey time and driver rest requirements are absent.

Farmers vehicles are expected to frequent the site as they deliver livestock to the farm operation site. Farmers vehicles will not operate under the same conditions as Metagro vehicles which are tracked with GPS, nor will they be under the same requirements of tendered contractor vehicles. The absence of constraints on driver behaviour may result in speeding and failure to comply with other rules relating to road safety applied to other road users. This may result in an increased likelihood of conflicts to the detriment of road safety

There is no information provided to suggest that vehicle operations are continuously monitored and actions are taken to address undesirable behaviour and actions.

Impact and Risk Assessment

Impact Significance	**Major**
Likelihood	**Likely**
Consequence	**High**
Risk without Mitigation	**High**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks to traffic and road safety are:

Table 46. Mitigation measures for the potential impacts and risks to traffic and road safety

Mitigation ID	Mitigation Measure
TR-1	Collect and analyse **traffic count and speed related information** on the Eastern Highway and analyse turning numbers into and out of the unpaved track. The assessment of the collected information will help to determine what is required to promote improved safety of turning movements to and from the public highway to the unpaved access road. Based upon the timeline of operations at the site location and the number of predicted vehicle movements, **upgrade the unpaved track** accordingly. As a minimum, a 50m section of the access track to the public highway will be paved to ease turning movements to and from the public highway and to reduce the likelihood of dirt and debris from the unpaved track being drawn onto the public highway. Review measures to **improve safety and maintenance on the access track**. This may include the addition of signage to warn of adverse vertical and horizontal geometry, posted speed limits, and delineators to mark the edge of carriageway. The retention of an unpaved carriageway will necessitate a programme of dust control, pothole filling, sign review and replacement, drainage control.
TR-2	A **comprehensive process for vehicle checks** is recommended for drivers to complete before commencing their journeys. It is important that **driver time is managed** to ensure excessive driving hours and speeding do not occur. As part of the journey route planning, designated stops will be identified for driver rest. Stops will be located where vehicle and personal safety is maximised and access to facilities such as food and rest areas can be obtained. Drivers will not drive for more than 4.5hrs before taking a rest break. Driver time and completion of journeys will be managed to ensure drivers are not under pressure to speed.
TR-3	Develop a form outlining the **requirements required for driving** within the roads under control of Metagro, to supplement its vehicle inspection checklist. This shall be signed by all drivers entering the Metagro site area. The content of the form will identify various requirements which drivers shall adhere to including speed limit compliance, seat belt wearing, use of well-maintained vehicles and no phone use whilst driving. Failure to abide to the regulations may result in exclusion from driving within the Metagro site.
TR-4	Further develop the **Traffic Management Plan**. It will include as a minimum: • Identification of **high risk sites** along the route. These are likely to include schools, hospitals and other sites which generate a high number of vulnerable road users and vehicle movements. Where possible distribution vehicle journeys will be scheduled to avoid peak traffic movements at these site locations. • Create **Driver Briefing Meetings**, recommended to be completed weekly or more frequently as necessary Full implementation of the Metagro's vehicle policy Distribution vehicles to keep to agreed access routes, minimise risk and disruption to project affected communities and other road users and adhere to speed limits.
TR-5	Further develop the **Traffic Management Plan** ensuring measures are in place to achieve the posted speed limits. This may necessitate the introduction of physical traffic calming or strict enforcement. Speed limits are generally not self-enforcing. Manage traffic routes around the camp so that where possible road traffic and vulnerable road users are separated. This may be achieved through the introduction

	of one way sections of road.
TR-6	Develop and implement a programme of **continual monitoring of transport operation** and public liaison. Implement mitigating measures and change policy where necessary to improve road safety performance. All accidents shall be reported and investigated to ensure measures are undertaken to reduce the likelihood of reoccurrence.

8.10 Biodiversity

PS 6 requires the Project to apply GIIP to the protection and conservation of biodiversity and ecosystem services; and to promote the sustainable management of living natural resources through the integration of conservation needs and development priorities into project design and implementation. GN 6 sets out specific expectations regarding the approach and methods to be adopted in meeting the requirements of PS 6 and specifies key Critical Habitats thresholds. PS 6, also reflects back on PS1 regarding the fundamental importance of a robust Environmental and Social Impact Assessment process to provide the information needed to enable conservation needs to be integrated with project design, construction, and operation.

PS 6 specifically outlines (Paragraphs 6 and 7) requirements to understand direct and indirect project-related impacts on biodiversity and ecosystem services. It also refers to the mitigation hierarchy and the need to seek to **avoid adverse impacts** before other steps in the hierarchy (**impact reduction, mitigation, restoration and offset**) are applied. PS 6 also accepts that predicting long term impacts on biodiversity is challenging and therefore advocates the use of **adaptive management practices** that can respond to changing conditions and the results of monitoring to achieve its objectives. Biodiversity management is to be integrated into the project ESMS through the use of appropriate biodiversity management and monitoring plans.

PS6 also requires an assessment to be carried out to determine whether the project could affect Natural or Critical Habitats. GN 6 specifies the thresholds that must be used to complete this assessment and the requirements that follow if presence of Natural or Critical Habitats is confirmed. Should a project be located within or have the potential to affect Natural or Critical Habitat, project-related direct and indirect impacts must be considered "*across the potentially affected landscape or seascape*". A No Net Loss (NNL) outcome is required for Natural Habitat affected by the project and a Net Gain (NG) outcome for all features with Critical Habitat affected by the project, whether directly or indirectly.

The Critical Habitat Assessment concluded that critical habitat is triggered under criterion 1 for the Mongolian marmot (*Marmota sibirica*).

In addition, the biodiversity field surveys also found the following species that did not trigger CH but that were present and thus impacts upon them need to be mitigated during this assessment; Mongolian gazelle (*Procapra gutturosa*), Bradt's vole (*Lasiopodomys brandtii*), red fox (*Vulpes vulpes*), Mongolian toad (*Strauchbufo raddei*), and over 40 different species of bird.

Potential impacts during construction include:

- Loss of modified habitat to the project footprint
- Fragmentation of habitat due to new access roads being developed or fencing on site
- Threat of injury or impalement of large wildlife, as well as to herder livestock, from extensive barbed wire fencing
- Human-wildlife conflict due to increased workers on site
- Collisions of wildlife with construction traffic

- Accidental introduction/spread of invasive non-native species during construction activities

Potential impacts during operation:

- Fragmentation of habitat due to new access roads and fencing on site
- Threat of injury or impalement of large wildlife, as well as to herder livestock, from extensive barbed wire fencing
- Damage to flora and fauna and to freshwater habitats from the inappropriate use of agrochemicals
- Eutrophication of the local Murun river from increased levels of nutrients due to fertiliser run-off
- Disturbance of fauna due to the introduction of new animals on site
- Alien invasive species or bacteria may be introduced to the local environment via the livestock operations
- Accidental introduction/spread of invasive non-native species with fodder imports
- Collisions of wildlife with traffic
- Increase of potential carrion from deceased livestock and local wildlife dietary changes and potential health risk of contact with pharmaceuticals. Carrion supply can increase presence of carrion birds in the site area, however live cattle specimens are unlikely to be predated by raptors given the minimum size and weight of the minimum 18 month old cattle being raised is too large to be suitable live prey. There are no current known plans to birth calves at the site or raise cattle younger than 18 months.
- Transmission risk of zoonotic diseases between livestock and native wildlife
- Existing transmission lines and the risk to avifauna collisions, especially the steppe eagle (*Aquila nipalensis*) which is known to be vulnerable to transmission line collisions and electrocution

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Likely**
Consequence	**High**
Risk without Mitigation	**High**
Risk after Mitigation	**Low**

Mitigation

Construction works will adopt Good Industry Practice (GIP) and apply the mitigation hierarchy to avoid and reduce impacts. GIP includes generic measures that are not necessarily species or feature specific and will be adopted as on site whether a relevant feature is present or not e.g., the timing of works to avoid impacts to nesting birds or the availability of spill kits, particularly near watercourses.

Certain measures have been included as part of the design of the proposed Project, referred to as embedded mitigation, to avoid or reduce impacts to features of ecological value. As part of the design, they are project commitments and therefore all impacts will be assessed based on their inclusion. The embedded mitigation measures include:

- Prioritise the siting of temporary construction facilities on already degraded modified habitat.
- Expand footprint of existing cattle feedlot facility

Biodiversity GIP will be managed by a suitably trained and experienced person (SQEP), with knowledge of local biodiversity, relevant biodiversity legislation, the practical elements of ecology, including handling of species and the identification of sensitive species and habitats, and will also have a working understanding of wider environmental issues and the construction/engineering process. The SQEP will be employed by Metagro to assist in the implementation of the mitigation measures outlined in Table 47 below. The SQEP will undertake tasks such as pre-clearance surveys for sensitive biodiversity receptors and support on delivery of the mitigation measures below.

The mitigation measures for the potential impacts and risks to biodiversity identified for the Project are listed in Table 47 below and are considered sufficient to achieve a no net loss for the biodiversity features anticipated to be impacted. Specific consideration for the critical habitat trigger species and the requirement of a net gain is to be addressed through additional conservation actions within a Biodiversity Action Plan (BAP) as proportional to the low residual impact assessed for the trigger.

Ecosystem Services

Priority ecosystem services relevant to the Project are water regulation and livestock grazing.

Regarding water regulation, the vegetation native to the steppe grassland will play an important role in regulating waterflow, reducing erosion and maintaining moisture in soil composition, which in turn will play an important role in maintain water quality downstream for local community users. As Section 5.4.3 above explains, there are at least 72 community water wells, 10 ponds / surface water bodies and 9 springs listed in the local Ulziit Community Database in proximity to the Metagro site. The Project could impact water regulation and quality two ways: either through agrochemical use or through over water extraction. Section 8.11 describes a range of Hazardous Waste mitigation measures, which if applied effectively, would take the associated risk from agrochemical use on this ecosystem service down to low. Table 43 “Mitigation measures for the potential impacts and risks to water resources” outlines a number of additional measures that will reduce impacts from water extraction.

Regarding livestock grazing, as Section 6.4 explains, the surrounding area is used by nomadic livestock herders, approximately a dozen herder gers (traditional tent-like dwellings) in the Project’s immediate vicinity, depending on the season, as nomadic herders move between their summer camps and winter camps. There are no significant impacts identified from Project activities upon the grassland areas that these livestock graze. In fact Metagro’s feedlot business model is predicted to potentially reduce pasture burden by decreasing the number of cattle freely grazing and shortening their fodder-dependent lifetime; since Metagro will be feeding ~18month old cattle for 3-6 months prior to harvesting, versus the typical nomadic herder practice of grazing their cattle for 4-6 years.

The specific mitigation measures proposed will also meet the requirements of the GlobalG.A.P. principles for Biodiversity and Habitats.

Table 47. Mitigation measures for the potential impacts and risks to biodiversity

Mitigation ID	Mitigation Measure
BI-1	Develop a **Biodiversity Action Plan (BAP)** and a resulting **Biodiversity Monitoringe and Management Plan** (BMMP). The BAP will include appropriate expertise and surveys to assess and safeguard the habitats of the one species which triggers critical habitat for the Project: Mongolian marmot (*Marmota sibirica*). Additional conservation actions proportionate to the residual impact on the species may include financial support of species monitoring initiatives or awareness raising with local communities/local authorities around poaching and hunting pressures to help avoid/reduce species overexploitation.

BI-2	The construction and operation workforce will be trained in **biodiversity management requirements**, including • how to recognise, notify and report, and avoid impacts to sensitive habitats and species where these are present. • movement of construction and operation transport vehicles on dedicated paths to minimise any harm to small fauna within the site
BI-3	**Use of non-barbed wire** in future and replacement perimeter fencing • In the operational phase of the Project, monitoring of newly installed fencelines must take place to assess risk to wildlife and any recording harm, significant injury, or mortality. Fencing design must be adjusted if regular significant harm to wild species occurs based on this data collected.
BI-4	Develop an **Invasive Species Management Plan.** Whilst no invasive non-native species (INNS) were recorded during the field surveys, the potential INNS introduction/spread risk must be managed from both the construction and operation phases of the Project. The following mitigation measures must be put in place during the operation phase of the Project: • Metagro will be required to take measures to prevent the spread of INNS of flora. Monitoring post-construction will ensure that newly restored areas are not inundated with non-native species from adjacent areas. • Quarterly monitoring for 1 year and biannually for 2 additional years post-construction will ensure that newly restored areas are not inundated with non-native species from adjacent areas Metagro must have in place an Invasive Species Management Plan for the duration of their operations to screen imported livestock, fodder and other materials for potential carrying of invasive non-native species. This includes any pests that may be introduced to the site.
BI-5	Risk to carrion birds from ingesting potentially harmful pharmaceuticals from cattle carrion to be managed by inclusion in the Project's Waste Management Plan. Monitoring of any carrion bird deaths in the local area to be included in the BMMP to detect any links to pharmaceuticals used by the cattle feedlot operations. The BMMP must also monitor the presence of carnivores drawn to the presence of carrion from livestock and any confirmed feeding activity.
BI-6	Suitable bird collision risk divertors installed at appropriate intervals on any new transmission lines installed as part of the Project. Recommended that Metagro work with the local provider or controller of the existing transmission lines to monitor bird collision risk and mitigate accordingly. This may be a local/national governmental authority or energy provider.
BI-7	The removal of vegetation, including grasses, scrub, and trees will be avoided and/or minimised through the following measures: • Areas for vegetation clearance will be clearly marked out. • Work areas will prioritise existing hardstanding, barren land, or areas devoid of surface vegetation where possible. This includes the siting of laydown areas and compounds. • Existing tracks or natural gaps in vegetation will be used as preferred access routes where practical.

	• The workforce will utilise clearly demarcated access routes and working areas, which have been selected based on the principle or avoidance and/or minimisation of vegetation removal. Vegetation will be checked prior to clearance by a SQEP with local biodiversity knowledge for the presence of any nesting birds to avoid harm to species or excess disturbance which could lead to nest abandonment. Ground nesting birds are known to nest in the arable fields.
BI-8	Worker behaviour management to reduce human-wildlife conflict risk: • Biodiversity awareness will be included within the site induction training. This will include roles and responsibilities, active and inactive periods for species of note, inventory of all critically endangered, endangered, and protected species using photographs, behaviour training including bans on hunting, foraging, and trapping, national regulatory requirements, activities that should be observed in specific sections or periods/months to avoid or minimise the risk of disturbance, injury, or death of critically endangered and endangered, and protected wildlife species, and reporting and protection activities during chance encounter with specific mammal and bird species.
BI-9	To manage traffic collision risk with wildlife: • The workforce will adhere to working corridors. • Staff will be provided with environmental awareness training. • The workforce will not deviate from approved clearance areas. • Appropriate speed limits will be applied, and traffic will be restricted to existing and/or dedicated haul routes to reduce direct mortality and disturbance from vehicles. Penalties for violation will apply. • Pre-clearance site surveys will be conducted before the commencement of all works to prevent animals present in working area being killed or injured during works. • Checks will be made for all vertebrate species and will specifically include ground nesting birds and burrowing mammals.

8.11 Hazardous Materials and Waste Management

Metagro's large-scale arable farming and livestock operations, plus ancillary functions such as vehicle fuelling and maintenance and the operation of greenhouses / tree nurseries require the use several environmentally hazardous materials, particularly agrochemicals (herbicides, pesticides, fertilisers) fuels and other hydrocarbons, and veterinary and other biological agents – most of which will generate hazardous wastes. If improperly managed, these hazardous materials and their wastes may pose a threat to communities; water and soil quality; occupational health and safety; and biodiversity. In addition, contaminated surface run-off from solid waste storage areas may convey additional sources of pathogens and nutrient loads to local surface and groundwater.

Agrochemicals will likely be applied across large areas of the landscape, in a setting where nearby shallow community water wells, ponds and water bodies, and the Murun River are all used for livestock and for herder water supplies. All these receptors can be readily impacted by inappropriate use of agrochemicals, or accidental spillages.

The most significant potential adverse impact on the environment of the cattle feedlot is the substantial amount of animal manure and wastewater generated on a daily basis, and the management of its collection,

storage, safe disposal and use. Effluents generated by cattle feedlot operations come from different sources as: runoff from livestock pens; feeding and watering, and waste storage and management facilities. These effluents have the potential to contaminate surface water and groundwater.

Solid waste that will be generated onsite during project operation phase include animal waste primarily manure, carcasses, sediments and sludge from the in-construction wastewater treatment facility. Raising animals for meat production brings direct sources of animal waste (slurry) and animal carcasses, both through the slaughter and meat processing stages and non-production related animal mortality. Animal feed not consumed can also contribute as a waste source. Wastewater is likely to be produced from regular cleaning of animals, carcasses, and farm facilities.

Metagro is embracing good international industry practice in the design, operation and management of its operations, and institutional control measures are in place for many aspects of hazardous materials and waste management, which meet the GlobalG.A.P. Integrated Farm Assurance Smart 'Must' principles and criteria for waste management. Three core elements of risk mitigation are outlined below, to encourage further alignment with GIIP.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Likely**
Consequence	**Medium**
Risk without Mitigation	**High**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks of hazardous materials and waste management are:

Table 48. Mitigation measures for the potential impacts and risks of hazardous materials and waste management

Mitigation ID	Mitigation Measure
HM-1	A **Hazardous Materials Management Plan** (HMMP) should be developed, regularly refined and implemented, to specify measures related to the production, handling, storage, and use of hazardous materials. The HMMP should cover all hazardous materials expected to be encountered including agrochemicals (including fertilisers) and hazardous wastes. As priorities, the HMMP should: • Good practice as identified in Section 5.12, all mitigation measures to be reviewed and updated if necessary to achieve agreement with GIP. • Identify substitutions to less hazardous materials where practicable, including the environmental hazards of agrochemicals. • Set out the requirements for associated Standard Operating Procedures (SOPs) • Set out detailed procedures for use, mixing, application and disposal of crop-spraying agrochemicals, to avoid spills and soil / surface water / groundwater impacts. • Set out the procedures for ensuring refuelling and other fluid transfer only occurs in areas with impervious surfaces, or where this is not possible monitor refuelling activities to avoid spills. • Set out the training and awareness for transfer and handling of agrochemicals and fuels and the response to spills for workers involved in the handling of fuels and chemicals.

	• Detail any specific personal protective equipment (PPE) required to respond to an emergency and training on its use. •
HM-2	A **Waste Management Plan** (WMP) should be developed, regularly refined and implemented following the waste hierarchy which defines how wastes will be reduced, re-used, collected, managed, recycled and disposed of in an appropriate manner and in accordance with good international practice. The WMP should include all site derived wastes, including animal manures, animal carcasses and the waste products from the slaughterhouse and meat processing operations. Measures the WMP should include: • Good practice as identified in Section 5.12, measures to be reviewed and updated as necessary • Management, storage and handling, reuse where appropriate, and disposal of wastes in line with measures outlined in the World Bank EHS Guidelines. • Identification and auditing of authorised and appropriate landfill and other facilities for waste treatment and disposal. • Use of only approved / licensed companies for undertaking waste transport • Measures to monitor and manage eutrophication and nutrient loading risks associated with intensive animal agriculture activities • Dissemination of the WMP and training of staff.
HM-3	An **Integrated Pest Management (IPM) Plan** should be developed, regularly refined and implemented, giving preference to alternative pest management strategies, with the use of agrochemicals as a last option. Key measures in the IPM may include: • Use predators (e.g. birds) to control pests; maintain structures to keep out pests; and use mechanical controls (e.g. traps, barriers, light, and sound) to kill, relocate, or repel pests • Protect natural enemies of pests by providing a favourable habitat (e.g. bushes for nesting sites and other indigenous vegetation) that can house pest predators • Use good housekeeping practices in barns and other facilities to limit food sources and habitat for pests, and consider covering manure piles to reduce pest and insect populations. • Only pesticides that are manufactured and registered and approved in accordance with FAO's International Code of Conduct on the Distribution and Use of Pesticides shall be used. • No pesticides that fall under the World Health Organization Recommended Classification of Pesticides by Hazard Classes 1A and 1B shall be used. • SOPs for use, handling, mixing and application of pesticides (including herbicides). • Application technologies and practices shall be designed to reduce unintentional drift or runoff, used only as indicated in the SOP/IPM and under controlled conditions. • Record and documentation requirements including records of pesticide use and effectiveness.

	• Storage requirements • Training and PPE requirements in accordance with planned procedures.

8.12 Occupational and Community Health & Safety

The health and safety risks inherent in the large-scale and complex Metagro Farm development and operation is illustrated by the subcontractor fatality in January 2023 during construction of one of the warehouses.

Detailed insight and guidance on OHS risks directly relevant to Metagro are given in the following WB EHS Guidelines:

- Annual Crop Production (2016)
- Mammalian Livestock Production (2007)
- Meat Processing (2007)

Metagro now has OHS Policies, Workplace Risk Assessment, Manuals of Procedures, OHS Guidelines for Contractors and Sub-Contractors, and a spreadsheet-based monitoring and reporting function. The Metagro safety culture has also been significantly strengthening, and greater focus has been given to the supervision and monitoring of subcontractors in addition to their employees.

A 3-year, 36-point Safety Improvement Plan is also in place, an extract of which is shown below.

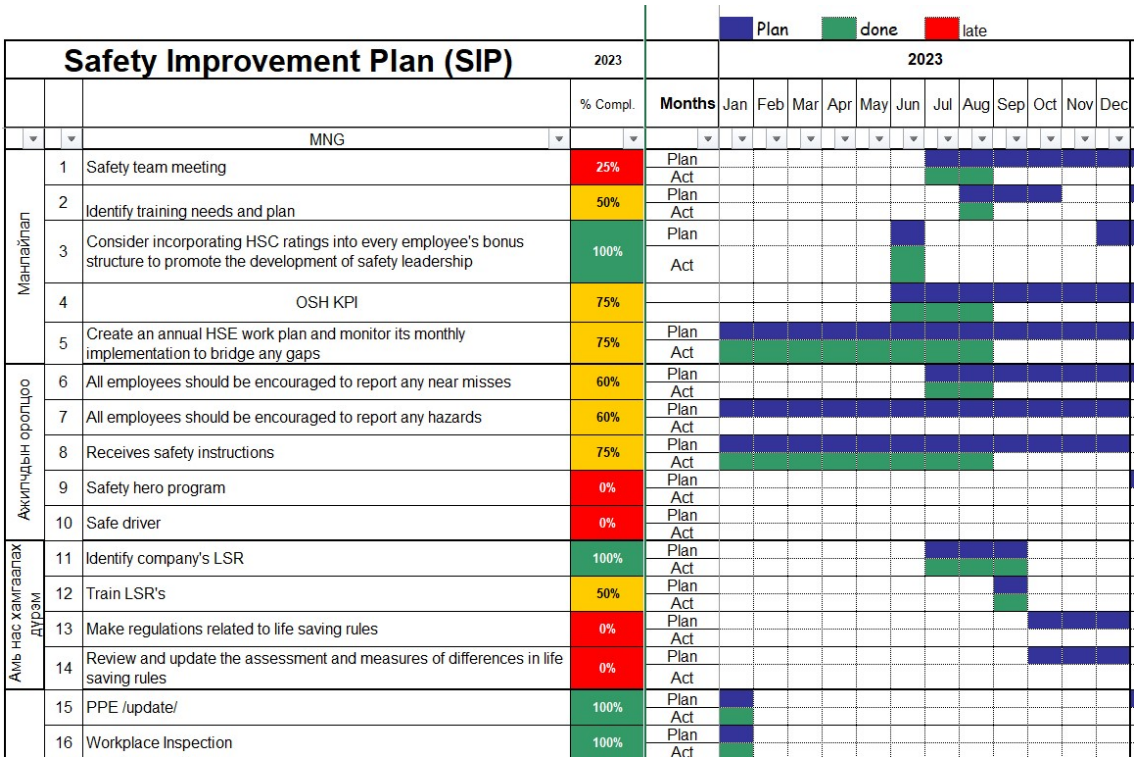

Figure 87. Metagro Safety Improvement Plan

The main community health and safety risk associated with the Project is considered to be the hazard to people and local livestock from the significant future traffic impacts from Metagro's full-scale operations. These community-focused risks are mitigated by the actions proposed in the Traffic and Road Safety section.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks to occupational and community health & safety are:

Table 49. Mitigation measures for the potential impacts and risks to occupational & community health & safety

Mitigation ID	Mitigation Measure
OHS-1	Further development and alignment of Metagro's existing **OHS Policy and OHS standard operating procedures** with sector-specific OHS best-practice, including the WB EHS Guidelines: • Annual Crop Production (2016) • Mammalian Livestock Production (2007) • Meat Processing (2007)
OHS-2	Enhance the existing **OHS Policy and OHS standard operating procedures** by achieving certification to international standard ISO 45001 for occupational health and safety
OHS-3	Development of an **Emergency Preparedness and Response Plan** informed by a HAZOP study or similar risk assessment. The Plan should at least include organisation of emergency areas, roles and responsibilities, communication systems, response procedures and resources and training. The Plan should have a dedicated section on Spill Control specifically to address, minimise and control potential for agrochemical and fuel spills. The Plan should also have a dedicated section on prevalent natural hazards such as wildfires, flooding and dzuds. It should include trainings for fire prevention and suppression actions for all construction contractors, workers, Project users, adjacent structure users and neighbouring communities.

8.13 Animal Welfare, Health and Food Security

Metagro is preparing appropriate procedures to manage and promote high standards of animal welfare and animal health, namely: an Animal Welfare Policy and an Animal Health Policy.

However both key initial documents are in draft form as at November 2023 at a stage where the cattle feedlot is close to full operational capacity, and a moment when meat product marketing campaigns to the public have commenced. It is time-critical that Metagro implement a full suite of animal welfare, health and biosecurity protocol and compliance and monitoring programmes.

Impact and Risk Assessment

Impact Significance	**Major**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The mitigation measures for the potential impacts and risks to animal welfare, health and food security are:

Table 50. Mitigation measures for the potential impacts and risks to animal welfare, health and food security

Mitigation ID	Mitigation Measure
AW-1	Good practice as identified in Section 5.14, all mitigation measures to be reviewed and updated if necessary to achieve agreement with GIP. Preparation of **Standard Operating Procedures** to supplement the *Animal Welfare Policy* for particular operations; including feedlot husbandry, animal transportation, slaughterhouse delivery. Some such SOPs have already been prepared for other topics (e.g. Feedlot Operations, Biosecurity) however, Feedlot Operations SOP includes no explicit reference to animal welfare. Related details for completion of the SOPs are available (for attention by Metagro) in the TAHC.
AW-2	**Amend existing SOPs** to include animal welfare provisions, especially Feedlot Operations SOP
AW-3	**Training** related to improved standards of animal welfare to be incorporated into the in-house training of staff engaged in handling livestock
AW-4	Use animal performance and disease data collection within TALUS as part of an **animal health continuous improvement programme**

8.14 Worker Influx / Local Hiring

(Par. 24) With respect to contracted workers the client will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the requirements of this Performance Standard, except for paragraphs 18–19, and 27–29.

(Par. 25) The client will establish policies and procedures for managing and monitoring the performance of such third-party employers in relation to the requirements of this Performance Standard. In addition, the client will use commercially reasonable efforts to incorporate these requirements in contractual agreements with such third-party employers.

(Par. 26) The client will ensure that contracted workers, covered in paragraphs 24–25 of this Performance Standard, have access to a grievance mechanism. In cases where the third party is not able to provide a grievance mechanism the client will extend its own grievance mechanism to serve workers engaged by the third party.

(Par. 9) The client will avoid or minimise the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, and communicable diseases that could result from Project activities, taking into consideration differentiated exposure to, and higher sensitivity of, vulnerable groups. [...]

(Par. 10) The client will avoid or minimise transmission of communicable diseases that may be associated with the influx of temporary or permanent Project labour.

Most workers at Metagro are not from the local area, primarily due to the technical qualifications and experience required for the job roles available. Although the influx of workers is relatively small (compared to a mining project, for example), their presence may have adverse indirect impacts on residents.

Some Metagro workers/contractors will be turning to Ulziit, Kherlen sum, Murun sum and Chinggis City to access goods, services and infrastructure. In small places like Ulziit, this will create added competition for goods and services that may inconvenience residents (e.g., less availability, higher prices), and that small businesses/institutions may not be equipped to meet.

Metagro workers/contractors will likely interact with residents of Ulziit, Kherlen sum, Murun soum and Chinggis City for socialisation and entertainment. As with any project in any part of the world, these interactions bring risks such as the spread of communicable illnesses (COVID, sexually transmitted infections) and possible friction between locals and "outsiders". There is an inherent potential for domestic and gender-based conflicts associated with interactions between workers/contractors and local community women, particularly for long-term workers working far from home and without regular leave and work rotations.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for worker/contractor impacts and risks are:

Table 51. Proposed mitigation measures for worker/contractor impacts and risks

Mitigation ID	Mitigation Measure
WI-1	In Metagro's existing **Code of Conduct** for all Project workers and contractors, include comportment regulations while off-site and outside of work hours
WI-2	In Metagro's existing **Contractor Management Plan,** require a process for ongoing E&S risk management by contractors and a signed commitment to comply with the Metagro ESG Policy.
WI-3	Develop a **Community Investment Plan** for Khentii aimag driven by impacts and risks to residents, businesses and public service institutions, with special attention to Ulziit and local herders (the stakeholders least equipped to cope with change)
WI-4	Develop a **Stakeholder Engagement Plan** that includes regular external communication with local communities and internal communication with the workforce to raise awareness of risks associated with company-community interactions and that promotes dialogue on the topic.

WI-5	Enhance the existing **grievance management process** to collect and address concerns from local stakeholders, and to gauge their perceptions and expectations, regarding the presence and actions of Metagro workers/contractors in local communities. Analyse grievances received to identify any trends related to workers/contractors.
WI-6	Develop an **induction presentation** for new Metagro workers and visitors that includes guidance on community relations "dos and don'ts"
WI-7	In Metagro's existing **training and skills development** programme, include opportunities for workers and contractors to learn more about IFC standards and risk management
WI-8	In the Metagro's existing **Human Resources** management plans, policies and processes, integrate the following: • Reference to the E&S requirements for contractors included in the Contractor Management Plan • Reference to the worker/contractor Code of Conduct • Reference to the grievance mechanism (external and internal) • Reference to the E&S training and awareness requirements for workers/contractors and visitors

8.15 Benefits Sharing

Based on findings from the ESIA scoping visits, local stakeholders have high expectations for receiving benefits from Metagro, including for example: support for Ulziit to promote the use of local services (e.g., hospital) and business growth (e.g., hotels, restaurants, worker accommodations); financial support to cultural institutions in Chinggis City for archaeological research and other heritage projects; feed for herder livestock; and access to mid- to high-level jobs and vocational opportunities locally, in part so that local youth don't have to migrate to Ulaanbaatar. Unmet expectations could lead to resentment and grievances.

While MCS Group has undertaken several community investments benefiting Metagro stakeholders over the past few years, the community projects do not have a clear link to the mitigation of Project impacts and risks. This leaves some impacts unaddressed (see Worker/Contractor Influx section above).

There is no clear, documented process for managing requests and for communicating the selection criteria for Project investments to local stakeholders. There is a risk that this lack of clarity will create unrealistic expectations among community groups seeking benefits from Metagro, or that some stakeholder groups may not understand the delineation between private sector and public sector responsibilities (e.g., for shared infrastructure like road maintenance), and that these unmet expectations could lead to grievances and conflicts.

There is also a risk that some stakeholders will interpret the lack of clear information to a lack of transparency, which could create grievances and conflicts if there are perceptions that Metagro is being unfair or is showing favouritism to certain individuals/groups in its distribution of benefits.

At the aimag government level, there is a risk that authorities might use Metagro and its potential for local socio-economic growth as a political football to curry favour with constituents.

Metagro recently hosted a well-attended job fair where approximately 10% of participants signed an employment contract. The Project's reasons for not hiring more local people (e.g., unqualified candidates, limited number of suitable vacancies) may not be apparent to all stakeholders and could create a perception that Metagro is not committed to hiring locally. This could lead to resentment, conflict among job seekers (locals vs outsiders), and grievances.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**High**
Risk without Mitigation	**High**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for benefits sharing impacts and risks are:

Table 52. Proposed mitigation measures for benefits sharing impacts and risks

Mitigation ID	Mitigation Measure
BS-1	In the **Community Investment Plan** for Khentii aimag, include priorities that are clearly driven by Project E&S impacts and risks and a description of a detailed and transparent process and selection criteria. Develop the Plan in collaboration with aimag authorities so that synergies can be explored.
BS-2	Develop a **Local Content Plan** to maximise local employment (where the requisite skills are available), and to prioritise the procurement of goods and services from local businesses (where the requisite standards and delivery timeframes can be met).
BS-3	Establish a formal (written & communicated) **Local Hiring Policy** stating Metagro's commitment to prioritise local hiring, where candidate qualifications meet the requirements of the job. Include reference to IFC standards and Good International Industry Practice (GIIP)
BS-4	Develop a detailed **Request Management Process** for logging and tracking community requests (e.g., jobs, projects, donations, sponsorships, etc.), including a process/tool for tracking commitments made
BS-5	In the existing **Contractor Management Plan,** include a requirement for any contractor needing to recruit workers to apply a local hiring policy aligned with Metagro's.
BS-6	In the **Stakeholder Engagement Plan,** include regular communication with local stakeholders to raise awareness of Metagro's priorities, processes and limitations for the distribution of Project benefits
BS-7	As part of the existing **grievance management process,** collect, analyse and address stakeholder concerns and perceptions relating to the distribution of Project benefits
BS-8	In the existing **Human Resources** management plans, policies and processes for Metagro, integrate the following: • Reference the Local Hiring Policy, Local Content Plan and Benefits Sharing Plan described above • Reference the E&S requirements for contractors included in the Contractor Management Plan

8.16 Local Agriculture Sector Economy

Private-sector stakeholders in the agriculture sector (farms, associated businesses, professional associations) engaged by the ESIA team during scoping visits indicated that while Metagro's high E&S standards are

generally a positive change for Khentii aimag, they will also have the negative consequence of raising stakeholder and worker expectations for all agricultural enterprises to adopt the same standards as Metagro's (especially regarding community investments). Smaller agriculture operations will not have the capacity to establish international level standards and will be disadvantaged when competing with Metagro for business, goods and services, and qualified staff.

There is a risk that competitors in the agriculture sector in Khentii aimag will resent Metagro and could seek to obstruct its success. There is also a risk that Metagro will monopolise agricultural business in Khentii aimag, potentially putting smaller operations out of business, contributing to unemployment, and restricting choice for consumers.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for impacts and risks to the local agricultural sector are:

Table 53. Proposed mitigation measures for impacts and risks to the local agricultural sector

Mitigation ID	Mitigation Measure
AS-1	In the **Community Investment Plan,** develop strategic measures for addressing impacts and risks to other agriculture sector businesses.
AS-2	In the **Local Content Plan**, develop strategic measures for addressing impacts and risks to other agriculture sector businesses.

8.17 Grievance Management

Metagro has a Standard Operating Procedure and associated management tools for addressing complaints and grievances from stakeholders. This same procedure is applied internally for grievances from employees, contractors and trade unions. However, in the absence of a Stakeholder Engagement Plan or other plan for systematically communicating about the grievance mechanism, it is likely that many stakeholder groups are not fully aware of the mechanism and/or do not fully understand how it functions. This creates the likelihood that some concerns are not being addressed, and that they could escalate and become Project risks.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for grievance management impacts and risks are:

Table 54. Proposed mitigation measures for grievance management impacts and risks

Mitigation ID	Mitigation Measure
GM-1	In the **Stakeholder Engagement Plan,** include ongoing awareness-building of the grievance mechanism
GM-2	Enhance the **grievance management process** to collect and address concerns and other feedback from local stakeholders

8.18 Stakeholder Management

Achieving the support of local stakeholders is an important risk mitigation measure for Metagro. In the absence of a Stakeholder Engagement Plan (SEP) and associated management tools, there is a risk that some stakeholders will not be aware of, or correctly informed about, Metagro activities that could affect them. This could lead to grievances and problems for Metagro, and makes it difficult for Metagro to address stakeholder concerns, perceptions and expectations early, before they escalate.

The ESIA team has prepared an SEP for the disclosure and consultation of the information in this draft report, along with associated management tools, however, Metagro will need to make this a systematic process throughout the lifetime of the Project in ways that minimise adverse impacts to stakeholders as well as social risks to Metagro assets, commercial activities and reputation, in alignment with Metagro's overall Project schedule.

Good practice stakeholder management typically involves the following:

- Stakeholder Engagement Plan (SEP): Annual strategy and action plan for building relationships with the people who are affected by, and who can affect, Metagro's activities.
- Stakeholder identification and analysis: Investing time in understanding (and documenting) Metagro stakeholders: who they are, their goals, their concerns, and their expectations.
- Stakeholder database: Detailed inventory of Metagro stakeholders, to be updated and expanded throughout the Project's lifetime.
- Engagement tracking: Register or database to document and monitor all interactions with stakeholders.

Impact and Risk Assessment

Impact Significance	**Moderate**
Likelihood	**Possible**
Consequence	**Medium**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for stakeholder management impacts and risks are:

Table 55. Proposed mitigation measures for stakeholder management impacts and risks

Mitigation ID	Mitigation Measure
SM-1	In the **Stakeholder Engagement Plan (SEP),** include an annual, monthly and weekly programme of activities for regular external communication with stakeholders and internal communication with the workforce. Set activity priorities according to Project impacts and risks, the Project operational timeline, and any key events/changes in the local context.
SM-2	As part of the SEP development process, undertake regular **stakeholder identification and analysis** to deepen understanding of Metagro stakeholders
SM-3	As part of the SEP implementation process, maintain a **stakeholder database** that is updated and expanded on a regular basis
SM-4	Develop and maintain an **engagement tracker** to log all interactions (planned and unplanned) with Metagro stakeholders

8.19 Supply Chain

The principal supply chain demand for the Metagro operation is the need to procure 1,620 head of young cattle each month for the cattle feedlot at full-scale operations. This involves a detailed sourcing and awareness-raising strategy with herders and breeders across several neighbouring aimags, including plans for the provision of insemination services to yield the ideal fast-growth animals.

It was previously estimated that the arable farm could only provide around half the fodder needed per annum, however the cessation of the pig farm business plan has significantly reduced off-site fodder supply chain demand.

Current fodder/feed consumption for the cattle feedlot is 15,000 tons (10,000 tonnes of grain and 5,000 tonnes of silage. Metagro's current harvest from 10,257 ha of arable field is 12,000 tons (including both grain and silage). About 3,000 tonnes of grain currently thus needs to be purchased, but harvest/yield will increase in upcoming years and Metragro is planning to be self-sufficient in fodder. Metagro may still selling premium grade wheat crops to flour mills; and therefore purchase lower grade wheat crops from other farmers as feed.

Agrochemicals and other inputs are also sourced from countries including China and Russia.

The E&S risks associated with supply chain management in agriculture typically include child labour, forced labour, significant safety issues leading to life-threatening situations for supply chain workers, and significant conversion of natural habitats from primary suppliers. Child labour issues are considered a low risk in Mongolia as schooling is compulsory for all children from 5-18 years old.

IFC PS6 states that in "*regions where there is a risk of significant conversion of natural and/or critical habitats, systems and verification practices will be adopted as part of the client's ESMS to evaluate its primary suppliers*." In high risk areas

In the document "Draft Supply Chain Risk Assessment (for [A] Growing cattle suppliers; and [B] Seed, grain suppliers)" dated Feb 2024, Metagro transparently identifies risks associated with cattle procurement, which is all from within Mongolia and primarily from the East and the Khentii Province, stating that the "main challenges in traditional grazing method is pasture degradation due to overstocking". There is less transparency regarding grain procurement, with little information provided regarding sourcing region (just stating domestic and international), suggesting less of an understanding of sourcing regions and risk.

Metagro has existing supplier management processes in place focused on the environment. Metagro outlines a Supplier Selection Policy that includes:

- Businesses should support a precautionary approach to environmental challenges;
- Undertake initiatives to promote greater environmental responsibility; and
- Encourage the development and diffusion of environmentally friendly technologies."

Furthermore, a Supplier Code of Conduct that requires:

- "Environmental protection: We expect our suppliers to have an effective comprehensive environmental management policy, and to comply with applicable legislation and regulations on the environment protection, water, energy, hazardous materials, emission and other significant risks. Suppliers are also encouraged to minimise adverse impacts, and enhance positive effects on the environment, as relevant and appropriate.

Both cattle rearing and grain production, unmitigated, have been shown to result in adverse biodiversity impacts and natural and/or critical habitat conversion. This can come about as a result of land clearance for crop growing and overgrazing, or degradation via agrochemical use, for example.

Metagro is clearly committed to managing environmental impacts within its supply chain. However its current supplier management process lacks the explicit measures to meet PS6 requirements. Little information has been made available regarding the sourcing of grain and Metagro will need to take steps to better understand this risk so any adverse impacts can be managed. In general, additional measures are required to better screen for habitat conversion risk[34]and verify suppliers are not responsible for significant conversion of Natural and/or Critical Habitat conversion. support

The other most prevalent supply chain risk is potential animal welfare issues with cattle suppliers.

The consequences of these risks, should they materialise, include among others: reputational damage for Metagro and its lenders/partners; difficulty accessing capital and financial services; damage to the Metagro and MCS Group brand; and loss of customer and shareholder loyalty.

To guard against these risks during operations, IFC standards and GIIP would encourage Metagro to take precautionary measures and put systems in place that clearly demonstrate that the company understands and manages its supply chain.

Impact and Risk Assessment

Impact Significance	**Major**
Likelihood	**Possible**
Consequence	**High**
Risk without Mitigation	**High**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for supply chain impacts and risks are:

Table 56. Proposed mitigation measures for supply chain impacts and risks

Mitigation ID	Mitigation Measure
SC-1	Develop a Metagro **Supply Chain Policy** that references IFC standards and Good International Industry Practice (GIIP)

[34] Potentially useful screening tools include: the Integrated Biodiversity Assessment Tool (IBAT), the Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE), and predicted spatial mapping of Natural and Critical Habitat

SC-2	Undertake **supply chain analysis**: describe the supply chain structure and characteristics; identify intermediary steps and players; and identify the nature of the transactions between primary producers and Metagro.
SC-3	Maintain a **supplier database** for storing and tracking information about suppliers.
SC-4	Develop a **supplier questionnaire** for collecting information that Metagro can use to map E&S risks
SC-5	Develop a **Supply Chain Management Plan** that identifies and assesses E&S supply chain risks for Metagro, and that outlines ways that Metagro can eliminate or minimise these issues in its area of control and influence.
SC-6	Update its **supply chain management system** to include verification practices that will (i) identify where the supply is coming from and the habitat type of this area; (ii) provide for an ongoing review of the client's primary supply chains; (iii) limit procurement to those suppliers that can demonstrate that they are not contributing to significant conversion of natural and/or critical habitats (this may be demonstrated by delivery of certified product, or progress towards verification or certification under a credible scheme in certain commodities and/or locations); and (iv) where possible, require actions to shift the client's primary supply chain over time to suppliers that can demonstrate that they are not significantly adversely impacting these areas.

8.20 Security and Human Rights

(Par. 12) When the client retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the project site. In making such arrangements, the client will be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, and by applicable law.

The client will make reasonable inquiries to ensure that those providing security are not implicated in past abuses; will train them adequately in the use of force (and where applicable, firearms), and appropriate conduct toward workers and Affected Communities; and require them to act within the applicable law.

The client will not sanction any use of force except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.

The client will provide a grievance mechanism for Affected Communities to express concerns about the security arrangements and acts of security personnel.

(Par. 14) The client will consider and, where appropriate, investigate all allegations of unlawful or abusive acts of security personnel, take action (or urge appropriate parties to take action) to prevent recurrence, and report unlawful and abusive acts to public authorities.

(Par 3) Business should respect human rights, which means to avoid infringing on the human rights of others and address adverse human rights impacts business may cause or contribute to. Each of the Performance Standards has elements related to human rights dimensions that a project may face in the course of its operations. Due diligence against these Performance Standards will enable the client to address many relevant human rights issues in its project.

Subcontracted security personnel (M-Armor / *Shonkhoriin Khash Ud)* at Metagro currently control access to the Project site and regularly patrol the 70km perimeter fence line. They have a range of equipment for protection and intervention including gas pistols, deterrent spray and handcuffs.

During the ESIA scoping visit, security personnel reported encounters with inebriated individuals seeking to access the Metagro site. While these types of interactions are said to be rare, there is still a risk that they could escalate and become violent, particularly in cases involving drug or alcohol use and where there might be suspicion of theft, trespassing or other illicit activity. Violent incidents entail risks of excessive use of force (real or perceived) by security contractors, which could represent human rights violations and/or lead to accusations and lawsuits against the company.

Impact and Risk Assessment

Impact Significance	**Major**
Likelihood	**Unlikely**
Consequence	**High**
Risk without Mitigation	**Medium**
Risk after Mitigation	**Low**

Mitigation

The proposed mitigation measures for security and human rights impacts and risks are:

Table 57. Proposed mitigation measures for security and human rights impacts and risks

Mitigation ID	Mitigation Measure
SH-1	In the existing **Contractor Management Plan**, include measures for ensuring that security contractors have policies and procedures for safeguarding against potential human rights violations and excessive use of force are included. Also describe the delineation of scope and responsibilities between the security contractors and local law enforcement.
SH-2	In the existing **Code of Conduct**, include guidelines for security contractors and any other worker/contractor who finds themselves in a situation where people and property could be harmed.
SH-3	In the **Stakeholder Engagement Plan**, include initiatives for raising awareness about human rights (both internally and in local communities) and the mechanisms that Metagro has in place to signal any potential violations.

8.21 Cumulative Risks and Associated Facilities

PS 1 (Par. 8) Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project's area of influence. This area of influence encompasses, as appropriate:

[...] Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

PS 1 (Par. 11) Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate environmental and social impacts, the identification of risks and impacts will take into account the findings and conclusions of related and applicable plans, studies, or assessments prepared by

relevant government authorities or other parties that are directly related to the project and its area of influence [...].

GN 22. The combination of multiple impacts from existing projects, the proposed project, and/or anticipated future projects may result in significant adverse and/or beneficial impacts that would not be expected in case of a stand-alone project. The Assessment should evaluate these cumulative impacts commensurate with the source, extent, and severity of cumulative impacts anticipated. As a result, the geographic and temporal boundaries of the cumulative impact assessment would depend on the potential cumulative impacts that are attributable to the project and those that affect the project as a result of reasonably foreseeable activities by third parties and will influence the final definition of the project area of influence [...] The client's baseline study should identify any relevant existing project or condition. In terms of anticipated future projects, priority should be given to assessing cumulative impacts stemming from the proposed project, such as further planned development of the project and other project-related future developments that are realistically defined at the time of the Assessment (for example, an anticipated future development for which licenses or permits have been issued should be included, even if it is not yet in implementation). IFC will work with the client to identify existing data and studies, and if necessary, will consider available technical and financial assistance mechanisms on a case-by case basis. [...] While the client is responsible for gathering information on cumulative impacts under paragraph 5 of Performance Standard 1, paragraph 6 of the Performance Standard also indicates that the client is expected to address risks and impacts commensurate to the client's control and influence over third party actions.

The assessment of cumulative impacts is an integral part of the ESIA process that is required to ensure that multiple effects on people, heritage and environmental receptors arising from the Project combined with impacts from other projects/activities have been addressed. Environmental and social impacts arising from existing, planned and foreseeable future developments within the Project Area of Influence (AoI) might individually be insignificant, but when combined with the Project could amount to a significant cumulative impact.

For this project the AoI for environmental effects has been defined as a 5km buffer known as the Project Affected Area (PAA). Within the Metagro PAA the sole other current developments are other nearby agricultural landholdings that are cultivated for similar cereal crops, though not always annually. The periodic nature of these activities is reportedly due to unpredictable landowner investment plans, and the complete dependence on favourable precipitation patterns – as there is no long-term / multiyear farming strategy for these land parcels, and none of the sustainable and beneficial agriculture approaches being used by Metagro.

The only significant nearby non-farming business is outside the PAA: the Berkh Uul coal mine, about 10km directly south of the Homestead that is a seasonal, open-cast mine providing coal supplies to the region predominantly in the winter. Berkh Uul LLC has been operating since 1965, paused, then restarted in 1996. The mine operation starts from October and ends in March each year due to coal demand and it has peak employment of about 30 people. The active excavation is about 50m x 50m x 6m deep.

- Neither the neighbouring agriculture nor the coal mine are considered to represent significant cumulative impacts to the Metagro project.

Associated Facilities:

There are two potential Associated Facilities linked to the Metagro project:

Power supply transmission lines: the operational areas of Metagro Farm were new-build on formerly undeveloped areas. To provide power to the sites, a 6kVA transmission line was installed in 2022 as an off-

take from the regional overhead 35kV line near Ulziit village, routing along the south-eastern and south-western boundaries of Field 1 as shown below.

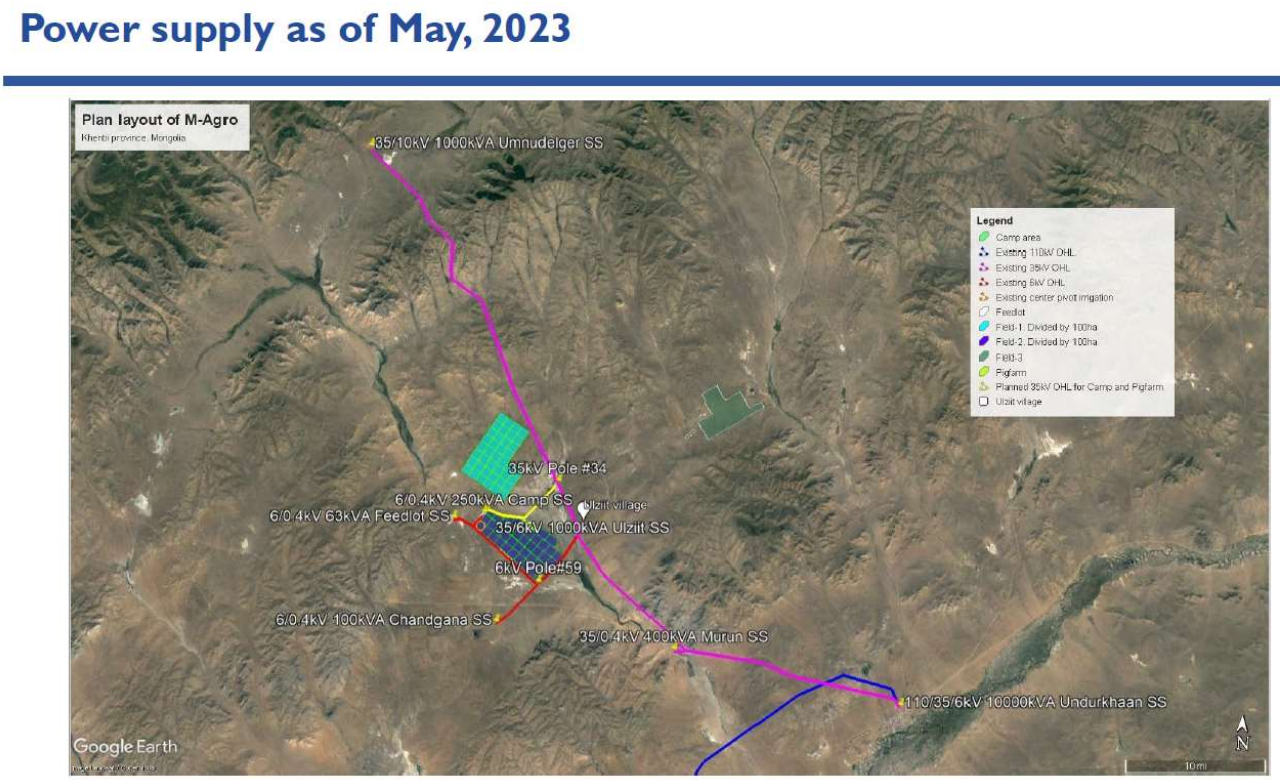

Figure 88. Current power supply to Metagro Farm

Additional power is required for long-term expansion of Metagro's operations: there were plans for an additional powerline along the north boundary of Field 1 rated at 110kV to the pig farm and 35kV onwards to the Homestead. As the pig farm project is now on hold, this power line concept has not yet been finalised.

The power lines are routed immediately adjacent to the Metagro's fields, have a very small footprint, do not require detailed land acquisition studies nor raise displacement concerns. They are therefore not considered to present significant cumulative impact concerns.

Possible impoundment dam on the Murun River: the European Bank of Reconstruction and Development (EBRD) has a regional fund that is catalysing the development of selected small-footprint dams to augment water supplies in Mongolia for municipal and/or commercial purposes. The Murun River is a candidate for this programme and Metagro would be the primary beneficiary of surface water supplies from such a dam. Feasibility studies have been undertaken at two alternate locations on the Murun River, both upstream of Metagro – about 3km and 6km north-west of the Homestead. Preliminary findings suggest that up to 6.9Mm^3/yr of water may be available if a dam is built, using conversative low-flow modelling scenarios. This may allow the Project to irrigate upto ~2,500 hectares of land.

Potential use of Murun River water

The potential use is estimated at low, medium and high scenario.

By drawing directly from the river			
Indicators	Low	Medium	High
Potential use for irrigation (million m³/year)	0.2	0.9	1.2
Potential area to irrigate (ha)	66	400	508

By accumulation (using dam)			
Indicators	Low	Medium	High
Potential accumulation (million m³/year)	6.9	12.1	17.4
Potential area to irrigate (ha)	2,577	5,233	9,319

As per study, the Murun river water flow was recorded as following:

- 0.58 m³/s, (July 24, 2003)
- 0.08 m³/s (July 3, 2011)
- 0.55 m³/s (Sept 17, 2015)

On average, maximum flood discharge of the Murun River is estimated as 1.12 m³/s.

Between field 1 and 2 of Metagro, the Murun river intermits for 20 km during the low stream flow. The point where the river flow intermits.

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Figure 89. Conceptual water supply and irrigation potential from a Murun River dam. Metagro

Technical reports from the work on behalf of the EBRD are not public domain, and the status of business case discussions is not known.

- As of February 2024, there is no update on whether this proposed dam may proceed – but given the recently confirmed much reduced irrigation water ambitions of Metagro, the business case for this dam no longer seems credible.

The potential environmental ecosystem and community water supply impacts of drawing very large volumes of water from the Murun River and also from groundwater resources have been highlighted in Sections 5.4 and 8.5 of this report.

- It is considered the mitigation actions outlined in Section 9.4 and in the ESAP with respect to Water Resources will allow a much more detailed future analysis of the sustainability of these irrigation water supply options for Metagro.
- Close collaboration between Metagro and the EBRD on the environmental and social impacts of a dam on the Murun River will be required if this business concept is to progress.

8.22 Summary of Key Risks, Mitigations and Monitoring & Reporting

The table below presents the consultant team's view of the key E&S risks and impacts; the mitigation, monitoring and reporting measures required; and the risk reduction that can be achieved.

Table 58. Summary of Key E&S Risks and Impacts and Associated Mitigation, Monitoring and Reporting Measures

Note: IR = Initial Risk/Impact Rating; RR = Residual (Post Mitigation) Rating.

Very High
High
Medium
Low

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
1	Geology and soils	Local soils are sandy and well drained but are susceptible to physical impacts (e.g. wind-erosion). This can be exacerbated by poor farming practice, including soil desiccation and loss of soil cover, as well as from compaction and other operational processes. Soils are also at risk of impacts from pollution associated with farm activities, including materials storage.		Metagro will reduce physical risks to soils (including erosion and compaction) through the use Good International Industry Practice (GIIP)-aligned soil conservation techniques. These will be described in a Soil Conservation and Management Plan and will include, but will not be limited to, no-till farming methods and the creation of planted wind-buffers around field perimeters. Monitoring: Soil erosion will be monitored and reported annually (e.g. tonnes/hectare/year) based on data on topography and slope; ground cover; exposed and bare soil.	GS-1a		Soil Conservation and Management Plan
				Metagro will also use GIIP-aligned approaches (to be described in the plan) to reduce risks of soil degradation from pollution associated with planned or unplanned activities.	GS-1a		
2	Water Resources	Current cropping regimes across Metagro's 10,257 ha site are all rain-fed with the exception of a 100ha test plot that Metagro are irrigating. As part of long-term options for the landholding, Metagro intend to increase this irrigation trial site to around 400ha based on local groundwater resource extraction. A water resources sustainability review is currently being undertaken.		The irrigated area will not exceed 400ha, as stated by Metagro in correspondence 25 & 26Jan24 & 1Feb24. Any further expansion will need to be explicitly authorised by IFC and will be dependent on the findings of the Water Resources Sustainability Review, Groundwater Management Programme, and Groundwater and Surface Water Quality Monitoring Programme herein Metagro are developing a Water Resources Sustainability	WR-1 WR-2 WR-3 WR-4		Water Resources Sustainability Review report Groundwater Management Programme
		Both surface and ground water sources are already used for watering livestock (there are		Review report to determine the sustainably available irrigation water supply available to the project. This will			Groundwater and Surface

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		72 shallow community water wells recorded nearby in the Ulziit community database) and water resource use is a particularly sensitive issue. Possible plans for damning the Murun River, backed by the EBRD, for surface water provision could also affect water provision – but given the recently confirmed much reduced irrigation water ambitions of Metagro , the business case for a dam no longer seems credible. *(Note issues regarding wastewaters are covered under "waste" below).*		include a computation groundwater model to assess localised aquifer drawdown, discussions on water recycling and reuse options; conclusions on irrigation technologies with respect to water conservation and water usage minimisation options. Once complete this will include specific advice on mitigation to reduce impacts to water resources. Monitoring: Water Availability: Metagro will develop a Groundwater Management Programme. This will collect monthly data on groundwater pumping rates and groundwater levels at different abstraction locations. It will also instigate regular checks to identify and detect any leakage along the main water distribution lines. Monitoring results will be reported at a minimum on an annual basis and will address groundwater level changes in different pumping areas; amount of water pumped from each borehole; water usage (drinking water, irrigation etc.); and groundwater quality. Material changes will trigger changes to water resource use based on an adaptive management approach to avoid significant adverse impacts to water resources or their users. Monitoring: Water Quality: Metagro will develop Groundwater and Surface Water Quality Monitoring Plans. These will involve sampling from pre-agreed ground and surface-waters including the most at-risk community water wells and the Murun River. Waters will be sampled at least annually and will include the following parameters as a minimum pH, EC, Cl, NO3, NH4, odour, colour, turbidity, indicative agrochemicals, indicative hydrocarbons.			Water Quality Monitoring Plans
3	Climate Change Resilience	Given the nature and location of the project, it is expected to be subject to a range of climate-change associated risks, including changes in temperatures, winds, rainfall patterns etc. This in turn could affect risks of		During the operation phase, Metagro will apply a range of good agricultural practices (including no-tillage, crop rotation and cover crop use) help preserve soil quality and boost yields despite potential climate impacts. Crops will be selected that are climate and pest resilient and will require	CC-1 CC-2 CC-3 CC-4		Climate Resilience Plan

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		droughts, fires and pests as well as water and power availability etc as well as associated effects on agricultural productivity and human and animal welfare.		less pesticide, herbicide and fertiliser input. The Emergency Preparedness and Response Plan (OHS-3) will include actions for floods, fires and power outages. Monitoring: Climate change impacts (rainfall, fires etc) will be regularly monitored. Specific biodiversity monitoring will detect changes in species (e.g. invasive/pest/disease/parasitic species) that may be associated with climate change.			
4	Greenhouse Gas Emissions	Operational activities are expected to result in annual GHG emissions in excess of 115,000t CO_{2e} pa. This is over 4 times the limit for annual reporting back to IFC. These emissions will arise from a range of activities associated with livestock rearing. Metagro intends to reduce these significantly over its operational life, but further studies are needed to determine the optimised approach to GHG emissions reduction.		Metagro will undertake a GHG emission study to better quantify its annual emissions and will produce a GHG emission reduction plan to include appropriate options such as use of renewable energy sources (solar / wind / on-site biogas) and adoption of GHG-efficient farming practices. Monitoring: Metagro will prepare Quarterly and Annual GHG emissions reports to demonstrate how the carbon intensity of the operations is being managed and reduced.	CC-5 CC-6		GHG emission study and reduction plan
5	Air quality	Construction and operational plant will result in emissions to air. Transport infrastructure consists mostly of unsurfaced tracks and will result in dust generation. Cattle production will result in gaseous emissions and odours. The nearest village is 3km from the closest field boundary and over 10km from the cattle feedlot operations. As such impacts on receptors outside of the farm are generally considered to be low.		Metagro will develop and implement an Air Quality Management Plan (AQMP) to minimise emissions from construction and operation activities. This will specifically include odours from the cattle feedlot operations and dust from site wide operations and vehicle movements on dirt tracks. Specific mitigation measures will include operational controls on manure spreading to minimise generation of odour and dust control though appropriate application of dust suppression measures on unpaved roads; minimising surface areas with exposed soil surfaces, planting hedges or erecting fences to minimise wind turbulence and offsite impacts; and effective cleaning and maintenance of pens and livestock yards. Monitoring: Metagro will undertake regular ambient and emissions source air monitoring (details to be determined as part of the AQMP) and report on this annually.	AQ-1		Air Quality Management Plan
6	Noise	No significant impacts from noise are		N/A	N/A		N/A

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		expected as the nearest village is 3km from the closest field boundary and over 10km from the cattle feedlot operations. Noise impacts on workers will be addressed through OHS controls.					
7	Traffic and road safety	Given the size of the Metagro operations, considerable numbers of vehicle movements will occur on a regular basis, including farmers delivering livestock to the site. Detailed numbers of such trips are still unknown. The site will be accessed by a 16km section of unpaved road off the main Eastern Highway. Risks of traffic accidents in Mongolia are high and these are exacerbated by herder livestock that graze freely around the project site. A Traffic Management Plan has been developed to address this and will be updated to align with GIIP.		Traffic Infrastructure: Metagro will undertake upgrades to the 16km unpaved track (based upon predicted vehicle movements) with an initial emphasis on the 50m section of the access track to the public highway to ease turning movements to and from the public highway and reduce the likelihood of dirt and debris from the unpaved track being drawn onto the public highway. It will also implement improved safety and maintenance on the access track, e.g. through the addition of signage to warn of adverse vertical and horizontal geometry, posted speed limits, and delineators to mark the edge of carriageway. Where areas of unpaved carriageway are retained a programme of dust control, pothole filling, sign review and replacement, drainage control will be put in place. Monitoring:: Metagro will collect and analyse traffic count and speed related information from the Eastern Highway and analyse turning numbers into and out of the unpaved track to determine what is required to promote improved safety of turning movements to and from the public highway.	TR-1		Updated Traffic Management Plan
				Driver Checks: Metagro will put in place a comprehensive process for driver vehicle checks and driver time will be managed to ensure excessive driving hours and speeding do not occur. Journey route planning, will include safe designated stops for driver rest with access to facilities such as food. Drivers will be encouraged not to drive for more than 4h.5rs before taking a rest break and driver time and completion of journeys will be managed to ensure drivers are not under pressure to speed. Specific requirements will be implemented for driving within the roads under control of Metagro and will be enforced for all drivers entering the	TR-2 TR-3		

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
				Metagro site area. This will including issues such as speed limit compliance, seat belt wearing, use of well-maintained vehicles and no phone use whilst driving.			
				The Traffic Management Plan (TMP) will be developed in line with Metagro's vehicle and driving policies including 1) Identification of high risk sites (schools, hospitals, markets etc) with journeys scheduled to avoid peak traffic movements at these locations 2) Driver Briefing Meetings 3) vehicles to keep to agreed routes to minimise risk to project affected communities and other road users. Measures will be in place to achieve the posted speed limits, such as physical traffic calming or strict enforcement. Traffic routes around the camp will b managed so that where possible road traffic and vulnerable road users are separated. (e.g. through the introduction of one way sections of road). Monitoring: A programme of continual monitoring of transport operation and public liaison. All accidents shall be reported and investigated to ensure measures are undertaken to reduce the likelihood of reoccurrence.	TR-4 TR-5 TR-6		
8	Biodiversity	The 8,820 hectare Undurkhaan Uul National Park is located approximately 44km east of the Metagro homestead and the major operational complexes but only 6.5km from the boundary of Field 3. This small mountainous park covers the Undurkhaan Uul Mountain which whilst only 1,660 metres above sea level is the highest point in this remote region of steppe, making the mountain a critical biosphere. A number of rare and endangered species are found in the wider area including the Mongolian Marmot (Marmota sibirica), White-naped crane (*Grus vipio*) and the Mongolian gazelle (*Procapra gutturosa*). Further		Metagro will develop a (BAP) and associated Biodiversity Monitoring and Management Plan (BMMP) which will include specific measures to safeguard the habitats of the Mongolian Marmot for which Critical Habitat may be triggered. Additional conservation actions will also be developed for residual impacts on other species, including support to species monitoring initiatives, awareness raising with local communities/authorities around hunting pressures. Monitoring: This will be detailed in the Biodiversity Monitoring and Management Plan (BMMP). For invasive species (see below) this will include at least quarterly monitoring for 1 year and biannually for 2 additional years post-construction to ensure that newly restored areas are not inundated with non-native species from adjacent areas	BI-1		Biodiversity Action Plan Biodiversity Monitoring and Management Plan

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		information on these is provided in the stand-alone Critical Habitat Assessment. Other species recorded are typical of modified steppe habitat. (Natural Habitats within the Metagro project area have been mostly modified during soviet-era farming operations and as a result of overgrazing and drought, although more vegetation is present along the Muran River.) Implementation of the project will result in a range of impacts associated with livestock farming, including further habitat change, including as a result of any irrigation. Specific impacts may also arise be associated with increases in carrion availability from deceased livestock leading to local wildlife dietary changes as well as potential contact with agricultural pharmaceuticals. Other risks include transmission risk of zoonotic diseases between livestock and native wildlife, risks associated with waste and wastewaters and collision risks for avifauna collisions and transmission lines for species such as the steppe eagle (*Aquila nipalensis*) which is known to be vulnerable to transmission line collisions and electrocution.		A GIIP-aligned Biodiversity Management Plan will be created and implemented to reduce impacts from workforce activities. This will include appropriate training in safeguards for sensitive habitats and species and use of dedicated routes for driving, amongst other measures. Where vegetation removal is required this will be minimised through the application of GIIP.	BI-2 BI-7 BI-8 BI-9		Biodiversity Management Plan Traffic Management Plan
				Fencing design will take into account non-livestock animal movements across the landscape, and also animal exclusion from waste disposal and similar areas. Fencelines will be monitored for evidence of wildlife injury, or mortality and fencing design will be adjusted if regular significant harm to wild species occurs based on this data collected.	BI-3		
				Metagro will develop a GIIP-aligned Invasive Species Management Plan to address risks of invasive non-native species (INNS). The Project team will not intentionally introduce any new INNS unless this is carried out following an appropriate risk assessment and in accordance with the existing regulatory framework for such introduction. Any INNS encountered will be demarcated and removed in accordance with GIIP. The operational Invasive Species Management Plan will include screening of imported livestock, fodder and other materials for potential carrying of invasive non-native species. This includes any pests that may be introduced to the site.	BI-4		Invasive Species Management Plan
				Risk to carrion birds from ingesting potentially harmful pharmaceuticals from cattle carrion will be managed through the Project's Waste Management Plan (WMP). Monitoring of any carrion bird deaths in the local area will be included in the BMMP to detect any links to pharmaceuticals used by the cattle feedlot operations. The BMMP will also monitor the presence of carnivores drawn to the presence of carrion from livestock and any confirmed feeding activity. Other issues associated with wildlife-waste interactions will be addressed through the WMP.	BI-5		Waste Management Plan (WMP)

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
				Metagro will work with authorities responsible for the existing transmission lines to monitor bird collision risk and mitigate accordingly. Suitable bird collision risk divertors will be installed at appropriate intervals on any new transmission lines installed as part of the Project.	BI-6		BMMP
9	Hazardous Materials	Metagro's activities will involve a range of hazardous materials, including agrochemicals (herbicides, pesticides, fertilisers) fuels, veterinary and other biological agents – most of which will include hazardous materials .		Metagro will develop and implement a Hazardous Materials Management Plan (HMMP). This will specify measures related to the production, handling, storage, and use of hazardous materials and will cover all hazardous materials expected to be encountered including agrochemicals (including fertilisers) and hazardous wastes. As priorities, the HMMP will 1) Identify substitutions to less hazardous materials where practicable 2) Set out the requirements for Standard Operating Procedures (SOPs) 3) Set out detailed procedures for use, mixing, application and disposal of crop-spraying agrochemicals, to avoid spills and soil / surface water / groundwater impacts 4) Set out the procedures for ensuring refuelling and other fluid transfer only occurs in areas with impervious surfaces, or where this is not possible monitor refuelling activities to avoid spills 5) Set out the training and awareness for transfer and handling of agrochemicals and fuels and the response to spills for workers involved in the handling of fuels and chemicals 6) Detail any specific personal protective equipment (PPE) required to respond to an emergency and training on its use.	HM-1		Hazardous Materials Management Plan
10	Solid and Liquid Wastes	The Project will result in a range of solid and liquid wastes, including a substantial amount of animal manure and wastewater daily from the cattle feedlot which will require appropriate collection, storage and disposal. Liquid wastes will include runoff from livestock pens; feeding and watering, and waste storage and management facilities which have the potential to contaminate surface water and groundwater. Solid wastes will include manure, carcasses, sediments and		Metagro will develop and implement a Waste Management Plan (WMP) following the waste hierarchy. This will define how wastes will be reduced, re-used, collected, managed, stored, handled, reused, recycled and disposed of in an appropriate manner and in accordance with GIIP (e.g. as outlined in the World Bank EHS Guidelines. It will also identify appropriately licensed and managed landfill and other facilities for waste treatment and disposal and approved / licensed entities for undertaking waste transport.	HM-2		Waste Management Plan

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		sludge from the wastewater treatment facility.					
11	Pest Management	Operations of this nature typically see agrochemicals applied across large areas of the landscape. Given the setting, with nearby shallow community water wells, ponds and water bodies (including the Muran River) which are used for livestock and for herder water supplies, and which are particularly sensitive to inappropriate use of agrochemicals, or accidental spillages, and integrated pest management approach will be adopted as far as practical.		Metagro will develop and implement an Integrated Pest Management (IPM) plan giving preference to alternative pest management strategies and the use of agrochemicals as a last option. This will include encouraging use of predators (e.g. birds) to control pests; maintaining structures to keep out pests; and using mechanical controls (e.g. traps, barriers, light, and sound) to kill, relocate, or repel pests. Natural enemies of pests will be protected by providing a favourable habitat (e.g. bushes for nesting sites and other indigenous vegetation) that can house pest predators and good housekeeping practices will be used to limit food sources and habitat for pests (e.g. consideration of covering manure piles to reduce pest and insect populations). Only pesticides that are manufactured and registered and approved in accordance with FAO's International Code of Conduct on the Distribution and Use of Pesticides shall be used and no pesticides that fall under the World Health Organization Recommended Classification of Pesticides by Hazard Classes 1A and 1B. SOPs will be developed for use, handling, mixing and application of pesticides (including herbicides) and application technologies and practices shall be designed to reduce unintentional drift or runoff, used only as indicated in the SOP/IPM and under controlled conditions. Monitoring: Metagro will record and document requirements and actions including levels of pesticide use and effectiveness of the approach.	HM-3		Integrated Pest Management (IPM) Plan
12	Community and Worker Health and Safety	The main community health and safety risk is expected to be associated with traffic impacts from Metagro's full-scale operations and risks to water resources as described above. However large-scale and complex farming operations do have inherent risks (as illustrated by the subcontractor fatality in January 2023 during construction of one of		Metagro will continue to develop and align its existing OHS Policy and OHS SOPs with GIIP, including the WB EHS Guidelines on Annual Crop Production (2016), Mammalian Livestock Production (2007) and Meat Processing (2007). This will be enhanced by achieving certification to international standard ISO 45001 for occupational health and safety.	OHS-1 OHS-2		OHS Policies and Plans
				Metagro will develop an Emergency Preparedness and Response Plan informed by a HAZOP study or similar risk	OHS-3		Emergency Preparedness

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		the warehouses). Metagro now has a safety management system in place and is developing a strengthened safety culture. Issues associated with worker influx are addressed below.		assessment. The Plan will include as a minimum organisation of emergency areas, roles and responsibilities, communication systems, response procedures and resources and training. The Plan will have a dedicated section on Spill Control specifically to address, minimise and control potential for agrochemical and fuel spills. The Plan will also have a dedicated section on prevalent natural hazards such as wildfires, flooding and dzuds.			and Response Plan
13	Animal Welfare	High standards of animal welfare and animal health, including a full suite of animal welfare, health and biosecurity protocol and compliance and monitoring programmes are required.		Metagro has developed draft Animal Welfare and Animal Health Policies to manage and promote this and will prepare and implement Standard Operating Procedures to supplement the Animal Welfare Policy for particular operations; including feedlot husbandry, animal transportation, slaughterhouse delivery. Monitoring: Metagro will use animal performance and disease data collection within TALUS as part of an animal health continuous improvement programme	AW-1		
14	Worker Influx / Local Hiring	Most workers at Metagro are not from the local area, primarily due to the technical qualifications and experience required for the job roles available. Although the influx of workers is relatively small, their presence may have an adverse indirect impact on residents for example through competition for goods and services (ie., less availability, higher prices). Metagro workers/contractors may also interact with local residents for socialisation and entertainment. Such interactions bring risks such as the spread of communicable illnesses (COVID, sexually transmitted infections) and possible friction between locals and "outsiders". There is an inherent potential for domestic and gender-based conflicts associated with interactions between workers/contractors and local		Metagro will address these issues by: 1) updating its existing Code of Conduct for Project workers and contractors to include comportment regulations while off-site and outside of work hours and developing an induction presentation for new Metagro workers and visitors that includes guidance on community relations "dos and don'ts" 2) using its existing Contractor Management Plan to require a process for ongoing E&S risk management by contractors and a signed commitment to comply with the Metagro ESG Policy. 3) Developing a Community Investment Plan for Khentii aimag driven by impacts and risks to residents, businesses and public service institutions, with special attention to Ulziit and local herders (the stakeholders least equipped to cope with change) 4) Enhance the existing grievance management process to collect and address concerns from local stakeholders, and to	WI-1 WI-2 WI-3 WI-4 WI-5 WI-6		Code of Conduct Contractor Management Plans Community Investment Plan Grievance Management Process Stakeholder Engagement Plan

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		community women, particularly for long-term workers working far from home and without regular leave and work rotations.		gauge their perceptions and expectations, regarding the presence and actions of Metagro workers/contractors in local communities. Analyse grievances received to identify any trends related to workers/contractors. 5) developing a Stakeholder Engagement Plan that includes regular external communication with local communities and internal communication with the workforce to raise awareness of risks associated with company-community interactions and that promotes dialogue on the topic.			
				Metagro's will update its existing Human Resources Management Plans, Policies and Processes to address issues of worker influx.	WI-7 WI-8		HR Plans, Policies, Processes
15	Community Benefits Sharing	Local stakeholders appear to have high expectations for receiving benefits from Metagro e.g. support with local services (e.g., hospital) a business growth (e.g., hotels, restaurants, worker accommodations); financial support (e.g. for archaeological research and other heritage projects); feed for herder livestock; and access to mid- to high-level jobs and vocational opportunities locally. Unmet expectations could lead to resentment and grievances. MCS Group has undertaken several community investments benefiting Metagro stakeholders over the past few years, but these do not have a clear link to the mitigation of Project impacts and risks and there is no clear, documented process for managing requests and for communicating the selection criteria for Project investments to local stakeholders.		Metagro will update its Community Investment Plan to include priorities that are clearly driven by Project E&S impacts and risks and a description of a detailed and transparent process and selection criteria. It will also develop a Local Content Plan to maximise local employment (where the requisite skills are available), and to prioritise the procurement of goods and services from local businesses (where the requisite standards and delivery timeframes can be met) and will establish a formal (written & communicated) Local Hiring Policy in line with GIIP. It will also develop a detailed Request Management Process for logging and tracking community requests (e.g., jobs, projects, donations, sponsorships, etc.), including a process/tool for tracking commitments made.	BS-1 BS-2 BS-3 BS-4		Community Investment Plan Local Content Plan Local Hiring Policy
				In the existing Contractor Management Plan, it will include a requirement for any contractor needing to recruit workers to apply a local hiring policy aligned with Metagro's.	BS-5		Contractor Management Plan
				In the Stakeholder Engagement Plan, it will include regular communication with local stakeholders to raise awareness of Metagro's priorities, processes and limitations for the distribution of Project benefits	BS-6		Stakeholder Engagement Plan
				As part of the existing grievance management process, it will collect, analyse and address stakeholder concerns and perceptions relating to the distribution of Project benefits	BS-7		Grievance Management Process

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
				In the existing Human Resources management plans, policies and processes for Metagro, it will integrate the following: · Reference the Local Hiring Policy, Local Content Plan and Benefits Sharing Plan described above · Reference the E&S requirements for contractors included in the Contractor Management Plan	BS-8		HR Plans, Policies, Processes
16	Local Economy	While Metagro's high E&S standards may raise stakeholder and worker expectations for all agricultural enterprises to adopt the same standards as Metagro's (especially regarding community investments). Smaller agriculture operations will not have the capacity to establish international level standards and will be disadvantaged when competing with Metagro for business, goods and services, and qualified staff. There is a risk that competitors will resent Metagro and could seek to obstruct its success and/or that Metagro will monopolise agricultural business in the region potentially putting smaller operations out of business, contributing to unemployment, and restricting choice for consumers.		In the Community Investment Plan, develop strategic measures for addressing impacts and risks to other agriculture sector businesses.	AS-1		Community Investment Plan
				In the Local Content Plan, develop strategic measures for addressing impacts and risks to other agriculture sector businesses.	AS-2		Local Content Plan
17	Grievance Management	Whilst Metagro has a Standard Operating Procedure and associated management tools for addressing complaints and grievances from stakeholders it is likely that many stakeholder groups are not fully aware of the mechanism and/or do not fully understand how it functions. This creates the likelihood that some concerns are not being addressed, and that they could escalate and become Project risks.		In the Stakeholder Engagement Plan, include ongoing awareness-building of the grievance mechanism	GM-1		Stakeholder Engagement Plan
				Enhance the grievance management process to collect and address concerns and other feedback from local stakeholders	GM-2		Grievance Management Process
18	Stakeholder Management	The ESIA team has prepared an SEP for the disclosure and consultation of the information in this draft report, along with associated management tools, however, Metagro will		In the Stakeholder Engagement Plan (SEP), include an annual, monthly and weekly programme of activities for regular external communication with stakeholders and internal communication with the workforce. Set activity priorities	SM-1		Stakeholder Engagement Plan

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
		need to make this a systematic process throughout the lifetime of the Project in ways that minimise adverse impacts to stakeholders as well as social risks to Metagro assets, commercial activities and reputation, in alignment with Metagro's overall Project schedule.		according to Project impacts and risks, the Project operational timeline, and any key events/changes in the local context.			
				As part of the SEP development process, undertake regular stakeholder identification and analysis to deepen understanding of Metagro stakeholders; maintain a stakeholder database that is updated and expanded on a regular basis and develop and maintain an engagement tracker to log all interactions (planned and unplanned) with Metagro stakeholders	SM-2 SM-3 SM-4		Stakeholder Engagement Plan
19	Supply Chain	Metagro will have a strong reliance on its supply chain, including the need to procure 1,620 head of young cattle each month for the cattle feedlot at full-scale operations. This involves a detailed sourcing and awareness-raising strategy with herders and breeders across several neighbouring regions, including plans for the provision of insemination services to yield the ideal fast-growth animals. It is also estimated that the arable farm may need supplementary fodder when fully operational which will need to be purchased and transported to site. Agrochemicals and other inputs are also sourced from countries including China and Russia. E&S risks associated with supply chain management in agriculture can typically include child labour, forced labour, significant safety issues leading to life-threatening situations for supply chain workers, and significant conversion of natural habitats from primary suppliers.		Metagro will develop a Supply Chain Policy that references IFC standards and GIIP and a Supply Chain Management Plan that identifies and assesses E&S supply chain risks for Metagro, and that outlines ways that Metagro can eliminate or minimise these issues in its area of control and influence. In implementing the plan it will undertake supply chain analysis: describe the supply chain structure and characteristics; identify intermediary steps and players; and identify the nature of the transactions between primary producers and Metagro. It will also develop a supplier questionnaire for collecting information that Metagro can use to map E&S risks and maintain a supplier database for storing and tracking information about suppliers.	SC-1 SC-2 SC-3 SC-4 SC-5		Supply Chain Policy Supply Chain Management Plan
				Metagro will update its supply chain management system to include verification practices that will (i) identify where the supply is coming from and the habitat type of this area; (ii) provide for an ongoing review of the client's primary supply chains; (iii) limit procurement to those suppliers that can demonstrate that they are not contributing to significant conversion of natural and/or critical habitats (this may be demonstrated by delivery of certified product, or progress towards verification or certification under a credible scheme in certain commodities and/or locations); and (iv) where possible, require actions to shift the client's primary supply chain over time to suppliers that can demonstrate that they are not significantly adversely impacting these areas.	SC-6		Supply Chain Management System

	Receptor / Issue	Potential Risk or Impact	IR	Mitigation, Monitoring and Reporting Measures	Ref	RR	Associated Plans
20	Security and Human Rights	Subcontracted security personnel currently control access to the Project site and regularly patrol the 70km perimeter fence line. They have a range of equipment for protection and intervention including gas pistols, deterrent spray and handcuffs. There is a risk of volent interactions (especially if suspicions of theft, trespassing or other illicit activity arise) with risks of excessive use of force (real or perceived) by security contractors, which could represent human rights violations and/or lead to accusations and lawsuits against the company.		Metagro will update the Contractor Management Plan, to include measures for ensuring that security contractors have policies and procedures for safeguarding against potential human rights violations and excessive use of force are included. Also describe the delineation of scope and responsibilities between the security contractors and local law enforcement.	SH-1		Contractor Management Plan
				Metagro will update the existing Code of Conduct, to include guidelines for security contractors and any other worker/contractor who finds themselves in a situation where people and property could be harmed.	SH-2		Code of Conduct
				Metagro will update the Stakeholder Engagement Plan to include initiatives for raising awareness about human rights (both internally and in local communities) and the mechanisms that Metagro has in place to signal any potential violations.	SH-3		Stakeholder Engagement Plan

9. Environmental & Social Management

9.1 Environmental & Social Management System Development

(Par. 5) The client, in coordination with other responsible government agencies and third parties as appropriate, will…establish and maintain an Environmental and Social Management System appropriate to the nature and scale of The Project and commensurate with the level of its environmental and social risks and impacts. […]
GN8. A management system that meets the requirements of Performance Standard 1 should be in place at the level of the client's organization where the funds from IFC's investment will be utilised (i.e., at the corporate or at the activity-specific level).

This section provides an overview of a Project Environmental and Social Management System (ESMS) and describes various environmental and social (E&S) management activities that should be undertaken by Metagro during construction and during operation.

An ESMS is currently being developed by Metagro, guided by IFC best practice and advisory, specifically including the IFC ESMS Implementation Handbooks for Animal Production (June 2014) and Crop Protection (June 2014), to manage E&S risks during the Project.

The objectives of an ESMS are:

- To ensure all activities and responsible persons anticipate and take action to avoid as far as possible adverse impacts or risks to communities and the environment;
- To ensure that Project activities comply with the relevant laws and regulations of the Government of Mongolia and Lenders' requirements (referred to collectively as the "Project Standards");
- To identify and assess social and environmental impacts, both adverse and beneficial;
- To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and, where residual impacts remain, compensate/offset for risks and impacts to workers, affected communities, and the environment;
- To ensure that affected communities and other stakeholders are engaged on issues that could potentially affect them;
- To promote and provide means for adequate engagement with affected communities throughout the Project life cycle on issues that could potentially affect them, and to ensure that relevant environmental and social information is disclosed and disseminated;
- To promote improved social and environmental performance through the effective use of management systems;
- To ensure all responsible persons consciously foster positive environmental and social impacts and benefits through proactive planning and Project design.

The ESMS will draw on the elements of the established business management process, outlined in IFC PS 1, forming the Plan-Do-Check-Act (PDCA) cycle that provides a methodical approach to managing environmental and social risks and impacts in a structured way on an ongoing basis.

An IFC PS 1 aligned ESMS will also enable many of the requirements of the GlobalG.A.P. Integrated Farm Assurance Smart principles and criteria to be met including *inter alia* internal documentation, continuous improvement plan, resource management and training, outsourced activities, complaints, worker health, safety and welfare, site management etc,

Specific procedures may be required to address a number of the GlobalG.A.P requirements such as Parallel ownership, traceability and segregation, Food safety policy and Food defence, and it is recommended that Metagro undertakes a gap analysis of the ESMS under development against the GlobalG.A.P. standards to enable any additional requirements to be incorporated into the overall management system from the outset.

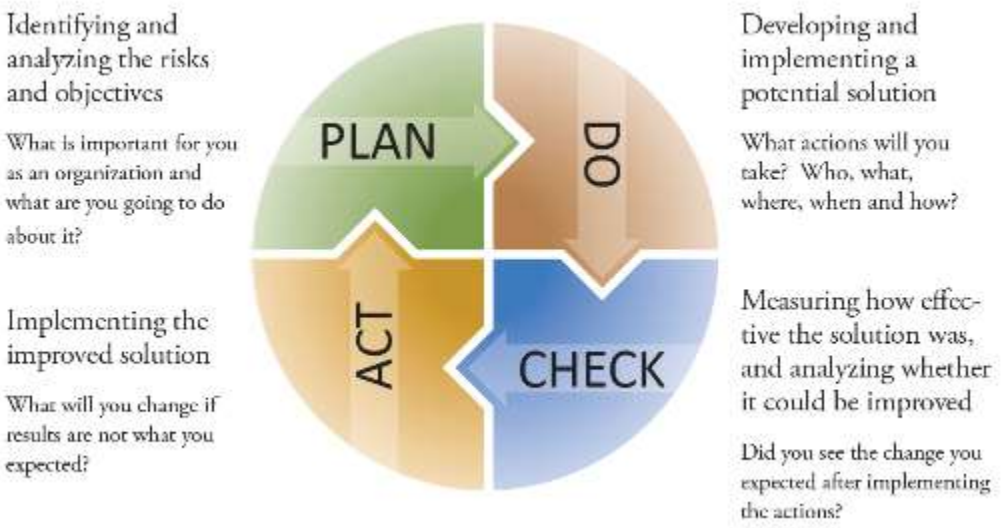

Figure 90. Plan, Do, Check, Act Cycle of Continuous Improvement

from IFC ESMS Implementation Handbooks

Key elements of an ESMS and how these align with the PDCA cycle for the construction phase of the Project are provided the table below. The Project Operator will need to implement corresponding policies and procedures to management E&S performance during operation.

Table 59. ESMS Elements and Alignment with the PDCA Cycle

Stage	Element	Objective/Function
	Policy	The Metagro Environmental and Social Policy will form part of the Project ESMS. The Policy will reflect leadership and accountability of Metagro in the commitment to sustainable development for the Project. The policies stipulate the environmental and social objectives and principles that guide Metagro to achieve sound environmental and social performance through the establishment, documentation, implementation and continuous improvement of the Project ESMS for construction and operation.
	Project Standards, Legal Compliance & other requirements	Metagro commits to comply with the IFC Environmental and Social Safeguard Policy and Performance Standards, as well as relevant Mongolian environmental, occupational health and safety, labour and other and social law and regulations. A system of procedures will be established and communicated to all management and staff to ensure the project compliance.
	Identification of Risks	Metagro will identify and set up a procedure to identify and assess associated

Stage	Element	Objective/Function
Plan	& Impacts	risks and impacts throughout the Project life. The ESIA also addresses this element of the ESMS.
	Management programme	Metagro will define the objective, targets, criteria, standards, and actions for the management of identified potential risks and impacts. This ESMP and the supporting suite of management plans to be developed fall under this element of ESMS. The ESMP and supporting plans are key components of the ESMS.
	Emergency Preparedness & Response Plan	Metagro will develop an Emergency Preparedness and Response Plan for the construction phase and allocate appropriate response and recovery resources.
Do	Management programme	Metagro will implement all of the mitigation, management and monitoring measures defined in the ESMP and supporting plans through its contractual arrangements and audits/inspections.
	Organizational structure, role, & responsibility	Metagro will ensure sufficient management sponsorship of human and financial resources, establish roles and responsibilities for personnel to implement the Project ESMS and ESMP within it.
	Competence, training & awareness	Metagro will ensure personnel are aware of their role and responsibilities by appointing competent people and enable them to meet the requirements of their role. Metagro will also implement a training programme.
	Communication	Metagro will establish and maintain effective communications, including between management and the workforce as well as external communications with stakeholders and affected communities. The Stakeholder Engagement Plan (SEP) falls under this element of the ESMS. The SEP (including the Community Grievance Mechanism) is a key component of the ESMS.
	Operational controls & maintenance	Metagro will implement operational controls, procedures, and tools to manage impacts and risks, uphold environmental performance and project compliance. These will be further described in the supporting management plans to be developed.
	Documentation & record keeping	Metagro will systematically control and maintain documents and records associated with E&S management.
Check	Monitoring, evaluation, correcting & improving performance	Metagro will establish and implement procedures to monitor and evaluate E&S management and performance and take measures to continually improve performance. Processes such as inspection, audit and physical E&S monitoring will be implemented. Details of monitoring will be identified in the supporting management plans or corresponding monitoring plans where applicable.
	Monitoring, evaluation, correcting & improving performance	Metagro will prepare a Corrective Actions Register or other system to record non-conformances and will promptly report and take corrective and preventive actions to reduce the likelihood of recurrence.
	Reporting	Metagro will ensure that responsible personnel report the compliance status of the Project ESMS and ESMP performance to Lenders, senior management, regulatory authorities and affected communities.
Act	Management Review and Management of Change	Metagro will assign a responsible person to review the suitability, adequacy and effectiveness of the ESMS and identify improvement actions to facilitate continuous improvement policies, management plans and management system.

The aim of the ESMS, ESMP and supporting suite of E&S management plans is for them to be live tools to allow E&S performance to be managed and monitored. Continual improvement of the ESMS, ESMP and full suite of supporting plans will be achieved by the continual evaluation of E&S management performance against relevant policies, objectives and targets to identify opportunities for improvement.

Periodic audits will be carried out by the Metagro team during the construction and operation phase to determine the level of compliance with the overarching ESMS and to evaluate the effectiveness of the ESMP and supporting plans and procedures.

Effectiveness and proper implementation will be reviewed approximately annually or as required by the management team.

9.2 Roles and Responsibilities

IFC PS 1 para 17: The client, in collaboration with appropriate and relevant third parties, will establish, maintain, and strengthen …an organizational structure that defines roles, responsibilities, and authority to implement the ESMS. Specific personnel, including management representative(s), with clear lines of responsibility and authority should be designated. Key environmental and social responsibilities should be well defined and communicated to the relevant personnel and [throughout] the client's organization. Sufficient management sponsorship and human and financial resources will be provided on an ongoing basis to achieve effective and continuous environmental and social performance.

IFC PS 1 para 18: Personnel within the client's organization with direct responsibility for the project's environmental and social performance will have the knowledge, skills, and experience necessary to perform their work, including current knowledge of the host country's regulatory requirements and the applicable requirements of Performance Standards 1 through 8. Personnel will also possess the knowledge, skills, and experience to implement the specific measures and actions required under the ESMS and the methods required to perform the actions in a competent and efficient manner. [para 19] For projects posing potentially significant adverse impacts or where technically complex issues are involved, clients may be required to involve external experts to assist in the risks and impacts identification process.

IFC PS 1 GN 72: 'the client should designate specific in-house personnel, including management representative(s), with clear lines of responsibility and authority for environmental and social issues. The management representative(s) is a key function within the organization. The management representative(s) should act as a link between senior decision makers and those working in functions/departments within the organization that need to implement and maintain environmental and social management and mitigation measures. The management representative(s) should be a part of the senior management team.'

IFC PS 1 GN 74: Clients can use in-house staff and/or external consultants ("competent professionals") or external experts ("external experts") to carry out the risks and impacts identification process, provided that the applicable requirements of the Performance Standards are met. …. To be considered qualified, these external experts should be required to have substantive and extensive experience in similar projects. They should be involved or engaged early in the project's development phase and, as necessary, in the various stages of design, construction, and commissioning of the project. [GN 75] … Prior background, time in the job, training, skills development, ongoing education, and past experience can all play a role in determining whether a person has sufficient knowledge and skills to carry out their part of the management system and programs. [GN 80] … When specific aspects of the project or the implementation of the management system and programs are outsourced to contractors, the client should also ensure that these contractors have the requisite knowledge, skills, and training to perform the work in a competent manner in accordance with the management system and programs and the requirements of the Performance Standards.

IFC PS 1 para 22 The client will establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. …. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities. The client's monitoring program should be overseen by the appropriate level in the organization.

para 23 In addition to recording information to track performance and establishing relevant operational controls, the client should use … as internal inspections and audits, where relevant, to verify compliance and progress toward the desired outcomes…. The client will document monitoring results and identify and reflect the necessary corrective and preventive actions in the amended management program and plans. The client, in collaboration with appropriate and relevant third parties, will implement these corrective and preventive actions, and follow up on these actions in upcoming monitoring cycles to ensure their effectiveness.

para 24 Senior management in the client organization will receive periodic performance reviews of the effectiveness of the ESMS, based on systematic data collection and analysis. … Based on results within these performance reviews, senior management will take the necessary and appropriate steps to ensure the intent of the client's policy is met, that procedures, practices, and plans are being implemented, and are seen to be effective.

The current organisational structure for Metagro's HSE team is shown below. Staff will be assigned specific duties and responsibilities to ensure effective management of the Project's environmental, social and reputational performance. Selected sub-contractor(s) will have additional responsibilities and will be assigned appropriate E&S responsibilities as part of the ESMP.

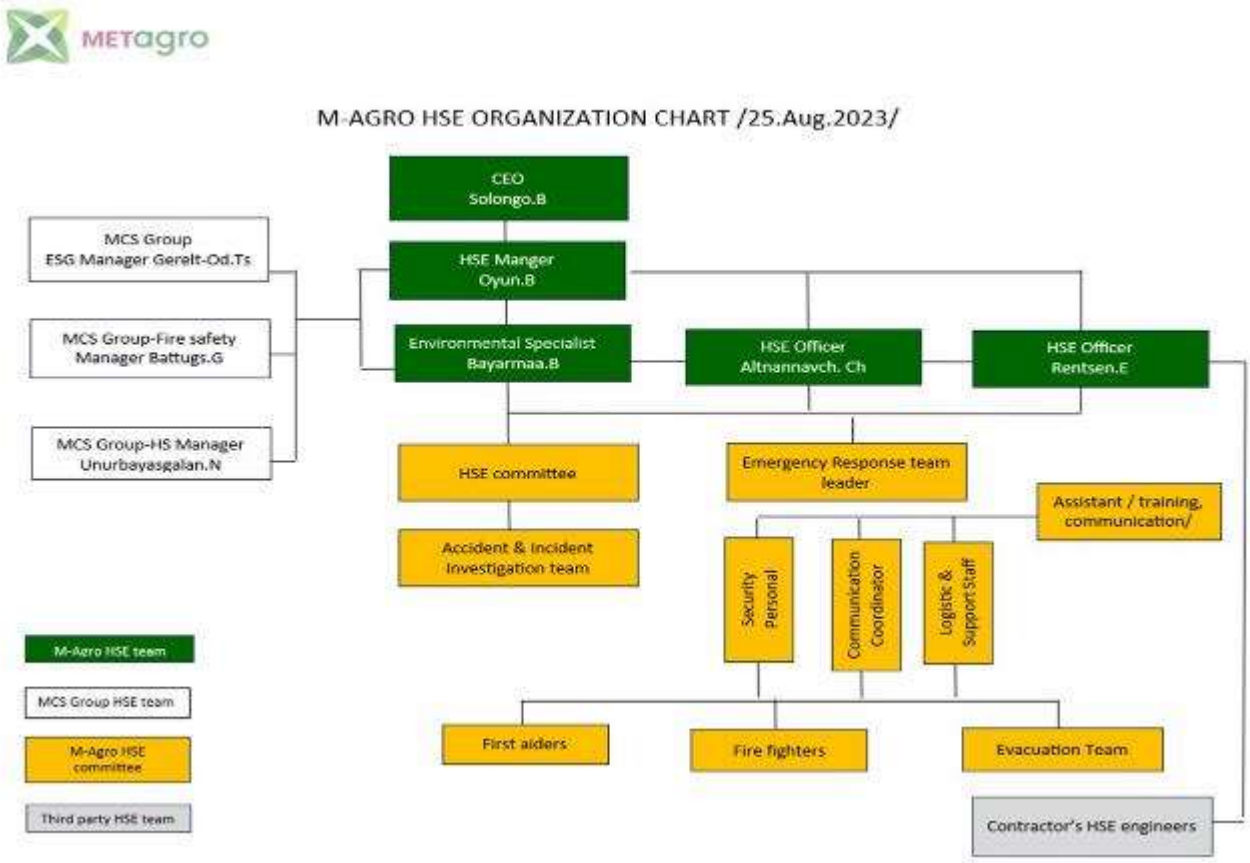

Figure 91. Metagro HSE Organogram

Community relations for Metagro are led by Tugssaikhan Usukh, a longtime staff and the Community Liaison based at the site who has a network of 5,000 friends on Facebook for his company-related information postings. Metagro does not have a designated social advisor at present.

The typical key roles and responsibilities of employees in relation to E&S performance are outlined in the table below. The specific responsibilities for each role will need to be defined under each of the supporting E&S management plans developed.

Table 60. Key Roles and Responsibilities

Role	General Responsibilities
Project Managers	• Responsible for directing and supporting delivery of the projects onsite • Liaising with government with respect to the worksites • Manage Day-to-day responsibility across the Project site; • Liaison with senior management on Project implementation challenges and timeliness of project execution; • Supervise project implementation work programme, contract specifications and attainment of conditionalities.
HSE & Environmental Supervisors	• To provide visible top level management involvement in implementing Project safety; • To communicate the Environmental and Social Policy and E&S Management Plans to on-the-ground managers and define objectives to meet that goal as part of Metagro management's commitment to a safe and healthy workplace; • To commit the necessary personnel with managing authority and resources to ensure trade person's safety and health; • To assign Company plans responsibilities to trade persons at all levels; • To ensure the responsibilities are understood and that essential tasks are performed; • To verify that guidelines and procedures are in place to protect the trade persons and others associated with a project; • To encourage subcontractor management involvement in the review and update of the Subcontractor Safety programme to ensure their commitment and support for an Injury Free workplace; • To recognise team members for good Safety practices and discipline those disregarding Company procedures; • To drive the Incident Investigation Process; • To lead monthly Safety & Environmental Project meetings with management, where available. • Develop work plan for HSE and environmental elements of ESMP implementation and review social element work plan. • Create awareness training workshops and educate staff on HSE and environmental issues through training programmes and review meetings; • Conduct HSE and environmental audits in accordance with Project monitoring guidelines; • Produce HSE and environmental reports covering the Project, internally and quarterly. • Review Health and Safety procedures • Ensure implementation of corrective actions

Role	General Responsibilities
Site Supervisors	• Directly responsible for ensuring compliance with method statements • Undertake site walkovers on a regular basis (daily/weekly during construction depending on activities) • Responsible for delivering training and awareness workshops/ webinars, implementing awareness campaigns • Supervising of works • Developing site specific method statements • Implementing method statements • Checking /auditing adequacy of construction prior to leaving the site
Community Liaison Officer (CLO)	• Direct interaction with communities in order to manage and maintain positive relationships. • Ensure the effectiveness in implementation of the grievance mechanism. • Tracking and investigation of community grievances received. • Ensure the effectiveness in implementation of the grievance mechanism.
Supply Chain Manager	• Contractor /subcontractor process, and audit programme
Social Advisor	• To Manage Day-to-day social management responsibility across all project sites(s); • Develop work plan for social elements of ESMP implementation • Create awareness training workshops and educate staff on social issues through training programmes and review meetings; • Motivate and maintain the interest of project staff in social issues through organisation of activities; • Ensure implementation and follow up of livelihood restoration measures; • Produce social reports covering the Project, internally and quarterly.
E&S Department and Management	• Advise and support staff consistently with the requirements of the Project ESMS and ESMP. • Ensure the ESMS is operating, and that the system is continuously improving. • Undertaking preconstruction surveys and implementation of the Land Disturbance Process across all construction locations (track and stations) • Develop construction methods and standardise materials usage under the contract; • Undertaking environmental monitoring activities
Permit/Legal Officer	• Responsible for reviewing and updating the Project Legal Register • Tracking the status of and compliance with permit requirements • Reporting on compliance with permits
HR Manager	• Sign off of HR policies and plans • Communicating with employer and OPERATOR • Investigation of any grievances

Role	General Responsibilities
HR Officer	• Writing HR plans, policies and associated plans • Implementation of HR plans. Policies and associated plans • Working with HR Lead on grievance investigations
Recruitment Manager	• Responsible for Recruitment Plan and Influx Management Plan • Ensuring recruitment and retrenchment are undertaken to the required standards
All personnel/workers	• All personnel/workers employed for the Project are responsible for carrying out their roles in accordance with the ESMS and ESMPs

9.3 Environmental and Social Management Plan

The ESMP provides a framework to enable the effective implementation of the E&S management measures developed through the ESIA. It identifies and provides guidance for the development of the full suite of E&S management plans that will be prepared in due course, focusing on E&S management actions required for the construction phase and broader requirements for the operational phase.

The purpose of the ESMP is to guide the implementation of mitigation measures and monitoring requirements identified through the ESIA process to reduce adverse environmental and social effects to acceptable levels and enhance positive effects. Broadly, the objectives of the ESMP are to:

- Ensure compliance with Project standards including Mongolian national legislative requirements and guidelines and International Good Practice through the IFC Performance standards and EHS guidelines;
- Support the development of detailed management plans for the Project and enable appropriate resources and responsibilities to be allocated; and
- Demonstrate to stakeholders such as lenders and local communities how the commitments and mitigation measures identified through the ESIA process will be planned, implemented and monitored/checked.

The ESMP should incorporate all mitigation measures identified within this ESIA

Metagro should develop topic-specific plans, procedures and processes to support delivery of the commitments made in this ESMP, illustrated by the examples below.

Table 61. Supporting E&S Management Documents

Documents	Design / Engineering	Environment	Communities / Social	Occupational Health & Safety
Project E&S Policy		X	X	
Project Human Resources Policy				X
Design Change Control Process (may form part of the wider Management of Change Process)	X			
Management of Change Process	X	X	X	X

Documents	Design / Engineering	Environment	Communities / Social	Occupational Health & Safety
Emergency Preparedness and Response Plan (EPRP)	X	X	X	X
Incident Investigation Process		X	X	X
Contractor Management Process		X	X	X
Standard Operating Procedures e.g., working at height, hot works, chemical handling procedures etc.		X	X	X
Training Plan		X	X	X
Hazardous Materials Management Plan		X		X
Spill Response Plan		X		X
Air Quality Management Plan		X		
Noise Management Plan		X		
Water Management Plan		X		
Wastewater Management Plan		X		
Waste Management Plan		X		
Biodiversity Management Plan / Biodiversity Action Plan (if required)		X		X
Invasive Species Management Plan		X		
Stakeholder Engagement Plan			X	
Worker Grievance Mechanism			X	
Community Grievance Mechanism			X	
Livelihood Restoration Plan			X	
Chance Finds Procedure			X	
Security Management Plan			X	
Traffic Management Plan			X	X
Occupational Health & Safety Management Plan				X
Worker Code of Conduct				X
Local Hiring Policy				
Local Content Plan			X	
Community Investment Plan			X	
Supply Chain Management Plan			X	

9.4 Environmental & Social CAPEX & OPEX

Metagro is making significant capital and operating investments in environmental and social matters, as illustrated below for 2024.

Table 62. Metagro Major E&S CAPEX planned for 2024

CAPEX Item	Value (US$)	Year
Retention pond for cattle feedlot	115,942	2024
Manure mixer, pump	22,609	2024
Waste water treatment plant	520,383	2024
Fertilizer and agrochemical warehouse	95,652	2024
TOTAL	**754,586**	

Metragro also makes significant OPEX commitments within the Environmental Management Plans for its operations. The table below illustrates the activities within the EMP for

Table 63. Metagro Typical EMP OPEX Items for 2023

CAPEX Item	Value (US$)	Year
Management organization	11,858	2023
Action plan to reduce adverse impacts	8,399	2023
Landscaping and gardening plans	1,482	2023
Waste management plan	3,310	2023
Action plan for the protection of historical and cultural heritage		2023
Environmental monitoring program	5,336	2023
A plan to report the implementation of the environmental management plan to the residents of the affected area	296	2023
Social Management Plan	2,223	
TOTAL	**32,905**	

9.5 Environmental & Social Action Plan

Metagro is committed to implement an effective ESMS to continuously manage and communicate the social and environmental impacts and risks imposed on its workers and contractors, and the local communities affected by its activities.

This ESIA has evaluated the Metagro Project for best practice and compliance using a long-form IFC compliance evaluation matrix, presented in **Appendix L**.

This IFC compliance matrix and the actions proposed within it have then been condensed and summarised to formulate an Environment and Social Action Plan (ESAP), presented below, that contains all the key elements within the full table in **Appendix L**.

The ESAP specifies measures for addressing adverse risks and impacts and enhancing beneficial impacts. It also includes systems management measures and capacity-building requirements for the ongoing planning, implementation, monitoring and evaluation of E&S performance throughout Metagro's lifetime.

Notes on ESAP Table

ESAP Item #	Tracking Number for future reference
IFC Table Ref	Item location withing detailed IFC compliance matrix

ESIA Reference	Cross reference to relevant section and actions within ESIA main text, e.g. S9.4 WR1-4 = Section 9.4, Water Resource #1-4

Table 64. Environmental and Social Action Plan for Metagro

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
Performance Standard 1: Environmental & Social Risks								
1	1.1	Environmental and Social Assessment and Management System	Metagro does not yet have a complete, IFC-aligned ESMS but has some elements in place. Metagro does not yet have Project-level staff capacity for ongoing development, implementation and monitoring of social components of the ESMS in alignment with IFC PS, namely: systematic stakeholder engagement; grievance management (internal and external); local content (hiring and procurement); strategic community investment; contractor E&S management; supply chain management	Metagro will finalise the development and implementation of its ESMS in alignment with IFC standards and good international industry practice (GIIP) Metagro will appoint a suitably experienced Senior Social Manager to undertake the development, implementation and monitoring of the social components of the ESMS and this ESAP. Job description and candidate selection to be approved by IFC. Project organogram to be updated accordingly. Metagro will organise a comprehensive IFC-aligned verification audit of the ESMS by an independent consultancy. ToR and selection of consultancy to be approved by IFC. Metagro will undertake capacity-building training on IFC PS and GIIP for all Project-level and Group-level HSE and Social staff. Metagro will develop a process for ongoing capacity-building, training and awareness-raising of international standards and GIIP in E&S management for all project workers/contractors	All elements listed in this ESAP developed as prescribed Document showing the architecture of the ESMS Senior Social Manager appointed Updated organogram showing functions responsible for social items in this ESAP Consultancy firm and target date selected for ESMS audit. ESMS audit completed. IFC PS and GIIP training completed. Process developed for ongoing capacity-building training and awareness-raising in E&S management	Metagro	S 7.1 S 9.1	Management time $75-150k 3rd Party Verification Audit and ESMS support follow-up

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
2	1.2	Policy	Metagro has an ESG Policy	Metagro will verify that the ESG Policy is Metagro-specific and that it references IFC PS and GIIP, and will adjust it as required Metagro will identify measures to communicate the Policy, both internally and externally	Written, Metagro-specific E&S Policy aligned with IFC PS Documented evidence that the policy is being communicated to staff, contractors and external stakeholders	Metagro	S 7.4	Management time only
3	1.3	Identification of Risks and Impacts	Metagro has undertaken an ESIA (this document) to identify Project E&S impacts, along with mitigation measures Metagro does not yet have a systematic process for identifying and assessing E&S impacts and risks on an ongoing basis	Metagro will develop a process for the ongoing identification and assessment of E&S impacts and risks across all Project departments Metagro will maintain an E&S Risk Register for ongoing risk identification, assessment, management and monitoring	Written procedures for ongoing E&S risk identification and assessment E&S Risk Register specific to Metagro, updated quarterly	Metagro	S 7.1	Management time only
4	1.9	Primary supply chain	Metagro does not yet have documented measures in place to analyse, monitor and manage E&S risks associated with its supply chain	Metagro will undertake identification and analysis of E&S risks associated with its primary supply chain, primarily regarding cattle and fodder procurement Metagro will develop a Supply Chain Management Plan to address the identified E&S risks Metagro will develop an E&S questionnaire for prospective suppliers and will include questionnaire responses among its supplier selection criteria	Documented identification and analysis of E&S risks associated with primary supply chain, with input from relevant departments Supply Chain Management Plan document with action plan (timeline) Template of E&S questionnaire for prospective suppliers. Integration of questionnaire in the procurement process.	Metagro	S 8.19 SC1-6	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
5	1.12	Management programmes	Metagro does not yet have systematic E&S management programmes to address all Project impacts and risks on an ongoing basis. Priority management programmes are prescribed in this ESAP.	Metagro will develop management programmes to address each group of impacts and risks identified in the ESIA. A management programme typically includes: an annual plan, procedures, assigned resources (staff, budget), an implementation timeline, and a monitoring and evaluation (M&E) process. Based on the impact & risk groups identified in the ESIA, Metagro will establish and/or enhance the following Management Programmes: - Soil Conservation - Groundwater - Emergency Preparedness & Emergency Response - Air Quality - Traffic - Biodiversity - Invasive Species - Hazardous Materials - Waste - Integrated Pest Management - Occupational Health & Safety - Animal Welfare & Health - Stakeholder Management - Grievance Management - Community Investment - Local Content - Worker/Contractor Influx - Supply Chain Management - Security and Human Rights Metagro will update and adjust the management programmes annually (at minimum) throughout the lifetime of the project.	Complete, documented management programmes for each group of E&S impacts and risks in the ESIA, and any new ones emerging over the course of Project operations	Metagro	S 9.1 S 9.3 S 8 throughout	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
6	1.23	Stakeholder Analysis and Engagement Planning	Metagro has not yet undergone a formal (documented) process of stakeholder identification and analysis for affected communities in its AoI Metagro currently undertakes stakeholder engagement on an ad hoc basis, according to Project needs or emerging issues The ESIA Team has identified vulnerable stakeholders as part of the ESIA SEP Metagro does not yet have a systematic process for identifying, analysing and managing vulnerable stakeholders	Metagro will deepen its understanding of stakeholders in the project AoI by I) undertaking stakeholder identification, mapping and analysis, and II) establishing a centralised data management system that allows for aggregation and tracking of engagement records and information and updating the information on an ongoing basis. This will include differentiation of vulnerable stakeholders.	Documented stakeholder identification and analysis exercise with input from all relevant project departments Stakeholder database (or similar) in place and maintained / expanded regularly	Metagro	S 8.14 WI1-8 S 8.15 BS1-8 S 8.16 AS1-2 S 8.19 SE1-4	Management time only
7	1.24	Stakeholder Analysis and Engagement Planning	Metagro currently undertakes stakeholder engagement on an ad hoc basis, according to Project needs or emerging issues	The ESIA Team will develop a Stakeholder Engagement Plan (SEP), including communication of the grievance mechanism, for disclosure and consultation of the draft ESIA Report to stakeholders in Metagro's AoI. Metagro will develop a Metagro-specific SEP, aligned with IFC PS 1 and updated annually, for solidifying stakeholder relationships in its AoI and for ongoing participative disclosure and consultation of Project impacts & risks, mitigation measures, and general Project information, activity reports and opportunities. Metagro will develop special engagement measures	ESIA SEP developed, implemented, and documented Annual project SEP developed, implemented and documented	Metagro	S 8.14 WI1-8 S 8.15 BS1-8 S 8.16 AS1-2 S 8.19 SE1-4	Management time $15-30k ESIA consultation

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
				for vulnerable stakeholders. Communication of the grievance mechanism will be integrated in the SEP.				
8	1.31	External Communications	Metagro does not currently have an external communications procedure as described in this IFC PS Metagro has a communication plan at the MCS Group level, and has some methods in place for collecting stakeholder input and concerns	Metagro will develop a Project-specific External Communications Procedure that focuses on collecting input from external stakeholders and that demonstrates how the input helps inform Metagro's E&S management programmes Metagro will communicate the External Communications Procedure with all project personnel and contractors who interface with community stakeholders	Documented Communications Procedure Documentation of measures undertaken to communicate the procedure to all relevant staff/contractors	Metagro	S 8.19 SE1-4	Management time only
9	1.32	Grievance Mechanism for Affected Communities	Metagro has procedures for managing community grievances, however, enhancements are required for them to be considered a complete, IFC-aligned grievance mechanism. The ESIA Team's proposed adjustments are included in the ESIA SEP.	Metagro will adjust its existing grievance management procedures to bring them in closer alignment with IFC standards and GIIP Metagro will integrate ongoing communication about the grievance mechanism into its annual SEP	Enhanced external grievance mechanism documented and communicated to community stakeholders as part of the SEP	Metagro	S 8.17 GM1-2	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
10	1.33	Ongoing Reporting to Affected Communities	Metagro undertakes some reporting to government authorities and communities, however, it does not have a systematic process for doing so based on Project impacts and risks	In the SEP, include activities for regular, ongoing reporting to affected communities about Project impacts, risks, action plans and stakeholder concerns	Ongoing reporting to affected communities documented and integrated into project SEP	Metagro	S 8.17 GM1-2	Management time only
Performance Standard 2: Labour & Working Conditions								
11	2.1	Human Resources Policies and Procedures	Metagro adopts and implements the MCS Group human resources policies and procedures, however, those policies and procedures are missing some of the requirement of this IFC PS.	In its existing Human Resources management plans, policies and processes, Metagro will integrate the following: - Reference to E&S requirements for contractors - Reference to enhanced worker/contractor Code of Conduct - Reference to the enhanced grievance mechanism - Reference to the E&S training and awareness requirements for workers/contractors and visitors	Updated Human Resources Management Plan	Metagro	S 8.14 WI-8	Management time only
12	2.7	Grievance Mechanism	Metagro has procedures in place for workers to raise workplace concerns, which are communicated to them at the time of recruitment. However, enhancements are required for these procedures to be considered a complete, IFC-aligned grievance mechanism. The ESIA Team's proposed adjustments are included in the ESIA SEP.	Metagro will adjust its existing internal grievance management procedures to bring them in closer alignment with IFC standards and GIIP Metagro will include ongoing communication of the internal grievance mechanism to workers and contractors as part of its annual SEP	Updated Grievance Redress Mechanism	Metagro	S 8.17 GM1-2	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
13	2.15	Work environment	Metagro now has OHS Policies, Workplace Risk Assessment, Manuals of Procedures, OHS Guidelines for Contractors and Sub-Contractors, and a spreadsheet-based monitoring and reporting function. The Metagro safety culture has also been significantly strengthening, and greater focus has been given to the supervision and monitoring of subcontractors in addition to their employees. A 3-year, 36-point Safety Improvement Plan is also in place	Further development and alignment of Metagro's existing OHS Policy and OHS standard operating procedures with sector-specific OHS best-practice, including the WB EHS Guidelines: - Annual Crop Production (2016) - Mammalian Livestock Production (2007) - Meat Processing (2007) Enhance the existing OHS Policy and OHS standard operating procedures by achieving certification to international standard ISO 45001 for occupational health and safety	Updated OHS Policy, and SOPs Certification to ISO 45001 Monitoring reports documenting all activities related to the update and implementation of the plans and procedures identified	Metagro	S 8.12 OHS1-3	Management time $75-150k for 3rd party support for ISO 45001 development
14	2.16	H&S Management	Same as line 2.15	Development of an Emergency Preparedness and Response Plan informed by a HAZOP study or similar risk assessment. The Plan should at least include organisation of emergency areas, roles and responsibilities, communication systems, response procedures and resources and training. The Plan should have a dedicated section on Spill Control specifically to address, minimise and control potential for agrochemical and fuel spills. All agrochemical and fuel storage areas should have appropriate secondary containment and bunds The Plan should also have a dedicated section on prevalent natural hazards such as wildfires, flooding and dzuds.	Emergency Preparedness and Response Plan, and related SOPs Monitoring reports documenting all activities related to the update and implementation of the plans and procedures identified	Metagro	S 8.12 OHS1-3	Management time $250k Hardstanding, secondary containment and bunds for all hazardous materials storage and handling areas $15 – 25K Procurement and maintenance of emergency response equipment

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
				It should include trainings for fire prevention and suppression actions for all construction contractors, workers, Project users, adjacent structure users and neighbouring communities.				
15	2.17	Third parties' engagement	Metagro has contractor management plans and associated procedures to ascertain that its contractors are reputable, legitimate and have appropriate HSE processes in place. However, the contractor management plan(s) are missing some of the E&S requirements stipulated in this IFC PS.	Metagro will adjust its contractor management plans, monitoring systems and contractual agreements to require compliance with the Metagro ESG Policy, and to require a process for the identification, assessment, mitigation and reporting of E&S risks for all contractors throughout construction and operations.	Modified contractor management plans, monitoring systems and contractual agreements applied	Metagro	S 7.1 S 7.4 S 8.14 WI1-8 S 8.15 BS1-8	Management time only
Performance Standard 3: Resource Efficiency & Pollution Prevention								
16	3.1	Resource efficiency and pollution prevention principles	Metagro is implementing its operations as a leading model of regenerative agriculture; adopting good agricultural practices such as the no-tillage technique, crop rotation, planting of cover crops to enable proper soil management and preserve soil quality, whilst also boosting agricultural yield and allowing for adequate supply of livestock feed.	Metagro should develop a Soil Conservation and Management Plan for preventing physical and chemical degradation of soils, such as pollution, erosion or compaction from agricultural activities. Other aspects of resource efficiency are covered in water / ecosystem services - Line 4.4; pollution prevention - Line 3.9; IPM - Line 3.11	Soil Conservation and Management Plan and related SOPs	Metagro	S 8.4 GS1 S 8.6 CC1-2	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
17	3.4	Greenhouse Gases	Metagro has presented documents highlighting strategies to reduce 20,899 tons of CH4 emissions over the next 10 years of the project's operation However it has not yet conducted a current and future baseline GHG emission study of the project site to benchmark this reduction against, and to estimate its predicted scope 1 and 2 emissions based on the proposed scale of operation.	Metagro will conduct a baseline GHG emission study to quantify and estimate its emissions and carbon sequestration potential of its farm. Metagro will develop a GHG quantification methodology and reporting framework to handle resource efficiency and track its emissions. Metagro to consider investing in more renewable energy sources to power its operations.	Detailed current and future baseline GHG emissions with all aspects of the operational phase of the project carefully considered. Implemented GHG quantification methodology and GHG reporting framework. Quarterly and Annual GHG emissions reports to track progress and set targets.		S 8.6 CC5-6	Management time only
18	3.6	Prevention and mitigation	Metagro has the potential to release pollutants to soil, surface water, groundwater and air from several key operations, most notably: - biological pollutants and odours from its feedlot and slaughterhouse operations - agrochemical pollutants from its storage, handling and use of fertilisers, herbicides and pesticides - hydrocarbon pollutants from its storage, handling and use of fuels and oils for its large machinery and vehicle fleet - air pollutants (dust) from its agricultural activities and transportation on dirt tracks across the site Engineering features to control key risks are being implemented, including the in-	Hazardous materials and waste controls are required, see line 3.9 A Groundwater and Surface Water Quality Monitoring Programme is required, see line 4.4 Metagro should develop an Air Quality Management Plan to minimise odour and dust emissions.	Air Quality Management Plan implemented see also lines 3.9 and 4.4		S 8.4 WR1-4 S 8.7 AQ-1 S 8.11 HM1-3	Management time $30-50k / year on waste water treatment compliance analytical costs and air quality monitoring see also line 4.4, ESAP Item #22

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
			construction cattle feedlot wastewater treatment plant. Secondary containment and hardstanding will be in use for hazardous liquid storage and handling. A monitoring regime is also required to assess the performance and compliance of pollution control measures.					
19	3.9	Wastes	Metagro has institutional control measures in place for many aspects of hazardous materials and waste management.	Further alignment with GIIP should be undertaken for key elements of hazardous materials and waste management. This should include further development of an Emergency Preparedness & Response Plan, Hazardous Materials Management Plan, and Waste Management Plan in accordance with the recommendations in the ESIA The Waste Management Plan must include measures to monitor and manage eutrophication and nutrient loading risks associated with intensive animal agriculture activities.	Updated Emergency Preparedness & Response Plan and related SOPs Updated Hazardous Materials Management Plan and related SOPs Updated Waste Management Plan and related SOPs Monitoring reports documenting all activities related to the update and implementation of the plans and procedures identified	Metagro	S 8.11 HM1-3	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
20	3.11	Pesticide Use and Management	Metagro is a significant user of agrochemicals including pesticides and herbicides (such as over 50 tonnes of glyphosate in 2022) An IPM programme is in place, detailed records are kept of all agricultural crop activities including sprayer operations, and several approaches to natural pest control are being implemented - such as the installation of roosting post for birds of prey every 150m around the 70km of perimeter fencing.	The IPM should be regularly refined and implemented, giving preference to alternative pest management strategies with the use of agrochemicals as a last option. Key measures in the IPM may include: - Use predators (e.g. birds) to control pests; maintain structures to keep out pests; and use mechanical controls (e.g. traps, barriers, light, and sound) to kill, relocate, or repel pests - Protect natural enemies of pests by providing a favourable habitat (e.g. bushes for nesting sites and other indigenous vegetation) that can house pest predators - Use good housekeeping practices in barns and other facilities to limit food sources and habitat for pests, and consider covering manure piles to reduce pest and insect populations. - Only pesticides that are manufactured and registered and approved in accordance with FAO's International Code of Conduct on the Distribution and Use of Pesticides shall be used. - No pesticides that fall under the World Health Organisation Recommended Classification of Pesticides by Hazard Classes 1A and 1B shall be used. - SOPs for use, handling, mixing and application of pesticides (including herbicides) - Application technologies and practices shall be designed to reduce unintentional drift or runoff, used only as indicated in the SOP/IPM and under controlled conditions.	Updated Integrated Pest Management Plan and related SOPs Monitoring reports documenting all activities related to the update and implementation of the plans and procedures identified		S 8.11 HM3	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
				- Record and documentation requirements including records of pesticide use and effectiveness. - Storage requirements - Training and PPE requirements in accordance with planned procedures.				
Performance Standard 4: Community Health, Safety & Security								
21	4.1	H&S preventive and control measures	Metagro does not currently have preventive and control measures in place for impacts and risks to local communities associated with: - traffic and road safety - project emergencies - the influx of workers and contractors	Metagro will include impacts on local communities in the Traffic Management Plan Metagro will ensure local community protection is considered in the Emergency Preparedness and Response Plan Metagro will incorporate guidelines on community relations in the existing code of conduct for workers and contractors, including conduct off-site and outside work hours Metagro will include the same guidelines in an induction presentations for new workers/contractors and visitors Metagro will include the same guidelines in its E&S training programme for workers and contractors	Updated Traffic Management Plan Updated Emergency Preparedness and Response Plan Amended code of conduct for workers and contractors Induction presentation for new workers, contractors and visitors with community relations component Monitoring reports documenting all activities related to the update and implementation of the plans and procedures identified Community relations component integrated into E&S training programme	Metagro	S 8.9 TR1-6 S 8.12 OHS3 S 8.14 WI1-8	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
				Metagro will monitor the grievance mechanism for any trends associated with contractor interactions in local communities				
22	4.4	Ecosystem Services	The threat to water resources is a major Project risk due to the presence of multiple very shallow community wells for livestock and human consumption close to the site. Metagro's activities are a risk to the quality and availability of this resource due to: - proposals for extensive groundwater abstraction for irrigation - potential surface water damming and use for irrigation - the use of agrochemicals across large land areas	Undertake a Water Resources Sustainability Review to include: - a computation groundwater model to assess localised aquifer drawdown - water usage minimisation options - irrigation technologies review with respect to water conservation - water recycling and reuse options Develop a Groundwater Management Programme to monitor: - groundwater level changes in different pumping areas - amount of water pumped from each borehole - report on water usage (drinking water, irrigation etc.); and - groundwater quality in the Project area Develop a Groundwater and Surface Water Quality Monitoring Programme to include: - representative sampling locations, including the most at-risk community water wells, the Murun River, and other at-risk surface water bodies The irrigated area will not exceed 400ha, as stated by Metagro in correspondence 25 & 26Jan24 & 1Feb24. Any further expansion will need to be explicitly authorised by IFC and will be dependent on the findings of the Water Resources Sustainability	Groundwater irrigation system limited to 400ha Water Resources Sustainability Review Groundwater Management Programme in place Groundwater and Surface Water Quality Monitoring Programme developed and in progress Monitoring reports documenting all activities related to the update and implementation of the plans and procedures identified	Metagro	S 8.5 WR1-4	Management time $200k installation of shallow groundwater water level and quality monitoring network $40-80k / year on groundwater & surface water analytical costs

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
				Review, Groundwater Management Programme, and Groundwater and Surface Water Quality Monitoring Programme, above				
23	4.5	Community Exposure to Disease	same as line 4.4, and in addition: there is a risk to community livestock health and community member health from potential diseases and pests that may be introduced via Metagro's livestock operations	Finalisation of Animal Health Policy and Animal Welfare Policy (currently in draft) Continuous improvement of existing cattle feedlot, biosecurity, veterinary, and animal health and welfare practices and SOPs at Metagro Farm.	Animal Health Policy and Animal Welfare Policy in place Updated and additional SOPs for cattle feedlot operations	Metagro	S 8.13 AW1-4	Management time only
24	4.7	Arrangements for security personnel	Metagro uses Security contractors to control access to the Project site. There are currently no formal (documented) measures in place to assess risks of human rights infractions associated with security rules of engagement and use of force, and to verify that security contractors are trained in line with international standards and GIIP.	As part of its risk management process (line 1.3), Metagro will undertake the identification and analysis of E&S and human rights risks associated with Security contractors, including verifying that their policies and procedures on rules of engagement and use of force are aligned with international standards and GIIP. As part of its contractor management plan and associated requirements (line 2.17), Metagro will ensure that Security contractors have a process for identifying, addressing and reporting E&S risks. As part of its programme for ongoing training and awareness-building of IFC PS and GIIP for all workers and contractors (line 1.1), Metagro will ensure that Security contractors are trained according to the requirements of this IFC PS, and that all workers, contractors and local communities are informed on their human rights.	Same as lines 1.3, 2.17 and 1.1, with integration of the components described here	Metagro	S 8.20 SH1-3	Management time only

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources								
25	6.1	Direct and indirect project-related impacts	The main potential impacts on Biodiversity from the Metagro Farm operation include: -Fragmentation of habitat due to new access roads and fencing on site -Threat of injury or impalement of large wildlife, as well as to herder livestock, from extensive barbed wire fencing -Damage to flora and fauna and to freshwater habitats from the inappropriate use of agrochemicals -Eutrophication of the local Murun river from increased levels of nutrients due to fertiliser run-off -Disturbance of fauna due to the introduction of new animals on site -Alien invasive species or bacteria may be introduced to the local environment via the livestock operations -Accidental introduction/spread of invasive non-native species with fodder imports -Collisions of wildlife with traffic -Increase of potential carrion from deceased livestock and local wildlife dietary changes	Develop a Biodiversity Action Plan (BAP) and a resulting Biodiversity Management Plan (BMMP). The workforce should be trained in biodiversity management requirements, including - how to recognise, notify and report, and avoid impacts to sensitive habitats and species where these are present. - movement of transport vehicles on dedicated paths to minimise any harm to small fauna within the site - In the operational phase of the Project, monitoring of newly installed fencelines must take place to assess risk to wildlife and any recording harm, significant injury, or mortality. Fencing design must be adjusted if regular significant harm to wild species occurs based on this data collected. - Use of non-barbed wire in future and replacement perimeter fencing. Metagro will be required to take measures to prevent the spread of INNS of flora. Monitoring post-construction will ensure that newly restored areas are not inundated with non-native species from adjacent areas. Quarterly monitoring for 1 year and biannually for 2 additional years post-construction will ensure that newly restored areas are not inundated with non-native species from adjacent areas	Biodiversity Action Plan (BAP) and Biodiversity Management Plan (BMMP) and related SOPs in place. Training materials and training logs to demonstrate biodiversity awareness raising. Non-barbed wire fencing specified for future works. Fenceline inspections. Invasive Species Management Plan. Transmission line inspections. Agrochemical Management Plan. Waste Management Plan.	Metagro	S 8.10 BI1-9	Management time $50-80k Biodiversity Action Plan / Biodiversity Management Plan

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
			and potential health risk of contact with pharmaceuticals. - Carrion supply can increase presence of carrion birds in the site area, however live cattle specimens are unlikely to be predated by raptors given the minimum size and weight of the minimum 18 month old cattle being raised. - Transmission risk of zoonotic diseases between livestock and native wildlife Existing transmission lines and the risk to avifauna collisions, especially the steppe eagle (*Aquila nipalensis*) which is known to be vulnerable to transmission line collisions and electrocution	Metagro must have in place an Invasive Species Management Plan for the duration of their operations to screen imported livestock, fodder and other materials for potential carrying of invasive non-native species. This includes any pests that may be introduced to the site. Risk to carrion birds from ingesting potentially harmful pharmaceuticals from cattle carrion to be managed by inclusion in the Project's Waste Management Plan. Monitoring of any carrion bird deaths in the local area to be included in the BMMP to detect any links to pharmaceuticals used by the cattle feedlot operations. The BMMP must also monitor the presence of carnivores drawn to the presence of carrion from livestock and any confirmed feeding activity. Suitable bird collision risk divertors installed at appropriate intervals on any new transmission lines installed as part of the Project. Recommended that Metagro work with the local provider or controller of the existing transmission lines to monitor bird collision risk and mitigate accordingly. This may be a local/national governmental authority or energy provider.				

ESAP Item #	IFC Table Ref	Topic	Findings	Action Items	Indicators of Completion / Documentation	Responsible	ESIA Reference	Estimated Budget
26	6.7	Critical Habitat	The Critical Habitat Assessment concluded that critical habitat is triggered under criterion 1 for the Mongolian marmot (*Marmota sibirica*).	Develop a Biodiversity Action Plan (BAP) and a resulting Biodiversity Management Plan (BMMP). The BAP should include appropriate expertise and surveys to assess and safeguard the habitats of the one species identified via Critical Habitat Assessment: Mongolian marmot (*Marmota sibirica*), . Additional conservation actions proportionate to the residual impact on the species may include financial support of species monitoring initiatives or awareness raising with local communities/local authorities around poaching and hunting pressures to help avoid/reduce species overexploitation.	Biodiversity Action Plan (BAP) and Biodiversity Management Plan (BMMP) and related SOPs in place.	Metagro	S 8.10 BI1	See ESAP Item #25
27	6.9	Invasive Alien Species	There is potential for invasive species to be brought in via supply chain livestock	Develop an Invasive Species Management Plan (ISMP)	ISMP and related SOPs in place	Metagro	S 8.10 BI4	Management time only

9.6 ESAP Monitoring

The Project team should adhere to a time-bound and action-oriented ESAP to implement the mitigation measures provided for each of the identified environmental and social impacts. The recommended actions should be monitored on a regular basis, quarterly or half-yearly and all outcomes should be audited in accordance with existing EHS commitments.

The monitoring process should cover all stakeholders including employees, contractors, suppliers and the local community impacted by the project activities thereby increasing the effectiveness of suggested mitigations measures. Metagro should ensure that all its contractors comply with the requirements of conditions for applicable permits, suggested action plans and scheduled monitoring. Inspections and audits should be carried out by an internal trained team and external agencies/experts. The entire process of inspections and audits should be documented, and key findings should be implemented by the proponent and contractors in their respective areas.

9.7 ESAP Documentation & Record Keeping

Documentation and record keeping system must be established to ensure updating and recording of progression and closure of ESAP requirements. Responsibilities must be assigned to relevant personnel for ensuring that Metagro's ESMP documentation and document control systems are maintained and updated. The following minimum records should be maintained within Metagro's ESMS:

ESMS document architecture
E&S Management Plans
E&S Policies
E&S procedures
Legal Register
Operation control procedures
Work instructions
Incident reports
Emergency preparedness and response procedures
Training records
Monitoring reports
Auditing reports
Commitments register
Grievance register
Request register
Engagement activity register
Stakeholder database

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