

VINNYTSIA POULTRY FARM

ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA)
SUPPLEMENTARY INFORMATION REPORT (SIR)

DECEMBER 2016

VINNYTSIA POULTRY FARM

ESIA – SUPPLEMENTARY INFORMATION REPORT (SIR)

Myronivsky Hliboproduct (MHP)

Version 1









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TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	BACKGROUND	1
1.2	SCOPE OF THE SUPPLEMENTARY INFORMATION REPORT FOR THE ESIA.....	1
1.3	CONTENT AND FORMAT OF THE SUPPLEMENTARY ESIA	2
1.4	CONSTRAINTS AND LIMITATIONS.....	2
2	DESCRIPTION OF THE PROJECT.....	3
2.1	INTRODUCTION	3
2.2	INFORMATION ON MIRONIVSKY HLIBOPRODUCT (MHP GROUP)	3
2.3	PROJECT LOCATION.....	3
2.4	PROJECT AREA AND ITS SURROUNDINGS	4
2.5	PROPOSED DEVELOPMENT	4
3	POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK.....	12
3.1	LEGAL FRAMEWORK	12
3.2	UKRAINE REGULATION	12
3.3	INTERNATIONAL AGREEMENTS.....	15
3.4	INTERNATIONAL BEST PRACTICE, OPIC AND IFC REQUIREMENTS.....	16
3.5	CORPORATE EHS MANAGEMENT	20
4	PROJECT ALTERNATIVES.....	21
4.1	PROJECT PROPOSAL	21
4.2	SITE LOCATION ALTERNATIVES	21
4.3	‘NO PROJECT’ ALTERNATIVE	21
5	ENVIRONMENTAL BASELINE INFORMATION.....	22
5.1	BIODIVERSITY	22
5.2	METEOROLOGICAL AND CLIMATE.....	54

5.3	LANDSCAPE AND VISUAL.....	54
5.4	AIR QUALITY.....	55
5.5	NOISE AND VIBRATION.....	59
5.6	WASTE MANAGEMENT	60
5.7	SOIL, GEOLOGY, HYDROGEOLOGY AND HYDROLOGY.....	61
5.8	CULTURAL HERITAGE	65
5.9	SOCIAL BASELINE	66
5.10	STAKEHOLDER ENGAGEMENT AND CONSULTATIONS.....	72
6	IMPACT ASSESSMENT.....	76
6.1	INTRODUCTION	76
6.2	IMPACT ASSESSMENT METHODOLOGY	76
6.3	ECOLOGY	77
6.4	AIR QUALITY.....	89
6.5	NOISE IMPACTS.....	103
6.6	POTENTIAL SOLID WASTE IMPACTS	106
6.7	POTENTIAL LANDSCAPE AND VISUAL IMPACTS	135
6.8	GEOLOGY AND SOIL	136
6.9	HYDROGEOLOGY, HYDROLOGY AND WATER QUALITY	138
6.10	CULTURAL HERITAGE	145
6.11	COMMUNITY HEALTH AND SAFETY.....	145
6.12	SOCIAL AND SOCIO-ECONOMIC IMPACTS	153

7	PROPOSED MITIGATION MEASURES	164
8	ENVIRONMENTAL SOCIAL MANAGEMENT AND MONITORING PLAN	188

TABLES

TABLE 2.1	SETTLEMENTS IN CLOSE PROXIMITY	7
TABLE 3.1	PRINCIPAL UKRAINIAN ENVIRONMENTAL, SOCIAL AND H&S LAWS AND CODES RELEVANT TO THE PROJECT	12
TABLE 3.2	SANITARY PROTECTION ZONES REQUIREMENTS PER FACILITY	15
TABLE 3.3	PARTICIPATION OF THE UKRAINE IN RELEVANT INTERNATIONAL ENVIRONMENTAL AGREEMENTS	15
TABLE 5.1	CONSERVATION CATEGORIES.....	25
TABLE 5.2	MAGNITUDE OF IMPACT	26
TABLE 5.3	CONFIDENCE IN PREDICTIONS.....	26
TABLE 5.4	OVERALL APPRAISAL CATEGORY	27
TABLE 5.5	PROTECTED AREAS.....	31
TABLE 5.6	HABITAT DESCRIPTIONS	33
TABLE 5.7	SPECIES RECORDS IN THE VINNYTSIA REGION	46
TABLE 5.8	SPECIES OBSERVATIONS	51
TABLE 5.9	IMPORTANT ECOLOGICAL FEATURES	52
TABLE 5.10	NEAREST SETTLEMENTS.....	55
TABLE 5.11	BACKGROUND POLLUTANT CONCENTRATIONS AND SHORT TERM TLV	56
TABLE 5.12	SHORT TERM AMBIENT AIR QUALITY MONITORING AT FODDER PLANT (MG/M ³).....	57
TABLE 5.13	MAXIMUM ALLOWABLE NOISE LEVELS.....	60
TABLE 5.14	ACTUAL WATER CONSUMPTION.....	61
TABLE 5.15	BASELINE WATER CHEMISTRY FOR BUG RIVER.....	63
TABLE 5.16	WWTP SURFACE WATER DISCHARGE TO BUG RIVER MONITORING ANALYSIS.....	63
TABLE 6.1	IMPACT SIGNIFICANCE LEVELS	76
TABLE 6.2	ECOLOGICAL ASSESSMENT	78
TABLE 6.3:	SUMMARY OF PREDICTED IMPACTS WITHOUT MITIGATION.	87
TABLE 6.4	DUST RISK ASSESSMENT SCREENING BASED ON PROXIMITY TO RECEPTORS.....	90
TABLE 6.5	AVERAGE ANNUAL WIND DIRECTION FREQUENCY.....	93
TABLE 6.6	ASSUMED NOISE GENERATING EQUIPMENT.....	104
TABLE 6.7	DISTANCE TO NOISE RECEPTORS	105
TABLE 6.8	ANNUAL WASTE PRODUCTION	109
TABLE 6.9	ANNUAL WASTE PRODUCTION DECLARED (HATCHERY) ...	110

TABLE 6.10	ESTIMATED INCREASE PHASE 2 EXTENSION (HATCHERY).....	112
TABLE 6.11	ANNUAL WASTE PRODUCTION DECLARED.....	112
TABLE 6.12	ESTIMATED INCREASE PHASE 2 EXTENSION (BRIGADE)	114
TABLE 6.13	ANNUAL WASTE PRODUCTION DECLARED (WWTP).....	114
TABLE 6.14	ESTIMATED INCREASE PHASE 2 EXTENSION (WWTP).....	115
TABLE 6.15	ANNUAL WASTE PRODUCTION DECLARED (SLAUGHTERHOUSE).....	116
TABLE 6.16	ESTIMATED INCREASE PHASE 2 EXTENSION (SLAUGHTERHOUSE).....	117
TABLE 6.17	ANNUAL WASTE PRODUCTION DECLARED (RENDERING PLANT).....	118
TABLE 6.18	ESTIMATED INCREASE PHASE 2 EXTENSION (RENDERING PLANT).....	119
TABLE 6.19	ESTIMATED INCREASE MANURE PRODUCTION.....	119
TABLE 6.20	COMPLIANCE WITH IFC AND EU BREF REQUIREMENTS (MANURE SPREADING).....	121
TABLE 6.21	ESTIMATED CONSTRUCTION WASTE VOLUME PER NEW BUILDING.....	128
TABLE 6.22	ESTIMATED CONSTRUCTION WASTE VOLUMES PER SITE .	133
TABLE 6.23	WATER REQUIREMENT ASSOCIATED WITH PHASES 1 AND 2 OF THE DEVELOPMENT.....	139
TABLE 6.24	EFFLUENT PARAMETERS.....	142
TABLE 6.25	ASSESSMENT OF COMPLIANCE WITH IFC PS4 COMMUNITY HEALTH, SAFETY AND SECURITY.....	145
TABLE 6.26	ASSESSMENT OF COMPLIANCE WITH IFC PS2 LABOUR AND WORKING CONDITIONS.....	156
TABLE 7.1	SUMMARY OF PROPOSED MITIGATION MEASURES.....	164

FIGURES

FIGURE 2.1	VINNYTSIA OBLAST, VINNYTSIA CITY AND PROJECT LOCATION (RED).....	3
FIGURE 2.2	PROPOSED DEVELOPMENT AND ASSOCIATED FACILITIES	5
FIGURE 2.3	HATCHERY, FIRST AND SECOND LINE.....	7
FIGURE 2.4	HATCHERY, SITE FOR THIRD LINE.....	8
FIGURE 2.5	FODDER PLANT, PLACEMENT FOR TWO NEW INTERNAL RAILWAYS (LEFT) AND FOR NEW ADDITIVES STORAGE (RIGHT).....	8
FIGURE 2.6	SLAUGHTERHOUSE, SECOND LINE.....	9
FIGURE 2.7	RENDERING PLANT, SECOND LINE (CENTRE) AND FIRST LINE (RIGHT).....	9
FIGURE 2.8	WWTP, SECOND LINE (FOUNDATION-LAYING STAGE).....	10
FIGURE 2.9	BY-PASS NO. 1 (LEADING TO BRIGADES 50, 51 AND 52)	10
FIGURE 2.10	BY-PASS NO. 2 (LEADING TO BRIGADES NO. 7 TO 9, AND 43).....	11
FIGURE 2.11	BY-PASS NO. 3 (LEADING TO BRIGADE NO. 19)	11
FIGURE 5.1	PROTECTED AREAS FOR NATURE CONSERVATION	30

FIGURE 5.2	EXAMPLE OF TYPICAL LANDSCAPE IN SITE AREA.....	55
FIGURE 5.3	WATER QUALITY SAMPLING POINTS.....	65
FIGURE 5.4	MONUMENT IN LUKASHIVKA (LEFT) AND HISTORIC CHURCH IN VASYLIVKA (RIGHT)	66
FIGURE 5.5	EXAMPLE OF THE TYPICAL LAND USE OF PROPOSED BRIGADE SITES (BRIGADE 14).....	68
FIGURE 5.6	EXAMPLE OF BUS STOP SHELTER PROVIDED BY MHP	72
FIGURE 5.7	CONSULTATION IN VASYLIVKA	74
FIGURE 6.1	EXTERIOR VIEW OF HATCHERY SEALED SURFACE AREAS	111
FIGURE 6.2	WWTP LINED SLUDGE LAGOONS AND GROUNDWATER MONITORING WELL.....	115
FIGURE 6.3	PHASE 2 EXTENSION TO THE SLAUGHTER HOUSE.....	116
FIGURE 6.4	RENDERING PLANT ON LEFT AND SLAUGHTER HOUSE ON RIGHT.	118
FIGURE 6.5	MANURE STORAGE FACILITY	124
FIGURE 6.6	COMPLIANCE WITH IFC AND EU BREF REQUIREMENTS (MANURE STORAGE).....	125
FIGURE 6.7	BASELINE SITE CONDITIONS, HATCHERY EXTENSION (LEFT) AND CONSTRUCTION SITE WWTP EXTENSION (RIGHT)	129
FIGURE 6.8	TYPICAL BASELINE CONDITION FOR PHASE 2 BRIGADES AND ACCESS ROADS.....	129
FIGURE 6.9	CLEARING OF VEGETATION AND TRESS FOR THE ACCESS ROAD CONSTRUCTION.....	130
FIGURE 6.10	EXCAVATION OF 30 HA BRIGADE SITE AND TOPSOIL STOCKPILE BERM.....	131
FIGURE 6.11	TYPICAL VEHICLES ON SITE.....	131
FIGURE 6.12	CONCRETE SLAB ROAD DECK AFTER INSTALLATION (LEFT) AND BRIGADE REARING SHEDS CONSTRUCTED FROM SAME PRE-FABRICATED CONCRETE SLABS (RIGHT)	132
FIGURE 6.13	WHO SEISMIC HAZARD DISTRIBUTION MAP FOR UKRAINE.	138

APPENDICES

A P P E N D I X	A	HABITAT DELINEATION MAPS
A P P E N D I X	B	MHP LAND ACQUISITION 27 STEPS PROCEDURE (UKRAINIAN AND ENGLISH VERSIONS)
A P P E N D I X	C	BEST AVAILABLE TECHNIQUES - AIR AND WATER EMISSIONS, PROCESS WASTE AND OPERATIONAL TECHNIQUES
A P P E N D I X	D	BEST AVAILABLE TECHNIQUES – BIOSECURITY AND ANIMAL WELFARE
A P P E N D I X	E	LABOUR AND WORKING CONDITIONS
A P P E N D I X	F	STAKEHOLDER ENGAGEMENT PLAN
A P P E N D I X	G	STAKEHOLDER MEMO

1 INTRODUCTION

1.1 BACKGROUND

The Overseas Private Investment Corporation and CitiBank (or the “Banks”) are considering providing finance to Myronivsky Hliboproduct (“MHP” or the “Client”) for the construction of the Vinnytsia Poultry Farm Phase 1 Development (or the “Project”) in Ukraine.

The Banks’ investment will be used to fund the following project components:

- construction of new brigades¹ 13, 14, 19, 42, 43, 47 and 49, 50 and 51 (the last two are initially planned but their location has not been finalised);
- construction of a new Waste Water Treatment Plant (WWTP);
- construction of by-pass roads (total of approximately 17 km);
- completion of construction, and purchase of equipment for the Hatchery;
- completion of construction, and purchase of equipment for the Fodder Plant; and,
- completion of construction, and purchase of equipment for the Slaughter House and Render facilities.

The main construction phase is scheduled to be carried out during 2017–2018.

WSP|Parsons Brinkerhoff (WSP|PB) has been commissioned by MHP to prepare a Supplementary Information Report (SIR) for the Environmental and Social Impact Assessment (ESIA) for the proposed Project to be in line with (Overseas Private Investment Corporation) (OPIC) policies and International Finance Corporation (IFC) Performance Requirements (PRs).

In addition to this supplementary information report, and for the subsequent ESIA disclosure, an Environmental and Social Action Plan (ESAP) has been prepared, as well as Stakeholder Engagement Plan (SEP) and Environmental and Social Management Plan (ESMP), which can be found in Appendices to this report.

1.2 SCOPE OF THE SUPPLEMENTARY INFORMATION REPORT FOR THE ESIA

The objective of the report will be to produce a fit-for-purpose package of supplementary information to compliment the current national Environmental Impact Assessments (EIA) undertaken in Ukraine, providing a full package of disclosure to cover all ESIA requirements required by the OPIC policies and the IFC PRs. This SIR, as well as the National Environmental Impact Assessments (EIAs) and associated documents, will then be released for public consultation in accordance with the IFC requirements. In order to achieve this, the following has been undertaken:

- Review of documents produced to date for national permitting processes in respect of environmental and social issues;
- Review of any stakeholder identification, analysis and engagement actions, relative to IFC PS1, which have been undertaken to date;

¹ Brigade – a collection of poultry rearing houses forming a poultry rearing farm location

- Gap Analysis between the national requirements for EIA in Ukraine and the OPIC and IFC PRs for an ESIA, clearly identifying any gaps in the existing documentation and processes relative to the IFC requirements;
- Substantiate how the identified gap(s) could pose a risk to the Project;
- Identify a scope of work that would be required to fill the gaps;
- Develop an Environmental and Social Action Plan (ESAP); and,
- Preparation of a Disclosure Pack including supplementary information, a SEP, ESAP and ESMP in English.

Furthermore, gaps have been identified in the baseline data where additional field studies are recommended, which are defined within the ESAP to ensure that project moves forward with these required studies completed.

1.3 **CONTENT AND FORMAT OF THE SUPPLEMENTARY ESIA**

The Supplementary ESIA has adopted the following structure:

- Chapter 1: Introduction
- Chapter 2: Description of the Project
- Chapter 3: Policy, Legal and Administrative Framework
- Chapter 4: Description of Alternative Options, including the “No Project” Option
- Chapter 5: Environmental and Social Baseline Information
- Chapter 6: Assessment of the Impacts
- Chapter 7: Proposed Mitigation Measures
- Chapter 8: Monitoring Program comprising an Environmental Social Management Plan
- Appendix A: Habitat Delineation Maps
- Appendix B: MHP Land Acquisition 27 Steps Procedure
- Appendix C: Best Available Techniques – Air and Water Emissions, Process Waste and Operational Techniques
- Appendix D: Best Available Techniques – Biosecurity and Animal Welfare,
- Appendix E: Labour and Working Conditions,
- Appendix F: Stakeholder Engagement Plan
- Appendix G: Stakeholder Memo

A Bibliography provides the references of documents, authors and technical information that have been used within the report. Appendices provide site plans and maps.

1.4 **CONSTRAINTS AND LIMITATIONS**

This Phase 2 facilities extension project was aligned with the fixed project transaction timescale. To accommodate the set timescale, this supplementary assessment used the existing information available from the local EIAs (Phase 2 development) prepared by MHP (where such were finished), a detailed site reconnaissance, interviews with the MHP environmental and corporate social responsibility experts and further desktop research.

Where information was not available, suggestions have been made on how these gaps should be addressed as part of the on-going mitigation programme.

2 DESCRIPTION OF THE PROJECT

2.1 INTRODUCTION

This chapter provides details of the proposed development and describes the layout of the planned project components and their associated infrastructure. The description of the project, its components and activities has been provided and based on the recent site visit that took place in October 2016.

2.2 INFORMATION ON MIRONIVSKY HLIBOPRODUCT (MHP GROUP)

MHP Group is a vertically integrated agribusiness and food company undertaking a wide range of activities from grain production, to animal rearing and through to meat production. Other small operations within the group include production of foie gras and concrete for construction.

There are over 20 operating companies (enterprises) which form MHP Group. The Vinnytsia Facility is located in the Vinnytsia region / oblast.

2.3 PROJECT LOCATION

The project is located in the Vinnytsia Province (or Oblast). Its capital, also called Vinnytsia, is the administrative center of Vinnytsia Oblast and the largest city in the historic region of Podill'ya. Administratively, it is incorporated as a town of Oblast significance. It also serves as an administrative centre of Vinnytsia Raion, one of the 27 districts of Vinnytsia Oblast, though it is not a part of the district². The location of the project is presented in Figure 2.1.



Figure 2.1 Vinnytsia Oblast, Vinnytsia city and project location (red)

The population of Vinnytsia city is 372,484 (2015 Census estimates). The wider Vinnytsia Oblast has a population of 1,610,573, while the population of Ladyzhyn (the main settlement relevant to the project) is 22,778 people (2015 Census estimates).

² State Statistics Centre of Ukraine.

Vinnitsia Oblast is located in the central part of the Right Bank Ukraine and borders on seven other administrative Oblasts..

The environmental and social context of the project area is described in Chapter 5.

2.4 PROJECT AREA AND ITS SURROUNDINGS

The project area of the Vinnitsia Poultry Farm comprises the farm, the proposed project components, associated infrastructure and the immediate vicinity of these assets.

The project area is sited between the town of Ladyzhyn and surrounding villages of Mykhailivka, Fed'kivka and Hordiivka, and is located away from residential developments. The project area is characterised by open spaces and agricultural fields bordered by small access roads. The wider overall project area is estimated to be 27,000 hectares.

The project area mainly consists of **industrial areas with existing building** (for the WWTP, and the extension of the existing slaughter house, fodder plant, WWTP and hatchery), or **arable cultivated fields** for the new brigades and by-pass roads:

- **Existing Facilities' Extension:** the waste water treatment facility is located approximately 2.5km north of Lukashivka and set within a farmed arable landscape. The slaughter house and render facilities are within an existing operational compound comprising buildings, hard standing and bare ground areas. The proposed extension of the hatchery (c.0.5ha) will be situated entirely within an existing operational compound, of managed grassland and hard standing. The proposed extension works associated with the fodder plant is entirely located with the existing site compound.
- **Brigades:** Brigade 13 is entirely situated within an arable field approximately 1km west of Lukashivka. Brigades 14, 42, 43 and 47 are surrounded by entirely cultivated arable land. Brigade 19 is entirely situated within an arable field cultivated for corn (at the time of the site visit in October 2016). Two further brigades (50 and 51) will be developed but the final location for these has not been finalised.
- **Bypass Roads:** Bypass Road 1 (to connect Brigade 49 and 50) takes a route north, from the main road (T0237) between Bohdanivka and Lukashivka, on an existing track towards Bilousivka. The existing track is located between extensive arable fields to the east and west and is lined with trees. Bypass No.2 - was partially constructed at the time of survey. The bypass routes from a road south of Lukashivka and travels 0.1km south over arable fields before joining an existing track through woodland. Bypass No.3 (providing access to Brigade 19) follows an existing track between lines of trees planted as windbreaks.

2.5 PROPOSED DEVELOPMENT

MHP Group is a vertically integrated agribusiness and food company undertaking a wide range of activities, including grain production, animal rearing and meat production. There are over 20 operating companies (enterprises) which form MHP Group.

The proposed development of project components and associated infrastructure is presented in Figure 2.2.



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

- Notes
- Existing Brigades
 - Proposed Brigades
 - Fodder Plant
 - Hatchery
 - Slaughterhouse and Render
 - Vehicle Depot
 - Waste Water Treatment
 - Water Intake
 - Approximate Site Areas
 - Access Routes
 - Truck Route
 - Bypass Routes
 - Major Railway line
 - Roads
 - Major Route
 - Minor Route
 - Local Route

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Drawing Title: **Figure 2.2 Proposed development and associated facilities**

Scale at A3: **1:100,000**

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POULTRY FARM AND ASSOCIATED INFRASTRUCTURE DESCRIPTION

The project components include:

- construction of new brigades 13, 14, 19, 42, 43, 47 and 49, 50 and 51 (the last two are initially planned but a location has not been finalised);
- construction of a new Waste Water Treatment Plant (WWTP);
- construction of by-pass roads (total of 17 km);
- completion of construction, and purchase of equipment for the Hatchery;
- completion of construction, and purchase of equipment for the Fodder Plant; and,
- completion of construction, and purchase of equipment for the Slaughter House and Render facilities.

The location of brigades 50 and 51 is not currently confirmed, as MHP management is in the process of land lease agreement negotiations. As such, in addition to the main facilities, this report also describes these two brigades but they are not covered by the impact assessment in Chapter 6.

Details of the proposed project components and associated infrastructures, such as by-pass roads and the WWTP, are described below.

Brigades

MHP plans to build 10 new brigades as part of the project. The site selection process is currently at different stages:

- Seven of ten brigades have the lease agreement reached and finalised (brigades 13, 42, 47, 14, 49, 43 and 19). Of these seven brigades, four have passed the public hearing phase (42, 43, 47 and 49) and one is currently under construction (13)
- Three sites are yet to be confirmed, with no lease agreements reached for brigades 50 and 51, and one site yet to be identified (52).

The design for new brigades will be based on the same design as the existing brigades. Every brigade has a total of 38 poultry houses (2 rows of 19 on each side), requiring a total area of 25-30ha. An example of the brigade layout is provided in Figure 2.3. Each brigade has a capacity of approximately 39,050 chickens (broilers), on an average of 6-7 cycles per year. A total cycle takes 43-45 days, from the reception of day-old chicks to the delivery of broilers, including disinfection stage.



Figure 2.3 Typical Brigade layout

The settlements in closest proximity to the seven proposed brigades are shown in Table 2.1. No settlement is located within the 1km sanitary zone requirement as defined by the national EIA legislation.

Table 2.1 Settlements in close proximity

BRIGADE NO.	VILLAGE NAME
13	Lukashivka (1.26km east)
14	Lukashivka (1km east) ³
19	Velyka Stratiivka (2.35km north)
42	Kleban (1.47km south west)
43	Ulyanivka (1.70km north)
47	Mykhailivka (1.39km north west) Vasilivka (1.52km south east)
49	Bilousivka (2.2km north)

Brigades 50, 51 and potentially 52 will be located approximately 2.4 km west of Bohdanivka. However, as previously identified, the location of these additional brigades has not been confirmed as this stage.

In 2015 / 6, MHP carried out a number of national EIA (which in is called OVNOS in Ukraine) for brigades No. 13, 42 and 47. The rest of the planned brigades (No. 14, 19, 49 and 43) have not yet reached the national OVNOS stage.

Hatchery

The current Hatchery, as shown in Figure 2.4, was built in 2012 as part of the Phase 1 development of the Vinnytsia Poultry Farm development. The total area of the hatchery site is 8ha, with 3.5ha developed at the moment. There are currently two production lines operating, the first line is operating at 100% capacity and the second line is operating at 50% capacity. This project component involves the construction of the third production line within the site boundaries (i.e. the footprint of this historically allocated site stays the same). MHP also plans to purchase more efficient new hatchery equipment under this project, which would allow them to increase all production lines' capacity but without increasing the facility's footprint.



Figure 2.4 Hatchery, first and second line

The third line would be constructed directly adjacent to the second line. The land allocated for the third line is currently unoccupied but fenced off and not used for any current purpose, and includes a small concrete road leading to other internal roads on the edges of the site. The land allocated for the third line is shown in Figure 2.5.

³ The final absolute orientation was not decided for Brigade 14 but the statutory required distance of 1.2 km will be met for all brigades to comply with the Ukrainian regulatory norms.



Figure 2.5 Hatchery, site for third line

The hatchery process lasts approximately 21 days. Two MHP breeding farms (300km and 500km away) deliver eggs in special vehicles that support a strict microclimate regime. After delivery, the eggs are placed in special fridges, before going through the first stage sorting process. The eggs are then placed in an incubator for 18.5 days. After the second sorting, where bad quality eggs are taken out of the production line, the eggs with embryos are placed in a hatching machine for 72 hours. This is followed by the third sorting process to ensure the highest eggs quality, before the day-old chicks are sent to rearing houses. The organic waste is sent to a State-owned plant in Tulchyn, approximately 40km from the site, where a specially licensed company disposes of it, following the national sanitary legislation requirements. The nearest residential area is situated 1.83km to the north of the site.

More details are provided in the 2010 national OVNOS for the Hatchery facilities.

Fodder plant

The fodder plant was built in 2011 as part of the Phase 1 development. It currently has a capacity of 150,000 tonnes of grain storage, and 38,000 tonnes of sunflower storage, for processing per month. This project component will cover the development of the two new internal railway lines and one new additives storage building. The grain silo storage has adequate capacity for the 2nd production line to be installed (at least for the first 2 years). A second fodder production line will be added to the existing production line, within the same fodder mill building which was built with two lines intended, but currently only one production line has been installed. The land allocated for these components is shown in Figure 2.6. The existing buildings, including the building to be used for the installation of the 2nd fodder line, are covered in the original national Fodder Plant OVNOS, prepared in 2010.



Figure 2.6 Fodder plant, placement for two new internal railways (left) and for new additives storage (right)

Slaughterhouse

The phase 1 slaughterhouse facilities were built in 2011 as part of the earlier development. This project will cover the second building recently in construction which will house the 2nd production line to the slaughterhouse and the second rendering facilities / building. These are both within the existing and fenced-off site boundaries, as shown in figures Figure 2.7 and Figure 2.8. The nearest residential area is situated 1.2km to the south of the site.



Figure 2.7 Slaughterhouse, second line



Figure 2.8 Rendering plant, second line (centre) and first line (right)

The proposed slaughter house extension has already been covered by the 2010 OVNOS for the slaughterhouse.

WWTP

The WWTP was built in 2012 as part of the earlier development. Currently effluents are treated and then discharged to the Pivdenny Bug River. MHP Group will undertake the construction of an additional treatment line within the overall WWTP facility, located within the same site boundaries and adjacent to the existing WWTP facilities. The construction works have already commenced and are currently at the foundation-laying stage, as shown in Figure 2.9. The nearest residential area is situated 1.6 km to the south of the site.



Figure 2.9 WWTP, second line (foundation-laying stage)

The WWTP was designed for the 11,000m³ / day capacity, including effluents from the following facilities:

- Slaughter house, 10,200m³ / day;
- Fodder plant, 450m³ / day;
- Hatchery, 350m³ / day.
- Liquid wastes from the rearing brigades from changeover cleaning, which are tinkered into the WWTP.

Prior to reaching the WWTP, all effluents are preliminary treated through water treatment facilities located within the corresponding facilities.

As per the local EIA, the WWTP was designed to operate 312 days per year.

By-pass roads (x3)

MHP plans to build three by-passes to allow access to the planned new brigades and to relieve traffic in villages which are affected by MHP related vehicles.

By-pass 1: Bohdanivka By Pass

One by-pass road will allow access to the planned brigades No. 50 and 51 preventing traffic going through Bohdanivka, as demonstrated in Figure 2.10. The by-pass will upgrade the existing local roads for part of its length, which are currently unsuitable to traffic.



Figure 2.10 By-pass no. 1 (leading to brigades 50, 51 and 52)

By-pass Road 2: By pass of Olyanytsya

The second by-pass road will allow access from the national road network south of Lukashivka to existing brigades no. 7, 6, 8 and 9, as well as the planned brigade no. 43. This is expected to relieve current traffic going through Olyanytsya. The proposed by-pass route is presented in Figure 2.11. The road has already been partially constructed between the national road network to the forest, and from the other side of the forest to the railway lines. The road within the forested area has been widened by the Ministry of Forestry, to allow HGVs access. Chapter 5 – “Ecology” section further details the road within the forest.



Figure 2.11 By-pass no. 2 (leading to brigades no. 7 to 9, and 43)

By-pass Road 3: By pass of Hordiivka

The third by-pass road will allow access to planned brigade no. 19 and prevent traffic going through Hordiivka, as shown in Figure 2.12. The road will start from the national road network and cross the edge of agricultural fields, rejoining the national road to the south.



Figure 2.12 By-pass no. 3 (leading to brigade no. 19)

3 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

3.1 LEGAL FRAMEWORK

The construction and operation of the proposed Vinnytsia Poultry Farm will meet the requirements of Ukraine policy, as well as legal requirements and international environmental standards and guidance, such as those developed by the International Finance Corporation (IFC) and that are relevant to the project. Compliance with the legal requirements listed in Sections 3.1 and 3.2 are mandatory. Compliance with the requirements list in Section 3.3 will be required by the IFC. Consequently the national EIAs, SIR and the project (including through the ESAP and ESMP implementation) have been designed to comply with all these requirements.

3.2 UKRAINE REGULATION

Ukrainian legislative and regulatory base consists of (in order of hierarchy):

- international conventions, treaties, protocols and agreements ratified by the Parliament (Verkhovna Rada);
- laws; resolutions (*Postanova*) and decrees (*Rozporiadzhennia*) of the Cabinet of Ministers of Ukraine (CMU);
- orders (*Nakaz*) of the Ministers; and, various norms, rules, standards and guidance, often jointly referred to as regulations (*normatyvno-pravovi akty*) are approved by resolutions of the CMU and orders of the Ministers.

Of major importance are also by-laws (*Polozhennia*) of numerous government bodies (Ministries, State Agencies, State Inspectorates, State Services and other central government organisations) which define authority of the respective government organisation and its branches on regional (oblast and rayon) level. This section of legislation underwent very significant changes after the administrative reform of 2010, when the whole system of central government organisation was changed.

The environmental aspects are also regulated by relevant legal provisions contained in other parts of the country's law (civil law, water code, land code, administrative legislation, criminal law, etc.). More specifically, these provisions specify the grounds and details of punitive actions / penalties of disciplinary, administrative, material and / or criminal nature, imposed on an environmental offender and related to the harm done by the offence, environmental risk, and severity of adverse impact produced. Table 3.1 below provides a summary of the Ukrainian legislation relevant to this project that has been considered in the EIA, although this is not an exhaustive list.

Table 3.1 Principal Ukrainian environmental, social and H&S laws and codes relevant to the project

UKRAINIAN LAW/CODE	DATE ADOPTED
Specific EIA regulations	
The Law of Ukraine on Environmental Protection	1991
Principles of Town Planning	1992
The Law of Ukraine on Environmental Review	1995
Ukrainian State Construction Norm on EIA Components and Content, DB A.2.2-1-2003 with amendments in 2010	2010

UKRAINIAN LAW/CODE	DATE ADOPTED
Regulation of Urban development (2011)	2011
Other relevant regulations	
Requirement for Sanitary Protection	1996
Law of Ukraine on Air Protection	1992
Sanitary and Epidemiological well-being of population	1994
Subsoil Code of Ukraine	1994
Water Code of Ukraine	1995
Labour Code of Ukraine	1972 (as amended)
Law of Ukraine on Waste	1998
Land Code of Ukraine	2001
Law of Ukraine on Extra Hazardous Facilities	2001
Law of Ukraine on Land Protection	2003

The Law of Ukraine on Environmental Protection (1991)

The Law of Ukraine on Environmental Protection (1991) is the main umbrella Environmental Law in Ukraine that sets out the overall framework for environmental management and policy making in the country, including environmental assessment requirements. It stipulates that the Ministry of Environment carries out State Environmental Review (SER) with the following objectives: (a) to determine the level of ecological safety of an activity; (b) to establish compliance of project design materials with environmental regulations; and (c) to assess whether the planned mitigation measures are adequate and sufficient. The conclusions of SER are binding, and positive conclusions of SER are required for project approval.

The Law also stipulates that project design documentation should include EIA materials. The EIA is carried out taking account the environmental regulatory requirements, ecological carrying capacity, state of environment at the site location, environmental forecasts, socio-economic development outlook of the region, and expected cumulative negative environmental impacts.

Principles of Town Planning (1992)

This Law defines various legal, economic, social and organizational provisions for urban building activities with the aim "to ensure provision of environmental protection, rational nature resource use and conservation of cultural heritage".

The Law of Ukraine on Environmental Review (1995)

The Law of Ukraine on Environmental Review (1995) specifically deals with environmental assessment and review in more detail. It sets the requirements and the process for carrying out state and public environmental review. The main provisions of the Law include the following:

- Environmental review in Ukraine is focused on determining the level of compliance of planned activity with respective regulatory requirements;
- The Law stipulates requirements to review project alternative options, and to incorporate public opinion about the project;
- Materials submitted for SER should include an EIA report as a separate volume, and a Statement of Environmental Consequences of planned activities (published in local media) as part of this volume; and

- EIA report materials should include: substantiation and description of planned activities; information about alternatives; environmental baseline; types and levels of impacts in normal and emergency conditions; possible qualitative environmental changes; ecological and economic consequences; and, mitigation measures.

Ukrainian State Construction Norm on EIA Components and Content (2003) with amendments in 2010

This is the most comprehensive national regulation for EIA in Ukraine and details specific requirements for components, procedure and content of the EIA on construction activities.

Regulation of Urban development (2011)

The Law #3038-VI “On Regulation of Urban Development” considerably altered the EIA process in Ukraine. In particular, preliminary environmental assessment submissions were excluded from the list of requirements of the State Ecological Expertisa (SEE). This new Law has also introduced amendments to the Law “On environmental protection” (1991), Law “On ecological expertise” (1995), Law “On sanitary and epidemiological welfare of population” (1994) and Law “On fire safety” (1993), which came into an effect since 12th of June, 2011.

The Law effectively stated that separate fire, sanitary and ecological expertise/assessments for construction of new developments are no longer required. Instead, only one assessment/expertise should be carried as specified in the article 31 of the Law #3038-VI. It is stated that projects of IV and V categories are subject to mandatory expertise with respect to compliance with standards on health and safety of population, environmental protection, occupational safety, energy saving as well as fire, and radiation safety.⁴

Ukrainian requirements for Sanitary Protection Zones (SPZ)

The requirements for SPZs are set forward in the State Sanitary Rules for Planning and Construction of Human Settlements approved by the Order N173 of the Ministry of Health of Ukraine on 19.06.1996 (with amendments).

This document deals with various aspects of placing human settlements and various other associated facilities, and includes a number of annexes that set specific distances (thereby establishing the SPZ) between settlements and facilities that may impact human health by means of air pollution, noise, vibration, radiation, electro-magnetic fields, and other negative factors.

An SPZ is measured from the source of impact (e.g. an emissions generator) to the nearest settlement area. The impact factor, such as concentration of specific air pollutant, should be within the hygienic legal limit at the outer boundary of the SPZ. The following facilities are not allowed within SPZs:

- Human settlements, hotels, dormitories;
- Schools, kindergartens;
- Hospitals;
- Recreational facilities, parks, gardening cooperatives, sports facilities; and
- Facilities for the supply of drinking water and their protection zones.

⁴http://www.3dcftas.eu/sites/default/files/Oharenko_2016_Environmental%20impact%20assessment%20in%20the%20EU%20as%20a%20roadmap%20for%20reforms%20in%20Ukraine.pdf

Specific allocation of SPZ distances are based on sanitary classification of enterprises, industries and facilities..

It is possible to reduce SPZ in cases when, by means of calculation and laboratory research, it is proved that the legal pollution limits are not exceeded at the boundary of human settlement. Such a reduction of SPZ should be approved by the Chief State Sanitary Doctor of Ukraine. Table 3.2 provides details on the sanitary zone legal requirements per each facility type covered by the project⁵.

Table 3.2 Sanitary Protection Zones requirements per facility

FACILITY TYPE	REQUIRED SANITARY ZONE
Fodder plant	100 m
Brigades – over 40,000 broilers	1,200 m
Slaughterhouse	300 m
Wastewater Treatment Plant	400 m

Based on the Sanitary Norms 3077-84 requirements referring to the maximum permissible noise levels generated by roads the levels of 55 dBA for day and 45 dBA for night should not be exceeded.

3.3 INTERNATIONAL AGREEMENTS

Table 3.3 identifies the international environmental agreements related to the projects and that are ratified by Ukraine.

Table 3.3 Participation of the Ukraine in relevant international environmental agreements

CONVENTION	RATIFIED BY UKRAINE
World Meteorological Organization (October 11, 1947)	12 April 1948
Convention on Biological Diversity (Rio de Janeiro, June 1992)	29 November 1994
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Paris, December 1982) with amendments	1er December 1991
Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, November 1972)	12 October 1988
United Nations Framework Convention on Climate Change (Rio de Janeiro, June 1992)	13 May 1997
The Vienna Convention for the Protection of the Ozone Layer (Vienna, November 1989)	14 May 1986
UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Finland, February 1991)	20 July 1999
Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, March 1973)	29 March 2000
UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in	18 Nov 1999

⁵ <http://zakon0.rada.gov.ua/laws/show/z0379-96/print1470737714453305>

CONVENTION	RATIFIED BY UKRAINE
Environmental Matters (Aarhus, June 1998)	
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel, March 1989)	8 October 1999
Stockholm Convention on Persistent Organic Pollutants (Stockholm, May 2001)	25 September 2007
Energy Charter Treaty (Lisbon, December 1994)	6 February 1998
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam, September 1998)	6 December 2002
Kyoto Protocol to the UN Framework Convention on Climate Change (Kyoto, December, 1997) and Amendments	12 April 2004

In addition, Ukraine ratified the following relevant International Labour Organisation (ILO) Conventions which are now enforced in the country:

- C184 – Safety and Health in Agriculture, ratified in 2009
- C174 – Prevention of Major Industrial Accidents, ratified in 2011
- C161 – Occupational Health Services Convention, ratified in 2010
- C155 – Occupational Safety and Health Convention, ratified in 2012
- C029 – Forced Labour Convention, ratified in 1956, and
- C138 – Minimum Age Convention (minimum age is 16 years), ratified in 1979

3.4 INTERNATIONAL BEST PRACTICE, OPIC AND IFC REQUIREMENTS

Although Ukraine is not part of the European Union (EU), for some key operations MHP adopted, and complies, with the following relevant EU regulations. These are related to the management of poultry operations to prevent and reduce as far as possible the negative effects on the environment from poultry production operations. This is important for MHP group as it is a key component to allow the export of products to the EU.

A summary of those regulations and guidelines is given below, see also **Appendices C and D** for additional guidelines, EU BREF and BAT adopted by MHP.

EU ANIMAL BY-PRODUCTS REGULATIONS

With the animal by-products regulations⁶, animal by-products are defined as the entire bodies or parts of bodies of animals or products of animal origin not intended for human consumption. The scope of the regulations covers:

- the health and surveillance rules for the collection, transport, storage, handling, processing and use or disposal of animal by-products, and

⁶ Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules concerning animal by-products not intended for human consumption

- the placing on the market and, in certain specific cases, the export and transit including products derived from animal by-products.

The slaughter house incorporates a rendering facility which produces animal by-products for sale to the market.

THE INDUSTRIAL EMISSIONS DIRECTIVE (IED)

Most Poultry Farms in an EU Context are managed for their impact through the Industrial Emissions Directive. While this is not relevant to any site in Ukraine, this legislation does have some detailed guidance on the operation of 'Best Available Techniques' or 'BAT' for the management of impacts of a typical poultry farm operation. These have been referenced where appropriate to illustrate accepted best practice, although the IFC / World Bank EHS Guidelines for the sector are the primary source of guidance used in this assessment (see below).

OPIC, IFC AND SPECIFIC WORLD BANK ENVIRONMENTAL, HEALTH AND SAFETY (EHS) REQUIREMENTS

The international standards that apply to the Project are:

- Standards adopted by the OPIC, described in its Consolidated Environmental and Social Policy Statement (October 2010).
- The IFC Performance Standards requirements (2012).
- The World Bank Group General EHS Guidelines
- IFC Good Practice note on Animal Welfare in Livestock Operations
- The World Bank Group IFC EHS Guidelines for Poultry Production and Poultry Processing.
- The World Bank Group IFC EHS Guidelines on Annual Crop Production.
- All relevant international conventions etc., including the conventions and recommendations of the International Labour Organisation.

OPIC's environmental and social policies and procedures are described in the OPIC Environmental and Social Policy Statement. This includes guidance on: screening and categorization; environmental and social review; environmental and social standards; public consultation and disclosure; conditions and compliance; monitoring; climate change and renewable energy; and, country eligibility related to labour.

At a minimum, OPIC requires that all projects must meet the IFC Performance Standards, applicable Industry Sector Guidelines, and host country laws, regulations and standards related to environmental and social performance, including host country obligations under international law.

To manage the social and environmental risks and impacts of IFC projects, the IFC has developed a number of environmental and social Performance Standards. The IFC Performance Standards (PS), updated in 2012, and the accompanying Guidance Notes are applicable to this Project.

IFC PSs indicate that the party responsible for implementing and operating the project must comply with the applicable national laws, including those laws implementing host country obligations under international law. The PSs cover the following:

PS 1: Assessment and Management of Environmental and Social Risks and Impacts

PS1 underscores the importance of managing environmental and social performance throughout the life of a project. The objectives of PS1 are to identify and evaluate environmental and social risks and impacts of the project, to adopt mitigation hierarchy to anticipate and avoid or minimise effects and to promote improved environmental and social performance of clients through the effect use of management.

PS 2: Labour and Working Conditions

PS2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers. The objectives of PS2 are to promote the fair treatment, non-discrimination, and equal opportunities of workers, to establish, maintain and improve worker-management relationships and to promote compliance with national employment and labour laws. The PS aims to promote workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain, to promote safe and healthy working conditions and to avoid the use of forced labour.

PS 3: Resource Efficiency and Pollution Prevention

PS3 recognises that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. The objectives for PS3 are to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities, to promote the more sustainable use of resources, including energy and water and to reduce project-related GHG emissions.

PS 4: Community Health, Safety, and Security

PS4 recognises that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. The objectives of PS4 are to anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances. It aims to ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to Affected Communities.

PS 5: Land Acquisition and Involuntary Resettlement

PS5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. The objectives are to avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs. PS5 aims to avoid forced eviction and to anticipate and avoid, or where not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by i) providing compensation for loss of assets at replacement costs and ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. Further objectives include the need to improve, or restore, the livelihoods and standards of living of displaced persons and to improve the living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.

PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

PS6 recognises that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The objectives of the PS are to protect and conserve biodiversity, to maintain the benefits from

ecosystem services and to promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.

PS 7: Indigenous Peoples

PS7 recognises that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. The objectives of this PS are to ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture and natural resource-based livelihoods of Indigenous Peoples and to anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimise and/ or compensate for such impacts. Further aims include the need to promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner and to establish and maintain on-going an relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle. PS7 outlines the requirement to ensure the Free, Prior and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in the PS are present and to respect and preserve the culture, knowledge, and practices of Indigenous Peoples.

PS 8: Cultural Heritage

PS8 recognises the importance of cultural heritage for current and future generations. The main objectives of PS8 are to protect cultural heritage from the adverse impacts of project activities and support its preservation and to promote the equitable sharing of benefits from the use of cultural heritage.

WORLD BANK EHS GUIDELINES ON POULTRY PRODUCTION AND PROCESSING

The EHS Guidelines produced by the World Bank Group are technical reference documents on cross-cutting environmental, health, and safety issues applicable to all industry sectors. They cover general and industry-specific examples of Good International Industry Practice (GIIP), as defined in IFC PS3 on Pollution Prevention and Abatement.

The General EHS Guidelines (April 2007) contain the performance levels and measures that are normally acceptable to the IFC and are generally considered to be achievable in new facilities at reasonable costs by existing technology.

When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

EHS Guidelines on poultry production and processing (April 2007) cover process steps from the reception of live birds, slaughter, evisceration and simple rendering. In particular, the guidelines cover good practice and offer performance and monitoring indicators in terms of:

- Waste management – recommended measures include matching the feed content to the specific nutritional requirements of the birds, ensure production and manure storage facilities are constructed to prevent manure contamination of surface and ground water, keep waste as dry as possible by scraping wastes instead of flushing with water, use steam water in cleaning activities instead of cold water, reduce mortalities through proper animal care and disease prevention.

- Wastewater – recommended measures include the reduction of water use and spills from animal watering by preventing overflow of watering devices and using calibrated devices, the instalment of vegetative filters to trap sediment and water diversion to direct clean runoff around areas containing waste and the implementation of buffer zones to surface water bodies, avoiding land spreading of manure within these areas.
- Air emissions and odour - recommended measures include the use of exhaust stack heights from rendering and smoking that are consistent with GEP and the use of scrubbers to remove odour emissions.
- Energy consumption – recommended measures include the coverage and insulation of scalding tanks, the control of water levels, the improvement in cooling efficiency by insulating refrigeration room and the recovery of evaporative energy in the rendering process through the use of multi-effect evaporators.
- Hazardous materials – recommended measures include training of personnel using hazardous materials and avoidance of the use of pesticides falling under the World Health Organisation Recommended Classification of Pesticides by Hazard Classes 1a, 1b and II.
- Animal diseases – recommended management measures to minimise the potential for the spread of poultry pathogens include the establishment of sound biosecurity protocols for the entire poultry operation that control animals, feed, equipment and personnel, the prevention of interaction of wild birds with feed and the sanitization of bird housing areas.

3.5 CORPORATE EHS MANAGEMENT

At MHP, EHS policy has been developed and approved by the CEO. The policy commits MHP to the protection of employees' health, the provision of a safe working environment and the protection of the environment in MHP's regions of operation. In order to accomplish these commitments, MHP will:

- Comply with the Ukrainian EHS legislation;
- Assess EHS risks and implement appropriate controls;
- Improve EHS performance through modern technology and equipment;
- Apply energy efficient technologies and practices;
- Minimise waste generation;
- Undertake occupational health monitoring;
- Prepare and update emergency preparedness and response plans;
- Provide EHS training;
- Require contractors to adhere to EHS legislative and MHP requirements;
- Set EHS objectives and targets;
- Regularly review the effectiveness of the EHS management system; and,
- Allocate the necessary resources to improve EHS performance.

4 PROJECT ALTERNATIVES

4.1 PROJECT PROPOSAL

MHP plans further expansion of the Vinnytsia Poultry farm over the next 3 years, which will require more land. The proposed sites for the facilities covered by this development are detailed in Figure 2.2.

As initially discussed in section 2.5, ten new land plots are needed for the construction of the new brigades (by mid October 2016, MHP has reached land lease agreements for seven of them), land also will be required for the construction of 2 by-pass roads (plus one further by pass is in the late stages of construction). The hatchery, WWTP, fodder plant and the slaughterhouse will be extended within their current footprints and will not require new land.

Nearly half of the facilities covered within the Vinnytsia Poultry Farm (i.e. brigades, bypass roads, slaughter house and WWTP) are either already in operation (Phase 1 development which was finished in 2012) or their construction is about to be started – having received all regulatory Ukrainian permits.

4.2 SITE LOCATION ALTERNATIVES

Based on discussions held in early October 2016 with MHP Management and the Head of Land Lease Department, MHP has considered technical, environmental and social factors (proximity to local settlements, ability to reach a land lease agreement, etc.) when assessing potential sites for their facilities.

This selection process explains the lack of sequencing between brigade numbering e.g. brigade 19 is followed by brigade 42 etc. This means that once the location of the plot assigned for brigade 19 was identified, the next significant number of potential land plots was rejected because they either did not satisfy technical or environmental requirements, or because a land lease agreement could not be reached.

The site selection criteria also include taking into account the future location of the proposed brigade in relation to the existing facilities. Additional key factors that were considered included the availability and proximity of existing infrastructure.

4.3 'NO PROJECT' ALTERNATIVE

Under the “no project” alternative (or do-nothing scenario), there will be an unmet demand in poultry products in the region and the country. Without this project, the existing infrastructure which was designed and constructed with the view that their capacity will be used for both Phase 1 and Phase 2 of the MHP activities, would not be used effectively and efficiently, with spare building space remaining empty.

For example, if the Fodder Plant is not extended, the fodder material will need to be exported from another region or overseas. This would lead to less newly-created local jobs, increased noise emissions caused by increased traffic and loss of potential business to the region.

Equally, if the hatchery is not extended as part of the project, the eggs and chicks will need to be exported from outside the region which also would lead to less efficiencies, longer transportation transport for chicks and birds (potentially negatively affecting animal welfare) and increased emissions.

If the WWTP is not extended to the higher capacity a longer pipeline taking away the wastewater would be required. This will increase landtake and footprint of the project, or potentially increase traffic to tanker out the waterwater. The construction of a new WWTP or its development in a new location would not bring all the benefits of this development because a new WWTP not aligned with the existing MHP system would not deliver the best solution, and there is also risk that this “new” WWTP would not be aligned with the relevant international standards/Best Available Technique and the proposed development does.

Importantly, the benefits of economy of scale to MHP and local economy and employment will be unmet without this project.

5

ENVIRONMENTAL BASELINE INFORMATION

This chapter includes a description of relevant aspects of the physical and natural environment in the Project’s area of influence which serve as a baseline against which the anticipated impacts of the project will be determined.

The baseline conditions have been established through a combination of desk studies, a field visit and consultation with key stakeholders carried out by MHP during the development of the national EIA in 2011, 2012 and 2013. Additional consultation meeting in Vasylivka was undertaken by the WSP PB project team during the visit in October 2016.

However, no detailed surveys were undertaken during the preparation of this report, as they were not included in the original scope. Where gaps have been identified in the baseline data and additional field studies are recommended these have been incorporated in the ESAP.

5.1

BIODIVERSITY

METHODOLOGY APPROACH AND STUDY AREA

The aim of this section is to assess the potential ecological impacts of the proposed developments and extensions to MHP’s operations on the ecological features on and near to the following sites in the Vinnytsia Region:

- Waste Water Treatment
- Slaughter House and Render Facilities
- Hatchery
- Fodder Plant
- Brigade 13
- Brigade 14
- Brigade 19
- Brigade 42
- Brigade 43
- Brigade 47
- Brigade 49

- Access Road to Brigade 19
- Olynisca Bypass Road
- Access Road from Brigade 49 to Brigade 50
- Rearing Farms 50 and 51 (outline description of the general area intended for development is only possible currently due to the lack of an agreed final specific location).

The specific objectives of the assessment are:

1. Assess the potential impact of the proposed developments and extensions on ecological features;
2. Provide recommendations on further survey requirements for the ESAP (Chapter 8);
3. Undertake consultation with local stakeholders on the ecological issues where appropriate, and;
4. Assist in detailed design and identify avoidance measures and minor alterations which are cost-effective to minimise the ecological impacts.

ZONE OF INFLUENCE

Construction and operations can have impacts on ecological features beyond the confines of the 14 sites where development is proposed. Following international guidance⁹, all ecological features should be investigated that occur within the zone of influence (Zol), which the proposed developments affect during its lifespan. The potential Zol is defined as:

- Areas directly within the land take for the proposed developments, bypasses and access routes;
- Areas which will be temporarily affected during construction;
- Areas likely to be impacted by hydrological disruption;
- Areas where there is a risk of pollution and noise disturbance during construction and/or operation.

It is not expected that the Zol of the proposals will extend far beyond the overall development boundary and thus the study area has been deemed as the site and its immediate surrounds (to an approximate radius of 500m from the site boundary). The desk study included a review of the Protected Areas and associated closest records of each proposed development site.

LEGISLATIVE CONTEXT

The construction and operational activities for the scheme should comply with International and National legislation and policy. Laws and legislative acts in Ukraine related to the conservation of biodiversity and natural resources include:

- Law on the Protection of the Natural Environment (1991);
- Law on Nature Conservation Fund of Ukraine (1992);
- Statute on the Red Data Book of Ukraine (1992);
- The Land Code (1992), Forest Code (1994), Water Code (1995), and Mineral Resources Code (1994);

- Law on the Animal World; and
- Law on Ecological Examination (Impact Assessment).

Ukraine has ratified or signed the following relevant major environmental agreements related to natural resources, including:

- Convention on Biological Diversity (1992) – Ratified;
- Convention on Wetlands on International Importance as Waterfowl Habitat (Ramsar) – Ratified;
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn) – Ratified;
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern) –Ratified⁷;
- Convention on International Trade in Endangered Species (CITES) – Acceded, not Ratified; and
- Agreement on the Preservation of Bats in Europe – Ratified.

BASELINE DATA COLLECTION

Information on ecological resources and features has been obtained from the following sources:

- Data gathered through the review of existing information available in publications, reports, previous surveys, and that available from the Internet;
- Community consultation;
- Site walkover surveys; and
- Examination of aerial and site photographs.

A review was undertaken of the all previous records on internationally and nationally designated sites (e.g. Ramsar Sites, National Parks, Important Bird Areas, National Nature Reserves, Zakaznyks) and habitats within the area with information obtained from the a range of sources, including national archives and institutions and international organisations such as Birdlife International, United National Environment Social and Cultural Organisation (UNESCO), and United Nations Environment Programme – World Conservation Monitoring Centre (UNEP-WCMC) and by searching available publications, reports and online databases.

A walkover survey of the sites and its surroundings was carried out on 4 and 5 October 2016 to identify broad ecological features and resources and the potential of the site to support notable¹⁰ species and habitats.

An assessment of the ecotypes within the area surrounding each of the 14 sites, and their potential ecological importance, was undertaken by using available satellite imagery and ecosystem databases, such as habitat classification scheme used by the WCMC.

⁷ As part of its commitment to preserving the country's biological diversity, Ukraine is currently working on setting-up the Emerald Network.

ASSESSMENT

The ecological impact assessments presented in this ESIA follows international guidance:

- The IFC Performance Standards on Social & Environmental Sustainability. Performance Standard 6: Biodiversity Conservation & Sustainable Natural Resource Management (January 2012);
- Standards adopted by the Overseas Private Investment Corporation, described in its Consolidated Environmental and Social Policy Statement (October 2010); and
- The World Bank (2000) Biodiversity and environmental assessment toolkit.

In addition, the ecological assessment will be underpinned by the methodology outlined by the Chartered Institute of Ecology and Environmental Management⁸.

Valuing the ecological resources takes account of those that have been designated for their nature conservation interest and uses professional judgement to determine biodiversity values, including any social, community and economic values of ecological resources. The valuation makes use of all available guidance and information and considers the distribution or status of the species or features being considered. Where uncertainty exists, or where features cannot be valued with confidence due to lack of survey, an 'up to' valuation has been applied as a precautionary approach, using professional judgement based on available information. The following conservation categories of value have been used:

Table 5.1 Conservation Categories

VALUE	CRITERIA	EXAMPLES
Very High	High importance and rarity, international scale and limited potential for substitution	Internationally designated sites, such as Ramsar Sites.
High	High importance and rarity, international, national or regional scale with limited potential for substitution	Ramsar, Biosphere Reserves, National Nature Parks. Critical Habitats ⁹ and Critically Endangered Species ¹⁰ .
Medium	High or medium importance and rarity, local or regional scale, and limited potential for substitution	Local Zakazniks with potential for substitution. Species with locally restricted distribution.
Low	Low or medium importance and rarity, local scale	Non-designated sites/areas of some local biodiversity
Negligible	Very low importance and rarity, local	Other sites with little or no local

⁸ CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

⁹ As defined by Performance Standard 6 (IPC, 2012):

This includes areas that meet one or more of the following criteria:

1. Criterion 1: Critically Endangered (CR) and/or Endangered (EN) species;
2. Criterion 2: Endemic and/or restricted-range species;
3. Criterion 3: Migratory and/or congregatory species;
4. Criterion 4: Highly threatened and/or unique ecosystems; and
5. Criterion 5: Key evolutionary processes.

¹⁰ As listed on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species; Green Book of of Ukraine; and Red Book of Ukraine (<http://nature.land.kiev.ua/>)

VALUE	CRITERIA	EXAMPLES
	scale	biodiversity. Modified habitats.

Assessment of the significance of the effects of the proposed development on ecological resources has initially been made taking no account of the mitigation. This gives an indication of the need for appropriate mitigation to be implemented, as well as enabling an assessment of the likely effectiveness of that mitigation.

The assessment of significance of effects takes into account the following factors:

- The size, value and sensitivity of the ecological resource;
- The duration, magnitude and extent of effects;
- The timing and frequency of effects;
- The ability of the affected ecological resource to recover from temporary effects and timescale of recovery;
- The potential for implementation of, and effectiveness of, appropriate mitigation or enhancement measures; and
- The level of confidence in these predictions.

Impact assessment definitions in the following tables (Table 5.2, Table 5.3 and Table 5.4) describe criteria used for assessing impact magnitude, confidence levels and the overall appraisal categories used in the assessment.

Table 5.2 Magnitude of Impact

MAGNITUDE	CRITERIA
Major negative	The proposal would affect the integrity of the site, in terms of the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the population levels of species of interest.
Intermediate negative	The site's integrity will not be affected, but the effect on the site is likely to be significant in terms of its ecological objectives. However if, in the light of full information, it cannot be clearly demonstrated that the proposal will not have an effect on integrity, then the impact should be assessed as major.
Minor negative	Neither of the above apply, but some minor impact is evident.
Neutral	No observable impact in either direction.

Table 5.3 Confidence in Predictions

CONFIDENCE LEVEL	DESCRIPTION
Certain	Probability estimated at 95% chance or higher
Probable	Probability estimated above 50% and below 95%
Unlikely	Probability estimated above 5% but less than 50%
Extremely unlikely	Probability estimated at less than 5%

Table 5.4 Overall Appraisal Category

CONSERVATION IMPORTANCE					
Magnitude of impacts	Very High	High	Medium	Low	Negligible
Major negative	Very large adverse	Very large adverse	Moderate adverse	Slight adverse	Negligible
Intermediate negative	Large adverse	Large adverse	Moderate adverse	Slight adverse	Negligible
Minor negative	Slight adverse	Slight adverse	Slight adverse	Slight adverse	Negligible
Neutral	Negligible	Negligible	Negligible	Negligible	Neutral
Positive	Large beneficial	Large beneficial	Moderate beneficial	Slight beneficial	Slight beneficial

ASSUMPTIONS AND LIMITATIONS

The baseline conditions presented in this study represent those at the time of survey and reporting. Variations in these conditions will take place as a result of seasonal factors, and with the general passage of time.

Important fauna may travel over wide areas and/or have large home ranges and so can be overlooked within surveys. Species that are absent at the time of survey may also return to or colonise a site anew at any future time.

Walkover surveys were carried out on a single occasion only and did not access all areas proposed for development. Nevertheless, professional judgement and analysis of aerial photography, combined with ground-truthing, can be used to identify the likely presence or absence of important/critical ecological features or resources within a restricted period, without significantly compromising the robustness of the assessment.

It should also be noted that construction/extension of some facilities had already commenced and/or was partially completed at the time of survey. These sites included:

- Brigade 13
- Brigade 42
- Brigade 47
- Slaughter House and Render Facilities
- Waste Water Treatment
- Access Road Olynisca Bypass

For these sites, a retrospective assessment has been completed based on the extrapolation of ecological resources recorded in the immediate vicinity and information gathered from the surrounding landscape context. In all instances, habitat types in the area were found to be anthropogenically modified, extensive and homogenous, giving a high level of confidence in retrospective assessments undertaken.

CONSULTATION

A community consultation meeting was undertaken on 4 October 2016. This meeting was held at the townhall in вулиця Лісова and included community representatives from the Vasylivka area. Key ecological points arising from the meeting were as follows:

- It was confirmed that community representatives were not aware of any known ecological resources or features of significance in the area.
- It was confirmed that forests in the area were often state-owned and managed by the State Committee on Forestry (SCF), who function under the Ministry of Ecology and Natural Resources.
- Smaller parcels of woodland were likely to be under communal ownership with no formal management.
- Residents were aware of informal hunting, including species such as boar, fox, deer, rabbits and waterfowl. Wolves were mentioned to be in the area, however few records exist.
- Fishing was noted to be widespread and commonplace. Anecdotal evidence suggested that fish stocks were plentiful in the area.
- No direct intrinsic value was placed on biodiversity resources within the area beyond the functional and practical benefits these resources represent.

BASELINE

PROTECTED AREAS

Provisions on nature and biodiversity protection and conservation for Protected Areas are contained in 'On the Natural Protected Areas Fund of Ukraine' No. 2456-XII (16 June 1992). Article 3 of the Protected Areas Law classifies the protected areas into two broad categories (Natural Areas and Man-made Areas) which are in accordance with IUCN categories¹¹ as follows:

1. Natural Areas:
 - a. Nature preserves (IUCN Category Ia),
 - b. Biosphere preserves (IUCN Category Ib),
 - c. National natural parks (IUCN Category II),
 - d. Regional landscape parks (IUCN Category II),
 - e. Nature reserves (IUCN Category IV/V),
 - f. Natural monuments (IUCN Category III),
 - g. Protected tracts (IUCN Category V/VI).
2. Man-made Areas
 - a. Botanical gardens (IUCN Category IV),
 - b. Arboreta (IUCN Category IV),
 - c. Zoological gardens (IUCN Category IV),

¹¹ <https://www.iucn.org/theme/protected-areas/about/protected-areas-categories>

d. Garden art parks (IUCN Category III).

Vinnitsia Region contains approximately 320 protected areas comprising 45 reserves (18 of them of state importance); 213 natural monuments (8 of national importance); 33 reserve tracts; 29 memorials of landscape art (11 of them are of national importance)¹³.

No sites of international importance, such as Ramsar sites¹², were found within a 1 km search radius of all proposed development sites. In Ukraine, Ramsar sites affords the protection regime 'On the Protection of Wetlands of International Importance', No. 935 of 23 (November 1995), known as the 'Wetlands Resolution'.

None of the proposed developments are located within a Protected Area for nature conservation and none exist within a 1 km search radius of all sites (Figure 5.1)¹³.

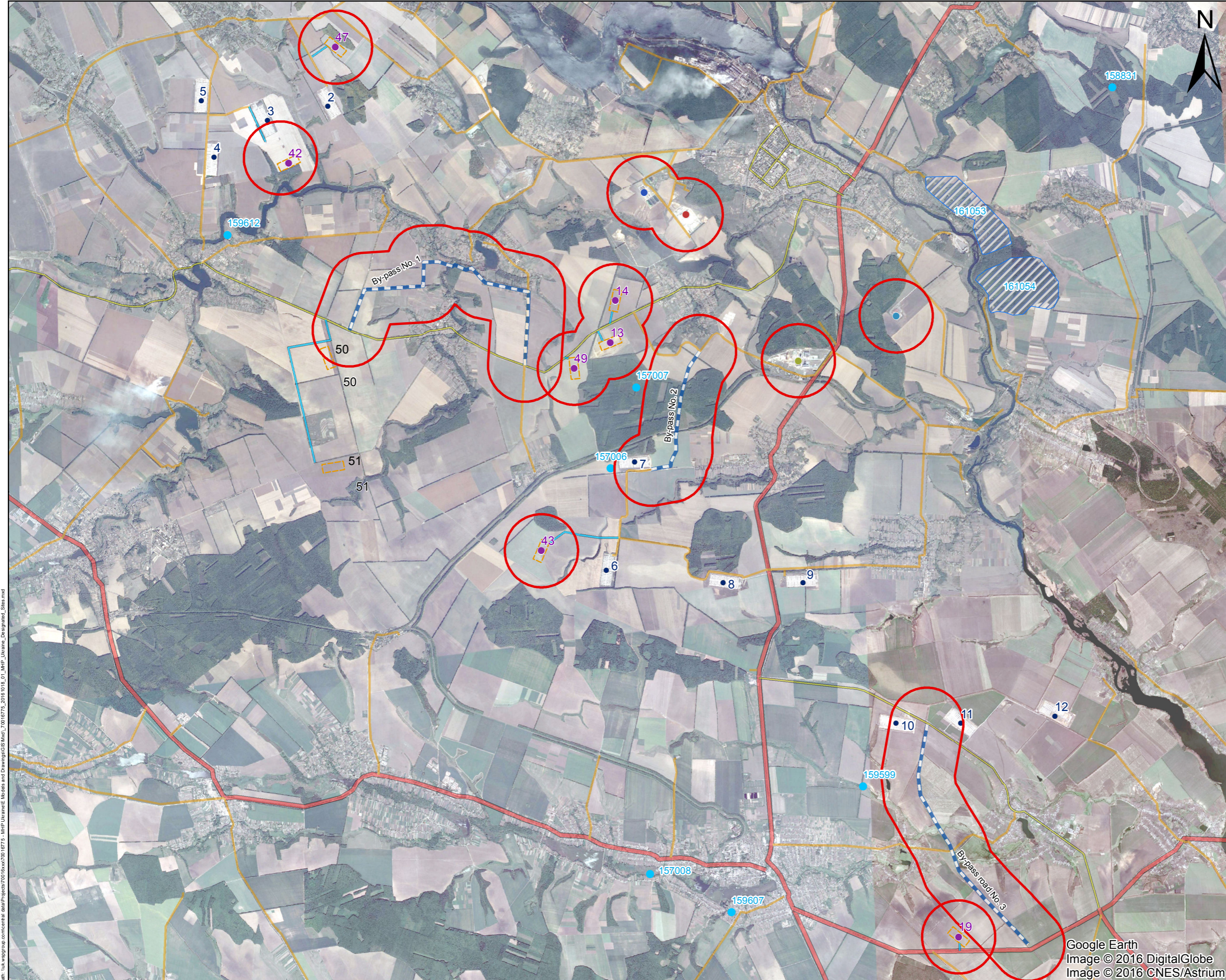
¹² Ramsar Convention on Wetlands of International Importance (1971)

¹³ UNEP-WCMC (2016). Protected Area Country Profile for Ukraine from the World Database of Protected Areas, October 2016

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

Notes

- 1km Site Radius
 - Existing Brigades
 - Proposed Brigades
 - Fodder Plant
 - Hatchery
 - Slaughterhouse and Render
 - Vehicle Depot
 - Waste Water Treatment
 - Water Intake
 - Approximate Site Areas
 - Designated Site Points
 - Designated Site Polygons
 - Access Routes
 - Bypass Routes
- Roads**
- Major Route
 - Minor Route
 - Local Route



Revision Details	By	Date	Suffix

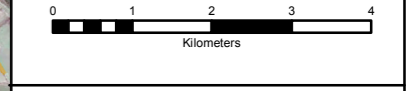
Drawing Status: **FINAL**

Job Title: **MHP Ukraine**

Drawing Title: **Figure 5.1 Protected Areas for Nature Conservation**

Scale at A3: **1:95,000**

Drawn: JA	Originated: HL	Date: 24/10/2016	
Stage 1 check: CB	Stage 2 check: HL		



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Google Earth
Image © 2016 DigitalGlobe
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The closest sites in relation to the project sites are shown in Table 5.5.

Table 5.5 Protected Areas

SITE	CLOSEST PROTECTED AREAS	DESIGNATION	WDPA REF ¹⁴	CATEGORY ¹⁵	DISTANCE / ASPECT FROM SITE
Waste Water Treatment	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	5.6km S
Slaughter House and Render Facilities	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	5.1km S
Hatchery	Korostovets'kiy	Regional Zakaznik	161054	IUCN Category IV	2.5km E
	Korostovets'kiy	Regional Zakaznik	161053	IUCN Category IV	3km NE
Fodder Plant	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	4.7km W
	Korostovets'kiy	Regional Zakaznik	161054	IUCN Category IV	5.6km E
Brigade 13	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	1.3km SE
Brigade 14	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	2.2km SE
Brigade 19	Trostryanets'kiy	Regional Zakaznik	159607	IUCN Category IV	6.1km W
Brigade 42	Urochische Dzerivka	Urochische Dzerivka	159612	IUCN Category IV	2.7km SW
Brigade 43	Ladizhins'ka dibrova	Zapovedne Urotchische	157006	IUCN Category III	2.6km NE
Brigade 47	Urochische Dzerivka	Urochische Dzerivka	159612	IUCN Category IV	6.1km SW
	Ladizhins'kiy	Regional Zakaznik	161119	IUCN Category IV	7.4km N
Brigade 49	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	1.5km E
Bypass Road No.1: Access Road from Brigade 49 to Brigade 50	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	3.2km E

¹⁴ UNEP-WCMC (2016). Global statistics from the World Database on Protected Areas (WDPA). Cambridge, UK: UNEP- WCMC.

¹⁵ <https://www.iucn.org/theme/protected-areas/about/protected-areas-categories>

SITE	CLOSEST PROTECTED AREAS	DESIGNATION	WDPA REF ¹⁴	CATEGORY ¹⁵	DISTANCE / ASPECT FROM SITE
Bypass Road No.2: Olynisca	Ladizhins'ka dibrova	Zapovedne Urotchische	157006	IUCN Category III	1.2km E
Bypass Road	Ladizhins'ki yaseni	Zapovedne Urotchische	157007	IUCN Category III	2km W
Bypass Road No.3: Access Road to Brigade 19	Polovicha	Regional Zakaznik	159599	IUCN Category IV	1.4km W

There will be no direct impacts on any designated sites for nature conservation. Indirect construction impacts such as dust, noise, vibration and temporary lighting will dissipate a short distance from the development sites and as such, Protected Areas are not considered further in this report.

HABITATS AND FLORA

Ukraine can be divided into seven major physiographic landscapes and aquatic ecosystems¹⁶. Broadly, these are as follows:

1. Polessia - lowland woody bogs and marshes in the far north of the country.
2. Forest-steppe in the west and central portion.
3. Steppe in the south.
4. Carpathian Mountains in the west.
5. Crimean Mountains in the far south.
6. Black Sea and Sea of Azov.
7. Freshwater systems, including rivers, lakes, and marshes.

The development sites are entirely located in the Vinnytsia region where the major landscape and ecosystem is classified as the Forest-Steppe¹⁶. The original vegetation of the Forest-Steppe region was a mosaic of broadleaf forests and open grasslands. Typical species documented^{17, 18} that characterises the Forest-Steppe include oaks (*Quercus petraea*, *Quercus rubra*, *Quercus pedunculata* and others), lime (*Tilia* spp.), poplar and aspen (*Populus* spp.), cherry (*Prunus* spp.), maples and sycamores (*Acer* spp.), beech (*Fagus sylvatica*), hornbeam (*Carpinus betulus*), willow (*Salix* spp.) ash (*Fraxinus* spp.), birch (*Betula* spp.), wild pear (*Pyrus* spp.) and crab apple (*Malus* spp.). The grasslands typically comprised species including feather grasses (*Stipa* spp.), fescues (*Festuca* spp.) and hair grasses (*Deschampsia* spp.).

The majority of these natural habitats within the region no longer exist and has, on the whole, been lost to large-scale arable agriculture and associated managed forest/woodland habitats.

¹⁶ Losekoot, Nathalie (1998). Nature Conservation in Ukraine: A Country Profile. Ministry of Agriculture, Nature Management and Fisheries. The Netherlands.

¹⁷ USAID (2001). Biodiversity Assessment for Ukraine. Task Order under the Biodiversity and Sustainable Forestry IQC (BIOFOR). Chemonics International Inc. Washington, D.C. and Environment International Ltd. Seattle, Washington

¹⁸ <http://www.vin.gov.ua>

Wetlands were common along the rivers and associated tributaries and impoundments, throughout the area. The dense network of rivers within the region belongs to three major river basins:

- The Pivdennyi Buh (Southern Buh/Bug) (approximately 62% of the territory)
- The Dniester (28%); and
- The Dnieper (10%).


8. The following table (


Table 5.6) provides a description of the proposed development locations in context of habitat types present. Corresponding habitat areas have been delineated and are presented in **Appendix A**.

Table 5.6 Habitat Descriptions



SITE	HABITAT DESCRIPTION ¹⁹
Waste Water Treatment	<p>Arable Land (14.1)</p> <p>The waste water treatment facility was located approximately 2.5km north of Lukashivka and set within a farmed arable landscape. Typical crops cultivated in the area include corn/maize (<i>Zea mays</i>), wheat (<i>Triticum</i> sp.), sunflower (<i>Helianthus</i> sp.) and rapeseed (<i>Brassica napus</i>). These habitats were noted to be intensively cropped and exhibited little to no field margins. Common bird species and small mammals are likely to use these areas; however these habitats are widespread in the region and are likely to be of negligible value for conservation.</p> <p>Wastewater Treatment Areas (15.6) and Urban Areas (14.5)</p> <p>Land preparation and construction of the waste water treatment extension was underway at the time of survey. The waste water treatment site was an existing facility in operation and the footprint of the extension works measure approximately 1.9ha, and situated entirely within the existing facility compound. Habitats within the compound were modified and included Wastewater Treatment Areas (15.6) (although these were not in operation and did not contain water at the time of survey), built structures, managed grassland areas and bareground. The footprint of the extension works, based on aerial photography and extrapolation of ground-truthed habitats, was likely to be entirely on managed grassland and bareground areas, considered to be of negligible value for conservation.</p> <p>Outside of the site boundary, additional Wastewater Treatment Areas (15.6) were also located 150m north east of the site. This area was separated from the site by a tree-lined road and appeared to comprise a series of settlement lagoons, scattered trees and shrubs. From aerial imagery, the neighbouring site appeared to be less intensively managed and has potential to support common bird and herpetofauna species. These habitats are modified and regularly disturbed but nevertheless provide interesting mosaics considered to be of low value for conservation.</p> <p>Inland Wetland Habitat (5.1)</p> <p>The Sel'nytsya River (tributary of the River Udych, which is a left tributary of the Pivdennyi Buh River) was located approximately 500m south west of the site. The river flows from west to east and discharges into the Pivdennyi Buh at Ladyzhyn. The river and associated wetlands, although modified and impounded in this area, has potential to support a range of flora and fauna, is likely to be important for fish, and presents an important wildlife corridor in an otherwise intensively farmed</p>

¹⁹ <http://www.iucnredlist.org/technical-documents/classification-schemes/habitats-classification-scheme-ver3>


SITE	HABITAT DESCRIPTION ¹⁹
	<p>landscape. Although not surveyed, a precautionary conservation valuation of up to high value has been applied to this habitat.</p> 
Slaughter House and Render Facilities	<p>Urban Areas (14.5)</p> <p>The slaughter house and render facilities were within an existing operational compound comprising buildings, hard standing and bare ground areas. These habitats are modified and regularly disturbed with little to no conservation interest. Both the slaughter house and render facility extensions were built at the time of survey. Based on aerial photography, these areas (slaughter house – c.1.5ha; and render facility – c.0.8ha) were developed on bareground or managed grassland habitats within the confines of the fenced operational area. Based on the low species diversity and the managed and disturbed state of the habitats recorded within the wider site compound (species included vetch species (<i>Vicia</i> sp.), yarrow (<i>Achillea</i> sp.), mugwort (<i>Artemisia</i> sp.) and horsetail (<i>Equisetum</i> sp.)), the urban areas are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>Situated c.171m north east of the slaughter house extension and outside of the operational fenced boundary, an extensive area of managed broadleaf plantation woodland was recorded. This woodland habitat extends approximately 136ha and is likely to support a range of bat, bird and mammal species. Although not surveyed, a precautionary conservation valuation of up to medium value has been applied to this habitat.</p> <p>Arable Land (14.1)</p> <p>Arable land surrounds the site, beyond the operational fenced boundary, on all aspects. All arable habitats within this assessment are considered to be of negligible value for conservation.</p>


SITE	HABITAT DESCRIPTION ¹⁹
	
Hatchery	<p>Urban Areas (14.5)</p> <p>The proposed extension of the hatchery (c.0.5ha) will be situated entirely within an existing operational compound, specifically on an area of managed grassland and hardstanding. The developed area comprised hard standing, bareground and managed grassland areas. Species included thistle (<i>Cirsium</i> sp.), oxeye daisy (<i>Leucanthemum vulgare</i>), bristly ox-tongue (<i>Helminthotheca echioides</i>), red clover (<i>Trifolium pratense</i>) and fescues (<i>Festuca</i> spp.). These urban areas are regularly disturbed and managed, as such, they are considered to be of negligible value for conservation.</p> <p>Arable Land (14.1)</p> <p>Arable land surrounds the site, beyond the operational fenced boundary, on all aspects. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>An area of managed broadleaf plantation woodland was located over 300m north and west of the proposed extension. This habitat is situated beyond the operational compound fence line and due to its large extent and connectivity to the Pivdennyi Buh River, it has potential to be an important resource for wildlife including dormouse, nesting birds, bats and other mammal species. These managed plantation woodlands are commonplace in the region and are typically of semi-mature age and homogenous structure. Although not surveyed, a precautionary conservation valuation of up to medium value has been applied to this habitat.</p>



SITE	HABITAT DESCRIPTION ¹⁹
	
Fodder Plant	<p>Urban Areas (14.5)</p> <p>The proposed extension works associated with the fodder plant is entirely located with the existing site compound, which comprised hard standing, buildings, bareground and managed grassland areas. These urban areas are regularly disturbed and managed, as such, they are considered to be of negligible value for conservation.</p> <p>Arable Land (14.1)</p> <p>Arable land surrounds the site, beyond the operational fenced boundary, to the east, west and south aspects. All arable habitats within this assessment are considered to be of negligible value for biodiversity.</p> <p>Temperate Forest (1.4)</p> <p>An area of managed broadleaf plantation woodland was located over 200m north of the closest proposed extension area (storage facility). This habitat was situated beyond the operational compound fence line and due to its large extent and connectivity to the Pivdennyi Buh River, it is has potential to be an important resource for wildlife including dormouse, nesting birds, bats and other mammal species. Although not surveyed, a precautionary conservation valuation of up to medium value has been applied to this habitat.</p>

SITE	HABITAT DESCRIPTION ¹⁹
	
Brigade 13	<p>Arable Land (14.1)</p> <p>Brigade 13 was entirely situated within an arable field approximately 1km west of Lukashivka. At the time of survey, the brigade was under construction with ground preparation in progress. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>An area of managed broadleaved plantation woodland habitat was located to the south of the proposed brigade, with a c.80-200m wide arable buffer between the development and woodland habitat. The woodland appeared to be managed with semi-mature species including oak, maples and sycamore with limited ground flora. This habitat has potential to be an important resource for wildlife including dormouse, nesting birds, bats and other mammal species and although not surveyed, a precautionary conservation valuation of up to medium value has been applied to this habitat.</p> 


SITE	HABITAT DESCRIPTION ¹⁹
Brigade 14	<p>Arable Land (14.1)</p> <p>Habitats within this site were entirely cultivated arable. Planted windbreaks exhibiting species including ash, sycamore, poplar species and acacia (<i>Robinia pseudacacia</i>) were recorded. These windbreaks provide some connectivity to habitats in the wider landscape; however because of their relative immaturity, low species diversity, lack of structure and mono-cultured homogeneity, these arable habitats are considered to be of negligible value for conservation.</p> 
Brigade 19	<p>Arable Land (14.1)</p> <p>Brigade 19 was entirely situated within an arable field cultivated for corn (at the time of survey). A tree-lined road and dry ditch is situated to the north of the site, where access to the proposed brigade would connect to. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> 
Brigade 42	<p>Arable Land (14.1)</p>

SITE	HABITAT DESCRIPTION ¹⁹
	<p>Habitat within the footprint of the proposed brigade was entirely cultivated arable. Ground preparation works at the time of survey was underway and it was noted that the land was harvested for corn prior to construction commencing. All arable habitats within this assessment are considered to be of negligible value for biodiversity.</p> <p>Temperate Forest (1.4)</p> <p>Managed broadleaved plantation woodland borders the site to the west and south which included species such as sycamore and maple. Ground flora towards the edges of the woodland habitat exhibited shrub and ruderal species. This habitat has potential to be an important resource for wildlife including dormouse, nesting birds, bats and other mammal species and although not surveyed, a precautionary conservation valuation of up to medium value has been applied.</p> <p>Inland Wetland Habitat (5.1)</p> <p>The Sel'nytsya River was located approximately 300m south of the site. The river flows from west to east and discharges into the Pivdennyi Buh at Ladyzhyn. The river channel is approximately 90m wide in this section and meanders through woodland riparian habitats. The river has potential to support a range of flora and fauna, is likely to be important for fish, macroinvertebrate, aquatic mammals and birds, and presents an important wildlife corridor in an otherwise intensively farmed landscape. Although not surveyed, a precautionary conservation valuation of up to high value has been applied to this habitat.</p> 
Brigade 43	<p>Arable Land (14.1)</p> <p>Habitat within the footprint and access from the existing road to the proposed brigade was entirely cultivated arable. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>Managed broadleaved plantation woodland is located c.300m to the north and south of the proposed brigade. These habitats were not surveyed; therefore a precautionary conservation valuation of up to medium value has been applied.</p>

SITE	HABITAT DESCRIPTION ¹⁹
	
Brigade 47	<p>Arable Land (14.1)</p> <p>Habitat within the entire footprint of the proposed brigade was arable farmland, formally cultivated for rapeseed in the previous season. At the time of survey, ground preparation works were in progress. Treelined field boundaries to the north and west of the site form windblocks and connect woodland parcels to the north and south of the site. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>Managed broadleaved plantation woodland areas are located immediately north and approximately 250m south of the proposed brigade. These habitats comprised densely planted semi-mature species including oak, maple and cherry. Sparse ground flora was recorded. These woodland habitats, although managed and relatively common in the Vinnytsia region, provides suitable conditions, sheltering and food opportunities for a range of species. As such, this habitat is considered to be of up to high value for conservation.</p>

SITE	HABITAT DESCRIPTION ¹⁹
	
Brigade 49	<p>Arable Land (14.1)</p> <p>Habitat within the entire footprint of the proposed brigade was arable farmland. The proposed access will connect to the road which links Bohdanivka and Lukashivka. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>Managed broadleaved plantation woodland areas are located immediately north and approximately 250m south of the proposed brigade. These habitats comprised densely planted semi-mature species including oak, maple and cherry. Sparse ground flora was recorded. These woodland habitats, although managed and relatively common in the Vinnytsia region, provides suitable conditions, sheltering and food opportunities for a range of species. As such, this habitat is considered to be of up to high value for conservation.</p> 
Brigades 50 and	The specific location for brigades 50 and 51 are yet to be determined, therefore it is

SITE	HABITAT DESCRIPTION ¹⁹
51	<p>not currently possible to define the detailed baseline or complete the location specific impact assessment for these Brigades. A general area has been identified for which is currently intended to locate these brigades, shown on figure 5.1. These areas as currently in arable use. Some woodland is located around this whole arable area, through the potential for any impact on this woodland will be dependent on the final location. For completeness, a description of these general features in the broad area intended, is provided below:</p> <p>Arable Land (14.1)</p> <p>Habitat within the entire footprint of the proposed two brigades, was arable farmland. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>Managed broadleaved plantation woodland areas are located to the south, east and further away to the west of the general areas of the two proposed brigades. These habitats comprised densely planted semi-mature species including oak, maple and cherry. Sparse ground flora was recorded. These woodland habitats, although managed and relatively common in the Vinnytsia region, provides suitable conditions, sheltering and food opportunities for a range of species. As such, this habitat is considered to be of up to high value for conservation.</p>
Bypass Road No.1: Access Road from Brigade 49 to Brigade 50	<p>Arable Land (14.1)</p> <p>The bypass takes a route north, from the main road (T0237) between Bohdanivka and Lukashivka, on an existing track towards Bilousivka. The existing track is located between extensive arable fields to the east and west and is lined with trees. The track forms Central Road (вулиця Центральна) which travels through Bilousivka; however the bypass takes a route west, over arable fields, south of the settlement. The proposed bypass travels c.1km over arable fields before adjoining an existing track that leads the route east, south of Bilousivka and Huty, before following existing tracks between windbreaks south and back onto the T0237. All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Inland Wetland Habitat (5.1)</p> <p>Two tributaries of the Sel'nytsya River and the River itself are located within 500m of the proposed route in various sections. The route crosses the downstream section of a Sel'nytsya River tributary, immediately south of Huty, over an existing crossing point. The river and associated tributaries has potential to support a range of flora and fauna, is likely to be important for fish, macroinvertebrate, aquatic mammals and birds, and presents an important wildlife corridor in an otherwise intensively farmed landscape. Although not surveyed, a precautionary conservation valuation of up to high value has been applied to this habitat.</p> <p>Temperate Forest (1.4)</p> <p>A large managed broadleaved woodland plantation area (c.30ha) is located south of Huty where the proposed bypass travels along an existing track that borders the north perimeter of this woodland parcel for 350m. From aerial imagery, this parcel of woodland shows a linear and homogenous plantation, possibly an orchard or an agricultural plantation. These woodland habitats, although managed and relatively common in the Vinnytsia region, provides suitable conditions, sheltering and food opportunities for a range of species. As such, this habitat is considered to be of up to medium value for conservation.</p>

SITE	HABITAT DESCRIPTION ¹⁹
	
Bypass Road No.2: Olynisca Bypass Road	<p>Arable Land (14.1)</p> <p>The bypass was partially constructed at the time of survey. The bypass routes from a road south of Lukashivka and travels 0.1km south over arable fields before joining an existing track through woodland. The south section of the proposed bypass also travels over an arable field for 1km, prior to joining May Street (вулиця Травня). All arable habitats within this assessment are considered to be of negligible value for conservation.</p> <p>Temperate Forest (1.4)</p> <p>The route joins an existing track through managed broadleaved plantation woodland, which has undergone recent widening and improvement from c.6m wide to 10m wide area. Semi-mature species were recorded in the woodland, including sycamore, oak and maple. The woodland appeared to be managed and uniform in character, with little ground flora present. The existing track continues south through the woodland for 0.7km. As a precaution, this habitat is considered to be of up to medium value for conservation.</p> <p>Temperate Shrubland (3.4)</p> <p>Immediately south of the woodland, the existing track and partially built bypass road travels through a former orchard for 0.5km before habitats open up to arable farmland. Significant clearing to c.30m wide area had been undertaken in this location. The former orchard comprised scrub species and thicket vegetation including rose (<i>Rosa</i> spp.), cherry (<i>Erasmus</i> spp.) blackthorn (<i>Prunus spinosa</i>), birch, dogwood (<i>Cornus sanguinea</i>), apple and guelder rose (<i>Viburnum opulus</i>). Due to the lack of management, this habitat was succeeding into dense thicket and is likely to be of value for a range of wildlife, particularly as a winter food source for birds and small mammals. Due to the lack of shrubland and scrub habitats in the area, this habitat is considered to be of up to medium value for conservation.</p>

SITE

HABITAT DESCRIPTION¹⁹

Bypass Road
No.3: Access
Road to Brigade
19

Arable Land (14.1)

The northern extent of the proposed access road follows an existing track between lines of trees planted as windbreaks. The proposed access continues south for c.4km through arable fields, cultivated for corn, until the route crosses an existing road between Velyka Stratiivka and Horiivka. The route continues south through arable fields and joins the T0222 main road. The entire route of the proposed access crosses arable habitats and boundaries, with exception of where the route crosses a river. All arable habitats within this assessment are considered to be of **negligible value** for conservation.

Inland Wetland Habitat (5.1)

The proposed route crosses the Nedoteka River (Tributary of River Oknya, which is a left tributary of Pivdennyi Buh) approximately 800m east of Velyka Stratiivka, which drains into the Pivdennyi Buh River at Trotyanchyk. The exact point at which the access road crosses the river was not sampled; however a downstream point of the river c.1km to the east of the proposed crossing point was accessed. The river measured approximately 6m wide and 1m deep. River banks were lined with willow and poplar species. Poaching by horses and cattle were evident at various locations. Marginal aquatic vegetation was abundant with good flow variability and fluvial geomorphological features present.

From aerial imagery, it appears that the river crossing point represents a canalised diversion channel, likely to be created for irrigation purposes. The channel appears to be linear and uniform at the proposed crossing point, whilst evidence of the historical channel, in the form of naturalistic meandering treelines, is present 100m to the south.

The river and associated wetlands, although appear modified in this area, has potential to support a range of flora and fauna, is likely to be important for fish, and presents an important wildlife corridor in an otherwise intensively farmed landscape. Although not surveyed, and as a precaution, it is likely that this resource is of **up to high value**.

Temperate Forest (1.4)

The access road routes immediately adjacent to a small parcel (c.4.2ha) of woodland, assumed to be broadleaved and managed. These woodland habitats, although managed and relatively common in the Vinnytsia region, provides suitable conditions, sheltering and food opportunities for a range of species. As a precaution,

SITE	HABITAT DESCRIPTION ¹⁹
	<p>this habitat is considered to be of up to medium value for conservation.</p> 

The majority of habitats within and surrounding the proposed development sites are considered to be modified, where human activity has substantially altered an area's primary ecological functions and species composition. These modified habitats within and surrounding the proposed development sites primarily include arable agriculture and forest plantations. Nevertheless, within an intensively cultivated landscape, managed forest plantations offer some conservation value for flora and fauna.

FAUNA

The Law of Ukraine 'On the Red Book of Ukraine', No. 3055-14 of 14 January (2009) (the 'Red Book Law') is a national register of all rare, extinct and close-to extinction plant and animal species located within the territory of Ukraine. The Red Book Law is in compliance with the International and European Red Lists of animal and plant species. The Law determines the regime of use and preservation of the listed plant and animal species and stipulates criminal and administrative liability for failure to grant the due protection through unsanctioned and unregulated use of the listed species.

Table 5.7 provides a list of species documented in the Red Book of Ukraine and that have been recorded in the Vinnytsia region. The Red Book of Ukraine divides species into the following categories:

- (0) Extinct: species, about which after several searches conducted in typical areas or other known and probable locations of distribution, no information about their existence in the wild was found;
- (I) Endangered: species in danger of extinction, conservation of which is unlikely if unfavourable effect is continued.
- (II) Vulnerable: species that in the near future may be classified as "endangered " if the affecting action continues.
- (III) Rare: species, which populations are small, which are not currently classified as "endangered" or "vulnerable", although they threatened;

- (IV) Uncertain: species are known, they are classified as "endangered", "vulnerable" or "rare", but there is no reliable information that enables us to determine which of these categories they belong to;
- (V) Unknown: species that could be attributed to one of the above categories, but due to the lack of reliable information that remains to be determined; and
- (VI) Recovered: species, which populations do not cause concern due to conservation measures, however, they are not to be used, and require constant monitoring.

Table 5.7 Species Records in the Vinnytsia Region

Class	Species (Common name)	Species (Scientific name)	Habitat Requirements	IUCN Status ²⁰ / Red Book of Ukraine Status
Amphibians	Agile frog	<i>Rana dalmatina</i>	It is found in glades and open sites within light deciduous woodland (oak, beech, hornbeam etc.), and less frequent in meadows and thickets. It generally it does not occur in pasture, arable areas or coniferous forests.	Least Concern / (I)
Reptiles	Southern smooth snake	<i>Coronella austriaca</i>	It is found in moorland, rocky coastlines, open woodland (deciduous, coniferous and mixed) and scrubland, hedgerows, woodland edges, heathland, sandy coastal sites, rocky areas, screes, subalpine and open areas with sparse vegetation.	Least Concern / (II)
	Aesculapian ratsnake	<i>Zamenis longissimus</i>	It is found in dry, open woodlands (deciduous, mixed and coniferous), woodland edges, forested ravines, scrubland and thickets, rocky outcrops, road embankments, moist meadows, field edges, traditionally cultivated land, tea plantations, stone walls and old buildings, parks and gardens.	Least Concern / (I)
	Green lizard	<i>Lacerta viridis</i>	It is found in bushy vegetation at woodland and field edges, within open woodlands, forested areas and shrubland, hedgerows, and in overgrown areas and cultivated land including orchards. It takes refuge in bushes and burrows.	Least Concern / (II)
Fish	Ukrainian brook lamprey	<i>Eudontomyzon mariae</i>	Lowland, piedmont and montane zones in clear, well oxygenated brooks. Ammocoetes in detritus-rich sands or clay sediments	Least Concern / (I)
	Russian spirilin	<i>Alburnoides rossicus</i>	Streams and small rivers with fast to moderately running shallow water, often over gravel, pebble or rocks. This species occurs in the rivers Dniester, South Bug and Dnieper draining to the Black Sea.	Least Concern / (I)

²⁰ http://www.iucnredlist.org/static/categories_criteria_3_1

Class	Species (Common name)	Species (Scientific name)	Habitat Requirements	IUCN Status ²⁰ / Red Book of Ukraine Status
	Dnieper barbel	<i>Barbus borysthenicus</i>	From premontane to lowland reaches of clear, warm, medium sized to large rivers with fast current and gravel bottom. Occasionally in lakes. Spawns usually in very shallow, fast-flowing waters, in riffles. Overwinters often in large aggregations inactive or active in slow-flowing river habitats.	Not Evaluated / (I)
	Common barbel	<i>Barbus barbus</i>	From premontane to lowland reaches of clear, warm, medium sized to large rivers with fast current and gravel bottom. Occasionally in lakes. Spawns usually in very shallow, fast-flowing waters, in riffles. Overwinters often in large aggregations inactive or active in slow-flowing river habitats.	Least Concern / (II)
	Sterlet	<i>Acipenser ruthenus</i>	The Sterlet is found in large rivers, usually in the current and in deep water. As water level rises, it moves to flooded areas to feed. It spawns on gravel in strong-current habitats.	Vulnerable / (I)
Birds	Stock dove	<i>Columba oenas</i>	This species has an extremely large range and broad habitat requirements.	Least Concern / (II)
	Great grey shrike	<i>Lanius excubitor</i>	Great grey shrikes are often found in semi-open areas composed of farmlands, field hedges, arable fields, meadows and pastures as well as coniferous and mixed forests. Shrikes prefer lowlands and tend to avoid higher elevations.	Least Concern / (III)
	Common goldeneye	<i>Bucephala clangula</i>	Lakes and rivers surrounded by forests and tree cavities for nesting.	Least Concern / (III)
	European roller	<i>Coracias garrulus</i>	It prefers lowland open countryside with patches of oak forest, mature pine woodland with heathery clearings, orchards, mixed farmland, river valleys, and plains with scattered thorny or leafy trees. It winters primarily in dry wooded savanna and bushy plains	Least Concern / (I)
	Black kite	<i>Milvus migrans</i>	Black kites inhabit a broad range of habitats. Most are found in open areas where there is close access to water bodies such as rivers, ponds, or lakes. Black kites are commonly found along river edges, which provide necessary resources such as fresh water and fish. Wetlands are another habitat that attracts black kites. Black kites also occur in woodlands, open savannas, and sometimes even in large cities.	Least Concern / (II)
Mammals	Northern birch mouse	<i>Sicista betulina</i>	The range of this birch mouse covers a variety of habitats including boreal and montane forests, subalpine meadows and tundra.	Least Concern / (III)

Class	Species (Common name)	Species (Scientific name)	Habitat Requirements	IUCN Status ²⁰ / Red Book of Ukraine Status
	Lesser mole rat	<i>Nannospalax leucodon</i>	The mole rat inhabits steppe grassland, meadows and pastures, in areas with a deep layer of loose, freely-draining soil in which it digs its extensive burrows. It is absent from ploughed land and arable monocultures, although it may be found in agricultural landscapes where there is a mixture of pastures, small crop-fields and orchards.	Data Deficient / (V)
	Podolian mole rat	<i>Spalax zemni</i>	The major habitat of this species is virgin steppes. It also occurs in side roads, forest belts, and agricultural fields, and was recently found in former military firing ranges	Vulnerable B2ab(ii,iii) / (V)
	Southern water shrew	<i>Neomys anomalus</i>	It inhabits lush vegetation next to slow-flowing or still eutrophic waters (marshes, swamps, lakes, rivers, and streams). Its habitat choice is influenced by competition with the larger Eurasian water shrew.	Least Concern / (III)
	European bison	<i>Bison bonasus</i>	Optimal habitats for the European bison are deciduous and mixed forests, but the range should include about 20% of grassland habitats.	Least Concern / (0)
	Eurasian otter	<i>Lutra lutra</i>	The Eurasian Otter lives in a wide variety of aquatic habitats, including highland and lowland lakes, rivers, streams, marshes, swamp forests and coastal areas independent of their size, origin or latitude.	Near Threatened / (Unvalued)
	Stoat	<i>Mustela erminea</i>	The Stoat occupies a wide range of habitats. It is often found in successional or forest-edge habitats, in scrub, alpine meadows, marshes, riparian woodlands, hedgerows, and riverbanks that have high densities of small mammals.	Least Concern / (Unvalued)
	Wild cat	<i>Felis sylvestris</i>	Wildcats are found in a wide variety of habitats, from deserts and scrub grassland to dry and mixed forest; absent only from rainforest and coniferous forest. European wildcats are primarily associated with forest and are found in highest numbers in broad-leaved or mixed forests with low population densities of humans.	Least Concern / (II)
	European mink	<i>Mustela lutreola</i>	European Mink has specialised habitat requirements. It is semi-aquatic, inhabiting densely vegetated banks of rivers, streams and sometimes, during the warm season, it may inhabit lake-banks. It is rarely found more than 100 meters away from fresh water.	Critically Endangered A3ce / (I)
	Western	<i>Mustela</i>	Over its wide geographic range,	Least Concern /

Class	Species (Common name)	Species (Scientific name)	Habitat Requirements	IUCN Status ²⁰ / Red Book of Ukraine Status
	polecat	<i>putorius</i>	western polecat is found in a wide variety of habitats and occurs widely in lowland woods and in riparian zones, and in rural areas close to farms and villages in the winter; but it also uses wooded steppe, sand dunes, marshes and river valleys, agricultural land, forest edge and mosaic habitats.	(Unvalued)
	Steppe polecat	<i>Mustela eversmanni</i>	Steppe Polecat inhabits a variety of relatively dry habitats including steppes, semi-deserts, pastures, and cultivated fields.	Least Concern / (I)
Bats	Lesser noctule	<i>Nyctalus leisleri</i>	The lesser noctule forages over woodland, pasture, and river valleys, where it feeds on flies (including mosquitos), moths and beetles. It is linked to old trees. Summer nursery roosts are located in tree holes, but also in buildings and bat boxes.	Least Concern / (III)
	Noctule	<i>Nyctalus noctula</i>	Noctules forage over wetland, woodland and pasture, feeding on larger moths, beetles and flies. Summer colonies are in tree holes, sometimes in buildings. Winter hibernacula are in rock crevices, caves, occasionally artificial structures.	Least Concern / (II)
	Brown long-eared	<i>Plecotus auritus</i>	It forages in the vicinity of the roost in deciduous and coniferous woodlands, along hedgerows, and in isolated trees in parks and gardens. It feeds mainly on moths and flies gleaned from foliage. In summer it roosts in colonies in buildings (attics, barns, churches, and drainage channels), tree holes, and bat boxes. Solitary animals also roost in underground sites. In winter it hibernates in caves, mines, buildings and occasionally trees.	Least Concern / (II)
	Serotine	<i>Eptesicus serotinus</i>	Found in a variety of habitats across its wide range including semi-desert, temperate and subtropical dry forest, Mediterranean-type shrubland, farmland and suburban areas. Favoured feeding areas include pasture, parkland, open woodland edge, tall hedgerows, gardens, and forested regions. Feeds on larger beetles, moths and flies. Most summer (maternity) colonies are in buildings and occasionally tree holes or rock fissures. In winter it roosts singly or in small numbers in buildings and rock crevices, or often in underground habitats.	Least Concern / (II)
	Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>	It forages over a range of habitats including woodland, edge, wetlands,	Least Concern / (Unvalued)

Class	Species (Common name)	Species (Scientific name)	Habitat Requirements	IUCN Status ²⁰ / Red Book of Ukraine Status
			and open parkland. Summer roosts are located in tree holes, buildings, and bat boxes, mainly in woodland areas. Winter roost sites include crevices in cliffs, buildings and around the entrance of caves, often in relatively cold, dry, and exposed sites.	
	Daubenton's bat	<i>Myotis daubentonii</i>	It forages over natural and artificial water bodies (including fjords), sometimes in woodland or scrub. Summer roosts are in tree hollows, caves, buildings and other artificial structures (e.g. bridges, cellars) in mixed sex colonies. It winters in a wide range of underground habitats.	Least Concern / (II)
	Lesser mouse-eared bat	<i>Myotis blythii</i>	It forages in scrub and grassland habitats, including farmland and gardens. Maternity colonies are usually found in underground habitats such as caves and mines, and sometimes in attics of buildings. It hibernates in winter in underground sites.	Least Concern / (II)
	Bechstein's bat	<i>Myotis bechsteinii</i>	This species has specialized habitat requirements and is largely dependent on mature natural forests. In Europe, it tends to prefer mature deciduous woodland of beech and oak with a high proportion of old trees.	Near Threatened / (II)
	Natterer's bat	<i>Myotis nattereri</i>	It forages in woodland, shrubland and parkland, sometimes over water, pasture, and road verges. It occurs in humid areas, and in dry areas it is dependent on water bodies. Summer roosts are in hollow trees, buildings and occasionally underground sites. It hibernates in underground habitats (caves, cellars and mines).	Least Concern / (II)
	Pond bat	<i>Myotis dasycneme</i>	This species feeds principally over open calm water, particularly canals, rivers and lakes, on small emerging and emergent insects, often taken from the water surface. It prefers water lined by open rough vegetation without trees. Most of the known summer maternity roosts are in buildings, often in large attics and church steeples, in groups of 40-600. Some tree and bat box roosts are recorded. It frequently hibernates in underground habitats ranging from natural caves to cellars and bunkers.	Near Threatened / (I)
	Barbastelle bat	<i>Barbastella barbastellus</i>	It forages in mature woodland and woodland edges, feeding mostly on large moths. In summer, roosting sites occur in mature woodlands and occasionally in older buildings. In winter the hibernation may start in	Near Threatened (I)

Class	Species (Common name)	Species (Scientific name)	Habitat Requirements	IUCN Status ²⁰ / Red Book of Ukraine Status
			trees, but later underground sites are preferred.	

The Vinnytsia region supported a range of faunal species which relied on forest habitats. These also include species such as pine marten (*Martes martes*), roe deer (*Capreolus capreolus*), hazel dormouse (*Muscardinus avellanarius*), forest dormouse (*Dyromys nitedula*) and grey dormouse (*Glis glis*). Bears were once known to be associated with the lime forests; however they are no longer in the region.

The red kite (*Milvus milvus*), stock dove (*Columba oenas*), ringdove (*Columba palumbus*), common turtledove (*Streptopelia turtur*), green woodpecker (*Picus viridis*), thrush nightingale (*Luscinia luscinia*), and other species inhabit are known to be present in the oak forests. The common quail (*Coturnix coturnix*) and partridge are widely distributed.

Rivers in the region forms migration routes, whilst the forests, ponds, and fields in the region are stations for migratory birds and waterfowl. Reptile species include the Aesculapian snake (*Zamenis longissimus*), common adder (*Vipera berus*), slow worm (*Anguis fragilis*), and fast lizard (*Lacerta agilis*) are common. The amphibians are represented by the pond frog (*Rana esculenta*), common newt (*Lissotriton vulgaris*), great crested newt (*Triturus cristatus*), and others.

The following table identifies the potential for each site to support species of conservation importance, based on habitat types present within 500m of the proposed development.

Table 5.8 Species Observations

SPECIES GROUP	LIKELY SPECIES	POTENTIAL CONSERVATION VALUE OF SPECIES ASSEMBLAGE
Birds	<p>No bird species of conservation importance were recorded within any of the proposed development sites.</p> <p>Common corvid species were abundant in all habitat types recorded. Raptors including western marsh harrier (<i>Circus aeruginosus</i>) and black kite were recorded hunting over arable fields. Common song birds were recorded within woodland and shrub habitats. These included species such as starling (<i>Sturnus vulgaris</i>), great tit (<i>Parus major</i>), and sparrow (Passeridae). Forest and wetland habitats are likely to be of higher conservation value for birds, offering nesting and foraging opportunities as well as being important migratory routes. Potential sand martin (<i>Riparia riparia</i>) nest site was recorded close to the Nedoteka River. Shrub habitats were noted of particular importance for birds, offering nesting and winter foraging opportunities.</p>	Up to Medium
Mammals	<p>A limited number of small mammal species are likely to use arable fields. Forest, shrub and wetland habitats offer a range of conditions suitable to support a wide range of mammal species. Evidence of deer was recorded in the forest habitats, whilst wetland habitats were noted to be suitable to support species such as otter, mink, watershrew. Shrubland habitats were found to be suitable to support a range of mammal species including dormouse, badger, deer. Habitats present within the Zol are modified, managed and anthropogenically disturbed, making it unlikely that particularly rare species persist in these areas.</p>	Up to Medium

SPECIES GROUP	LIKELY SPECIES	POTENTIAL CONSERVATION VALUE OF SPECIES ASSEMBLAGE
Bats	No evidence of bat occupation of any of the proposed development sites was found at the time of the walkover surveys. It is known that bat species are present in the wider area and are likely to be associated with forest, wetland and shrub Habitats. Trees appeared uniform and forest structure generally lacked diversity within the Zol, offering few roosting opportunities. Connectivity of forest habitats and wetland areas exist in the form of windbreaks, which serves as a corridor between suitable habitat areas; however the arable landscape is generally open, exposed and unsuitable to support bat species.	Up to Medium
Reptiles and Amphibians	No reptile or amphibian species were observed during the walkover survey. Arable habitats are generally considered to be sub-optimal to support any herpetofauna of conservation importance, whilst wetland, forest and shrubland areas provide suitable habitats for the species to forage, shelter, bask and hibernate.	Up to Medium
Fish	Fish species are known to be present within the wetland areas, whilst the habitat is considered to be of value for spawning, it can be assumed that the species within the rivers are also an important local ecological resource and wildlife corridor based on the overwhelming dominance of arable habitats in the region. The main freshwater fishes likely to be found in the area include species such like pike (<i>Esox</i>), chub (<i>Squalius</i>), roach (<i>Rutilus</i>), carp (<i>Cyprinus</i>), and river perch (<i>Perca</i>).	Up to Medium

IMPORTANT ECOLOGICAL FEATURES

Only ecological features which are important and potentially affected by the proposed developments should be subject to detailed assessment. Features that are sufficiently widespread, unthreatened and resilient to development impacts can be excluded from assessment. Important Ecological Features (IEF) are identified based on nature conservation status, relating to the need to conserve representative areas of habitats, species and the genetic diversity of species populations. For this project, IEFs have been identified as: Protected Areas; Critical Habitats; Natural Habitats; Modified Habitats that include significant biodiversity value; and populations or assemblages of species and their supporting habitats which are rare, threatened and/or notable or protected. Rare/threatened/notable species include those which are: legally protected, Ukraine Red Data Book listed, on the IUCN Red List of Threatened Species and/or diverse assemblages of species.

Habitats and species that are sufficiently widespread, commonplace, and/or small in area, as to be of low and negligible importance for nature conservation are not classified as IEFs and are therefore not included in the impact assessment other than to provide contextual baseline information. Table 5.9 lists all the applicable IEFs within each of the proposed development site's Zol and their potential conservation value.

Table 5.9 Important Ecological Features

SITE	IEF	VALUE
Waste Water Treatment	Inland Wetland Habitat	Up to High
	Birds	Up to Medium
	Mammals	Up to Medium

	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
	Fish	Up to Medium
Slaughter House and Render Facilities	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Hatchery	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Fodder Plant	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Brigade 13	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Brigade 14	Birds	Up to Medium
	Mammals	Up to Medium
Brigade 19	Birds	Up to Medium
	Mammals	Up to Medium
Brigade 42	Temperate Forest	Up to Medium
	Inland Wetland Habitat	Up to High
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Brigade 43	Temperate Forest (1.4)	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Brigade 47	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Brigade 49	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Brigades 50 and 51	Dependent on finalised location. Value levels likely very similar to Brigade 13 near by (see above).	
Bypass Road No.1: Access Road from Brigade 49 to Brigade 50	Inland Wetland Habitat	Up to High
	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
	Fish	Up to Medium

Bypass Road No.2: Olynisca Bypass Road	Temperate Forest	Up to Medium
	Temperate Shrubland	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
Bypass Road No.3: Access Road to Brigade 19	Inland Wetland Habitat	Up to High
	Temperate Forest	Up to Medium
	Birds	Up to Medium
	Mammals	Up to Medium
	Bats	Up to Medium
	Reptiles and Amphibians	Up to Medium
	Fish	Up to Medium

5.2 METEOROLOGICAL AND CLIMATE

CLIMATIC CONDITIONS

Vinnytsia is located about 260km south west of Kiev and approximately 430km northwest of the Black Sea port of Odessa. The climate is continental with short-lived mild winters and warm summers.

The nearest weather station is in Haisyn (approximately 18km to the north-east of the site). The average annual temperature recorded is +6.7°C, the average temperature of the warmest month (July) is +25.2°C and the coldest month (January) is -5.5°C. The absolute maximum / minimum temperatures recorded are +38°C in July and -3 °C in January.

Snowfall occurs from November to March, with the depth of snow cover varying between 5 - 36 cm. The average speed of the predominant north-westerly wind is 4.6m/sec (2012 – 2016 data).

5.3 LANDSCAPE AND VISUAL

CONTEXT

The proposed farm site covers an area of approximately 27,000 ha. Within the area, the total footprint of the proposed facilities is 210ha. The proposed sites are within agricultural land, mostly bordered by roads. There are no settlements or residential buildings adjacent to the sites.

BASELINE

LANDSCAPE CHARACTER

The project area is located on the Podoll'ya upland and features flat agricultural terrains with a relatively uniform character. Elevation does not vary by more than 1.5m.

Each of the proposed facilities is located within largely undeveloped agricultural land, with no buildings being located on the sites. The closest village to the facilities covered by this project, is Lukashivka, which is located 1km to the south of brigade no. 14. No other residential or industrial buildings are located within 1.2km of the sites.

The wider project area comprises villages and administrative and industrial structures, and is therefore relatively developed.

Given the predominantly flat character of the terrain, the views across the proposed development into the different sites are predominantly long range views, unless blocked by the sparse woodland areas.



Figure 5.2 Example of typical landscape in site area

SETTLEMENTS

There are four main settlements within a 1.5 km radius of the different sites. The nearest settlement is Lukashivka, which is located 1km to the east of brigades 13 and 14.

Table 5.10 provides details on distance of each settlement.

Table 5.10 Nearest settlements

VILLAGE NAME	DISTANCE	SITE
Lukashivka	1.00 km east	Brigade 13 and 14
Kleban	1.47 km south west	Brigade. 42
Mykhailivka	1.39 km north west	Brigade. 47
Bilousivka	2.20 km north	Brigade 49

VISUAL RECEPTORS

Visual receptors of moderate sensitivity include people living in residential properties in:

- Lukashivka (distance from the proposed site boundary to the nearest residential property: approximately 1km)
- Kleban (distance from the proposed site to the nearest residential property: approximately 1.47km)
- Mykhailivka (distance from the proposed site to the nearest residential property: approximately 1.39km)
- Bilousivka (distance from the proposed site to the nearest residential property: approximately 2.20km)

5.4 AIR QUALITY

Baseline air quality has been assessed using modelled background concentrations of pollutants provided by the State Administration of Environmental Protection in Vinnytsia region and monitoring undertaken at the existing Fodder plant to the south of Ladyzhyn.

BACKGROUND AIR QUALITY CONDITIONS

The project area is located in a predominantly agricultural area. Existing local sources impacting air quality are likely to include the existing poultry farm facilities, road traffic and dust generated by agricultural activities. There are also industrial processes, including a power station, further afield.

The values of background concentrations of pollutant concentrations were provided by the State Administration of Environmental Protection in Vinnytsia region, based on calculations rather than monitoring. Table 5.11 below shows the results of the calculation expressed as a fraction of the threshold limit value and in mass units.

Table 5.11 Background Pollutant Concentrations and Short Term TLV

POLLUTANT	TLV MG/M3	BACKGROUND CONCENTRATION (FRACTION OF TLV)	BACKGROUND CONCENTRATION (MG/M3)
Nitrogen Dioxide	200	0.09	18
Carbon Monoxide	5000	0.04	200
Dust	500	0.1	50

The calculated background concentrations are all well below the respective TLVs indicating that overall, the existing air quality is likely to be good.

The calculated concentrations provide a robust assessment of background concentrations although concentrations are likely to slightly higher at the roadside and in the vicinity of individual emission sources. Given the agricultural nature of the surrounding land, dust concentrations are likely to be periodically higher during occasions of dry weather and moderate to high winds. Furthermore, at times, the project area may be affected by emissions from the large coal fired power station in Ladyzhyn.

NATIONAL MONITORING

Ambient air quality monitoring is undertaken at key site locations at the Fodder plant to the south of Ladyzhyn as part of the monitoring of phase I of the proposed development,. Concentrations of Total Suspended Solids (from which particulate matter (PM₁₀) concentrations are estimated), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂) and carbon monoxide were monitored using manual, short-term methods. The monitoring and Ukrainian Limit Values are summarised in Table 5.12.

The monitoring was undertaken at 3 locations, on site, 100m from the site boundary and at the residential area ~1km to the south of the site, during periods of north-easterly winds when the wind was blowing from the site towards the monitoring stations.

Ambient air concentrations are clearly higher on site than either 100m from the boundary or ~1km from the site. The only exception to this was nitrogen dioxide, for which concentrations peaked 100m from the site on 12th and 13th October 2015. Notwithstanding the exception on 12/13th October, the data indicate that the fodder plant has a perceptible impact on local air quality in the vicinity of the plant.

Offsite, with the exception of 12/13 October for nitrogen dioxide, monitored pollutant concentrations are well within Ukrainian long term standards (and short term standards). It is not

possible to determine absolutely whether long term average concentrations would exceed the limits but the data indicate that air quality is relatively good in the project area.

Sulphur dioxide concentrations exceed the WHO 24 hour limit value, but WHO acknowledge that meeting this target may be difficult for some countries and have also proposed an interim target level of $125\mu\text{g}/\text{m}^3$. Monitored concentrations are within this target level.

Table 5.12 Short Term Ambient Air Quality Monitoring at Fodder Plant ($\mu\text{g}/\text{m}^3$)

POLLUTANT	UKRAINIAN LIMIT	WHO LIMIT VALUE	LOCATION	18/09/2015	12/10/2015	13/10/2015	13/10/2015
Nitrogen Dioxide	40 (Daily) 200 (Short Term)	40 (Annual) 200 (Hourly)	On site	36.7	36.0	35.6	37.3
			100m from boundary	26.7	51.6	51.6	32.3
			~1km from site	24.7	28.6	27.6	28.6
Carbon Monoxide	3000 (Daily)	10000 (8 hourly)	On site	1857	1744	1874	1834
			100m from boundary	1853	1555	1851	1685
			~1km from site	1560	1414	1495	1440
Sulphur Dioxide	50 (Daily) 500 (Short Term)	20 (Daily) (Target 1 = 125, Target 2 = 50) 500 (10 minute)	On site	71	43.6	45.3	45.6
			100m from boundary	<50	39.6	39.6	40.66
			~1km from site	<50	32.6	34.3	35
Dust	150 (Daily) 500 (Short Term)	50 (Daily) 40 (Annual)	On site	128.3	46.3	44.6	47.3
			100m from boundary	50	39	38.3	41
			~1km from site	38	33.6	31.6	35.3

USE OF AMMONIA IN CHILLING SYSTEMS AND EMERGENCY PREPAREDNESS AND CONTROLS.

The Vinnytsia Farm meat processing facility employs ammonia based chiller systems for cooling.

These are modern systems and employ a range of specific measure to reduce accident risks and also to provide emergency response arrangements in case of any incident. These include:

- Permits have been issued by the Ukrainian Ministry of Emergency Situations for the facilities, which ensure that safety arrangements are in place in line with the Regulatory Requirements. The Chiller systems are approved through a 'Declaration on Safety of High Risk Systems' approval number 05.35878960.01.2-D, valid from 01.09.2015. There is a further 'Conformity of entity's legal requirements for fire safety' ; Declaration number 11 from 01.11.2013.
- Detailed written procedures are in place for the management of these units, and also emergency response such as localised evacuation. These procedures include:

- Plan for evacuation.
 - Plan for emergency response.
 - Plan to ensure the protection employees in the event of emergency.
 - Procedure P-12 to "Undertake emergency training"
 - Plan for the full management of emergency situations.
- A leakage detection and alarm system is in place which includes:
 - Continuous monitoring of dangerous concentrations of ammonia fumes;
 - Enables exhaust ventilation at the concentration of ammonia fumes in the air to 500 mg / m³ (0.07%) of lower concentration threshold (NKPR) - threshold 1;
 - Enables the sounding of an alarm when the concentration of ammonia evaporation in the air up to 1500 mg / m³ (0.21%) of NKPR - threshold 2. This triggers the localised evacuation procedures, and relevant staff receive training on this procedure.
 - Control the concentration of ammonia evaporation is made through stationary monitoring systems. A warning and notification system is installed in the camera room.
 - Measuring the systems in all places with any risk of accumulation of ammonia vapors.
 - PPE is provided in all relevant areas, dedicated for use in maintenance, and separately for emergency response.

A planned preventative maintenance programme is in place, including a list of the works which shall be required to ensure full integrity of the systems is maintained. There are also a specific agreement in place with a specialised service organization that has all relevant permits to undertake the maintenance and all checks

Workplace Exposure to Ammonia

In regards to potential workplace / employee exposure to Ammonia within the poultry houses, MHP undertake daily monitoring of ammonia levels to ensure that these do not exceed the maximum levels required within Animal Welfare Standards. Monitoring is undertaken on a daily basis within all poultry houses, and a record is maintained of the level alongside other environmental factors such as temperature.

The maximum level of ammonia permitting is 20 ppm. In reality the levels are maintained much lower than this level, typically in the range of 10 – 15ppm, with 20ppm being a maximum. If any exceedences were identified then this can be easily rectified through instant additional ventilation. In regards to poultry exposure, this maximum level permitted by MHP is below the workplace exposure standards set for safety and workforce exposure. A sample of relevant standards for ammonia are:

- USA: OSHA workplace exposure standard is 50ppm (8hr average). No short term exposure standard.
- USA NIOSH (more conservative standard): 25ppm (8hr average) 35ppm permitted for short term exposure
- UK 25ppm (8hr average), 35ppm short term

As the above show, maintaining the concentrations below 20ppm, will ensure that the workplace work safety exposure standards will also not be exceeded, and there is an additional margin provided also.

MHP do not utilise formaldehyde in their operations.

SUMMARY

The existing process (phase 1) has a perceptible impact on local air quality but does not cause a breach of air quality standards). Background concentrations of pollutants are well within Ukrainian standards.

5.5 NOISE AND VIBRATION

No noise baseline and its assessment based on the noise level measurements taken in the project area and/or beyond the site boundaries could be found in the OVNOSs. However, some mitigation measures were mentioned, including keeping appropriate distances from residential areas and shielding noise sources with walls and landscaping.

The environs of the project are predominantly **industrial areas with existing building** (for the WWTP, and the extension of the slaughter house, fodder and hatchery), or **arable cultivated fields** for the proposed brigades and by-pass roads:

- The waste water treatment facility is located approximately 2.5km north of Lukashivka and set within a farmed arable landscape. The slaughter house and render facilities are within an existing operational compound comprising buildings, hard standing and bare ground areas. The proposed extension of the hatchery (c.0.5ha) will be situated entirely within an existing operational compound, specifically on an area of managed grassland and hard standing. The proposed extension works associated with the fodder plant is entirely located with the existing site compound, which comprised hard standing, buildings, bare ground and managed grassland areas.
- Brigade 13 is entirely situated within an arable field approximately 1km west of Lukashivka. Brigade 14 is surrounded by entirely cultivated arable land. Brigade 19 is entirely situated within an arable field cultivated for corn (at the time of the consultants' visit). A tree-lined road and dry ditch is situated to the north of the site, where access to the proposed brigade would connect to. Habitat within the footprint of the proposed brigade 42 is entirely cultivated arable land. Ground preparation works at the time of survey was underway and it was noted that the land was harvested for corn prior to construction commencing. Habitat within the entire footprint of the proposed brigade 43 is arable farmland. The proposed access will connect to the road which links Bohdanivka and Lukashivka. Habitat within the entire footprint of the proposed brigade 47 is arable farmland, formally cultivated for rapeseed in the previous season. At the time of survey, ground preparation works were in progress.
- Bypass No. 1 (to connect Brigade 49 and 50) takes a route north, from the main road (T0237) between Bohdanivka and Lukashivka, on an existing track towards Bilousivka. The existing track is located between extensive arable fields to the east and west and is lined with trees. Bypass No.2 - was partially constructed at the time of survey. The bypass routes from a road south of Lukashivka and travels 0.1km south over arable fields before joining an existing track through woodland. Bypass No.3 (providing access to Brigade 19) follows an existing track between lines of trees planted as windbreaks. The proposed access continues south for c.4km through arable fields, cultivated for corn, until the route crosses an existing road between Velyka Stratiivka and Horiivka.

Taking noise measurements in the project area was not covered by this Supplementary ESIA scope, and the WSP|PB team took the opportunity note the noise characteristics at the project locations visited in October 2016. Based on site observations, the nature of noise in the project area was dominated by an occasional traffic and agricultural machinery noise on the surrounding cultivated fields.

The following guidance documents have been used as the basis for assessment of operational noise from the proposed development:

- The IFC document Environmental, Health, and Safety Guidelines: General EHS Guidelines: Environmental, 2007;
- The World Health Organisation document Guidelines for Community Noise, 1999

Section 1.7 of the IFC document refers to noise and, in addition to providing generic control measures that should be considered, presents noise limits for off-site residential receptors. These limits are subject to a maximum increase in background noise levels of 3 dB. The limits quoted are 55 dB $L_{Aeq,1hr}$ during the day (07:00-22:00) and 45 dB $L_{Aeq,1hr}$ at night (22:00-07:00), making reference to the World Health Organisation (WHO) guidelines as a source.

The WHO guidelines provide limits for noise at various community locations. For residential receptors, the following guideline values apply:

- Outdoor living areas daytime and evening: 55 dB $L_{Aeq,16hr}$ (to prevent serious annoyance)
50 dB $L_{Aeq,16hr}$ (to prevent moderate annoyance)
- Outside bedrooms at night 45 dB $L_{Aeq,16hr}$ (to prevent sleep disturbance)

It must be noted that as these thresholds for noise (or permissible noise levels) are aligned with those of the Ukrainian legislation (see Section 3.2), compliance with the applicable Ukrainian legislation also ensures compliance with the WHO guidelines for permissible noise levels at community locations,

Noise impacts shall therefore be considered against the absolute guideline levels summarised in

Table 5.13, below, where significant impacts shall be considered to be those that exceed these limits:

Table 5.13 Maximum Allowable Noise Levels

RECEPTOR	HOURS	MAXIMUM ALLOWABLE NOISE LEVELS
Outside residential dwellings	07:00-22:00	55 dB $L_{Aeq,1hr}$
	22:00-07:00	45 dB $L_{Aeq,1hr}$

5.6 WASTE MANAGEMENT

The following facilities, construction sites and undeveloped future locations of Phase 2 facilities have been assessed regarding the baseline conditions for waste production and management.

PERMITTED TYPES AND AMOUNTS OF WASTE FROM EXISTING FACILITIES

The environmental permits / OVNS (Ukrainian Environmental Impact Assessments) for the Phase 2 facilities were available and these declared the following type and quantities of waste that were permitted to be produced and disposed of according to the type of operation. These are summarised below for each facility in tabular form along with the reported disposal or recycling methods.

SOLID WASTE

A baseline has been established for the aggregated waste production from the existing facilities based on the OVNS declarations and information from the site visits of the 4th and 5th October 2016. The additional waste volumes for Phase 2 have been calculated on the basis of an estimated percentage increase in overall production of 75% from the additional 9 brigades being added to the existing 12 already in operation. a percentage production increase has

From this baseline and production increase, an incremental impact assessment was done for the additional aggregated solid waste volumes that will be generated by the construction and operation of the Phase 2 facility extensions and 9 additional brigades. For clarity and continuity both the baseline and additional production impact assessment are given together in the impact assessment section below.

5.7 SOIL, GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

WATER AND SANITATION

According to the 2010 OVNS (EIA) for the Vinnytsia hatchery, water consumption for the hatchery alone has been calculated at 558.38m³/day or 157,766.4 m³/year. The water will be sourced from the Ladyzhn reservoir, which comprises two 500m³ reservoirs supplied directly from the Yuzhnyi Bug (South Bug) River.

Water consumption associated with the 13th brigade (the Brigade sampled during the audit) will be supplied by the same two reservoirs from Ladyzhn and will consume up to 129,678.18m³/year.

Actual water consumption from the whole Vinnystia Poultry Farm (e.g. hatchery, poultry house, rearing zones, processing, ancillary features and accommodation) has been calculated as shown in Table 5.14 below:

Table 5.14 Actual Water Consumption

	WATER CONSUMPTION (M ³)	
	→ 2013	→ 2014
Vinnytsia Poultry Farm	2,130,591	3,272,019

The individual OVNS for the hatchery, rearing zones and slaughter house do not identify any negative impacts related to water availability as a result of MHP activities. However, it should be noted that the OVNSs have been prepared in isolation, and therefore do not assess the aggregated effect on water use.

WATER ENVIRONMENT

Regional setting

The assessment of water supply provision in the Ukraine developed as part of the DesPro project (Aquapro 2009) identifies that within the Vinnytsia Oblast 17 towns, 24 villages and 70 rural populated areas have centralised water supply systems. Ladyzhin is one of 6 towns in the region which have centralised water supply systems using water abstracted from the Pivdenny Bug river. The remaining populated areas utilise groundwater as their water supply source. The main groundwater aquifer in the Oblast is associated with the fractured Precambrian bedrock, including its weathered upper part, with the aquifer being best developed in the northern, central and eastern parts of the region. Individual wells support abstraction rates of 50-75 to 500-1200 m³/d, with a total available groundwater resource of 147000 m³/d being cited as being available within the Vinnytsia Oblast. Groundwater in the southern and central rayons is cited as having a high TDS with elevated concentrations of iron and nitrate, although no values for these concentrations are presented.

The DesPro project reported that 30% of households in the Oblast were connected to a centralised system, although in rural areas only 3.5% of households were connected to a central water supply system. 57.4Mm³ of water was supplied in the Oblast, with 76.6% being used by households, 17.7% for utility needs and the remainder by industrial/commercial use.

The project sits within the catchment of the river Bug, a major transboundary river which forms a 185km length of border between the Ukraine and Poland, as well as marking the border between Poland and Belarus further downstream. The river water resources are of significant importance, with an estimated 2 million people in the Ukraine depending on the river for their water supply. In addition to supporting abstractions for industry, irrigation, fisheries and water supply, the river is also utilised for waste water discharge. The long-term average flow of the Bug River at the Ukrainian-Belarusian border is 55 m³/s, although significant variations in flow do occur, with high flows resulting from the spring snow melt and low flows occurring in autumn due to low summer recharge. Flows vary across the year with highest flows in March-April in response to snow melts and the lowest flows generally occurring in August-September. Low flows may continue during harsh winters with runoff being retained as snow rather than entering the surface drainage network. The natural TDS of the river waters is influenced by the underlying geology, with the TDS of waters in the river reaches which flow over crystalline basement being around 500 mg/l, while the TDS increases to 1000 mg/l when the river flows over areas of limestone and/or loess e.g. in the southern part of Ukraine.

These variations in flow give rise to significant variations in water chemistry, although the river is reported as being in general undisturbed and supporting a high quality ecological system. The main water quality issues for the Bug river are reported as high concentrations of organic pollution, nitrate, phosphate and bacteriological pollution. Diffuse sources of nutrients and municipal pollution are the main sources, with limited impact from industrial activities. Analysis of river water samples collected at the Ukraine-Poland border levels of ammonium as N (~0.2 mg/l) and nitrate as N (0.9 to 1.4 mg/l) are close to EU standards, while the total P concentration of 0.17- 0.34 mg/l. The concentration of all metals was below EU standards. The total effluent load is considered low compared to the natural water flow in the Southern Bug, so although increased nutrient content may occur below point source discharges this dissipates downstream due to dilution in the river.

Project area

The Bug River is regulated by the Ladyzhin Reservoir in the project area. The reservoir, which is located at a distance of 406km from the mouth of the river, has a catchment area of 13300 km² and a average flow of 38.5 m³/s (Bug River Management Plan). The reservoir is utilised as a water supply for municipal water supply, industrial and agricultural use. The Ladyzhin power station is the second largest industrial water user in the Oblast, accounting for 18% of industrial demand. Discharge of heated water from this power plant is considered to enhance biological activity in the reservoir.

The site survey undertaken by WSP in October 2016 identified that groundwater has been utilised for private/village water supply in the project area, Hand pumps were seen in both public spaces, presumably providing a communal water supply, and in private dwellings. Water supply pipelines are currently being installed by MPH to replace groundwater sources in the project area.

The Vinnitsiya Farm project has a permitted abstraction volume of 5,997,859 m³/yr, with water being drawn from the Ladyzhin Reservoir, Water use on the project facilities is monitored via the site SCADA system. In 2015 the annual water usage for the whole Vinnitsiya Farm complex was reported as 3,785,600 m³ (10370 m³/d) divided into 1,965,500 m³ for the process and 1,820,100m³ for drinking and washing. Monthly water use varied between 12170 m³/d and 8940 m³/d in September and November respectively.

PARAMETER	CONCENTRATION (MG/L)
Ammonia as N	0.6
Suspended Solids	4.41
Nitrate	2.18
Nitrite	0.08
Sulphate	45.8
Phosphate	0.45
Chloride	34.9

Treated water from the Waste Water Treatment Plant will be discharged into the Bug river downstream of the

Ladyzhin Reservoir. The permitted discharge volume to the river from the WWTF is 4,015,000 m³/year, or 0.13 m³/s. The assimilative capacity assessment associated with the discharge utilises a minimum monthly average receiving water flow of 5.41 m³/s with an average baseline water chemistry as shown in Table 5.15. The baseline water chemistry data, which is presented

IFC GUIDELINE VALUES	PERMITTED LIMITS	SITE PERFORMANCE 1/4LY AVE	SITE PERFORMANCE SPOT SAMPLE 12/0716	COMPLIANT
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in the Environmental Impact Assessment Report for the Waste Water Treatment Plant (2011) is stated as being derived at a control point 0.5km from the discharge. MHP have indicated that water quality samples are collected 100m upstream and 350m downstream of the discharge point.

Table 5.15 Baseline water chemistry for Bug river

The latest available analysis from the WWTP discharge monitoring point on the Bug river is given below with comparison to the IFC guidelines values for surface water discharges.

pH 6 – 9	6.5-8.5	No details	7.01	Yes
BOD ₅ 50 mg/l	</=3.5	2.8-3.21	2.04	Yes
COD 250 mg/l	</=28	19-22.66	25.4	Yes
Total nitrogen 10mg/l	No limit	19.11-21.73*	29.47	No Ukrainian Standards. Marginally above IFC standards, but based on one sample only.
Total phosphorus 2 mg/l	</=0.25	0.14-0.21	0.21	Yes
Oil and grease 10 mg/l	No details	0.021-0.035	No details	Yes
Total suspended solids 50 mg/l	</=20.25	6.64-8.45	8.4	Yes
Temperature increase <3°C	15-25	No details	27.6	No details on ambient temp of watercourse. Above limit permitted.
Total coliform bacteria MPN 400/100ml	No details	No details	No details	No details

Table 5.16 WWTP Surface water discharge to Bug River monitoring analysis.

Groundwater monitoring boreholes have been installed at the Waste Water Treatment Plant, while groundwater strikes were also noted as part of the ground investigation works for the different farm facilities. Site investigation boreholes drilled to a depth of 12m at the Fodder Plant did not encounter groundwater, while boreholes to 10m depth at the Hatchery site were also dry, indicating that a significant unsaturated zone exists at these sites between the ground surface and the watertable.

The WSP site reconnaissance identified a number of activities not related to the farm which have the potential to impact surface and groundwater quality in the project area, specifically:

- The municipal sewage treatment facility, which is located adjacent to the farm WWTP;
- A fly ash disposal facility which appears to be receiving a fly ash slurry from the power station at Ladyzhin is located to the south west of the MHP HQ and WWTP. A surface water stream appears to flow from the fly ash disposal facility passing to the south of the MHPs facilities and on into the Bug River. The stream's discharge point to the Bug River is upstream of the water quality sampling point used on the river by MHP as part of its compliance monitoring. Given the distance downstream from the stream outflow to MHPs sampling point, it is probable that any chemical load related to leaching of flyash will have been attenuated/diluted in the River Bug. It is therefore considered unlikely that any impacts from the flyash would be detected in MHPs discharge monitoring samples.

Although a range of regional and site specific data relating to the water environment has been compiled for the project, we would recommend that going forward additional data be collected to help with management of water aspects of the project. The monitoring programme could include:

- Water abstractions: Identification and quantification of significant abstractions (e.g. public water supply, industrial/agricultural users, private water supply) within the area of influence would support the Vinnitsiya Farm project in understanding how these may interact with their project water requirements;

- Meteorology data: A rainfall record will help with the design of surface water management features such as the concrete lined sumps which collect rainfall runoff from building and hard standing.
- Surface water flow and water chemistry: Flow gauging data would allow seasonal variations in water quantities within the river system to be reviewed, while surface water quality data will allow a further development of the dilution/loading assessment which was done as part of permitting the Waste Water Treatment Plant;
- Groundwater level and water chemistry: These data should allow the potential impact on water quality related to both operation of the process facilities (e.g. efficiency of ponds capturing surface water runoff from site infrastructure including the manure storage facilities) and offsite activities such as fertiliser application to be further assessed;.

To confirm the location of the water quality sampling points, MHP provided a map of the River Bug (below) which demonstrate the following:

- The green dot shows the location of the water sampling point prior to the discharge point,
- The red dot shows the point where MHP discharges their wastewater after it has been treated at the WWTP, and
- The yellow dot shows the location of the second sampling point downstream of the discharge point..

In this configuration MHP is able to monitor potential impacts to the Bug river from its WWTP discharges.



Figure 5.3 Water quality sampling points

5.8 CULTURAL HERITAGE

CONTEXT

Historic and cultural resources include monuments, structures, works of art and sites of outstanding universal value from historical, aesthetic, scientific ethnological and / or anthropological points of view, including graveyards and burial sites. The Ministry of Culture is responsible for the preservation, maintenance and assessment of historical and cultural monuments in Ukraine. Cultural heritage is protected through the Law of Ukraine on Protection of Cultural Heritage (Vidomosti of Verkhovna Rada (VVR), 2000, N 39, 333).²¹

According to article 32 of the above Law, permission of the Register of Historical Sites of Ukraine is required before undertaking development within protected archaeological area.

BASELINE

The city of Vinnytsia stands on the Southern Buh River. It was first mentioned in historical papers in 1363, as a Lithuanian fortress.

Places of interest in the city include: the wooden churches of St. Mykola and Yuriy (XVIII century); the Museum after M. Pirohov; the complex of monastery buildings; the historical and cultural complex "Busha" and the Haidamatskiy Ravine; the Catholic Church of St. Florian (Shargorod); the site of an ancient Scythian settlement three km from Nemyriv (VII-V centuries BC); St. Uspenskiy rock monastery in Lyadov; the palace of Pototskiy (1757); the state Museum and the palace of the Countess con Meck and P. Chaikovskiy; and, the Headquarters of Hitler, which was built not far from Vinnytsia in 1942-1944.²²

There are no internationally²³, nationally or locally designated historical and cultural monuments within the project area. Several monuments and churches were identified within a 10km area surrounding the proposed sites and are assessed to be of cultural or religious value:

- One monument in Lukashivka, approximately 1.5km to the west of proposed brigade 14.
- One church in Vasylivka, approximately 2km to the south west of proposed brigade 47
- Two churches, in Kleban, approximately 5km to the north west of proposed brigade 50
- One church and two monuments in Demydivka, approximately 5km to the south of proposed brigade 19
- One church in Trostyanets, approximately 5km to the west of proposed brigade 19
- One church in Olyanytsia, approximately 6km to the east of proposed brigades 13, 49 and 43

There are no archaeological areas of local significance within a 2 km area surrounding the proposed sites.

²¹ http://www.unesco.org/culture/natlaws/media/pdf/ukraine/ua_law_protection_cultural_heritage_engtof.pdf

²² http://www.vin.gov.ua/web/web_oda_engl1.nsf/webgr_view/GrNFCYF?OpenDocument&count=5&RestrictToCategory=GrNFCYF

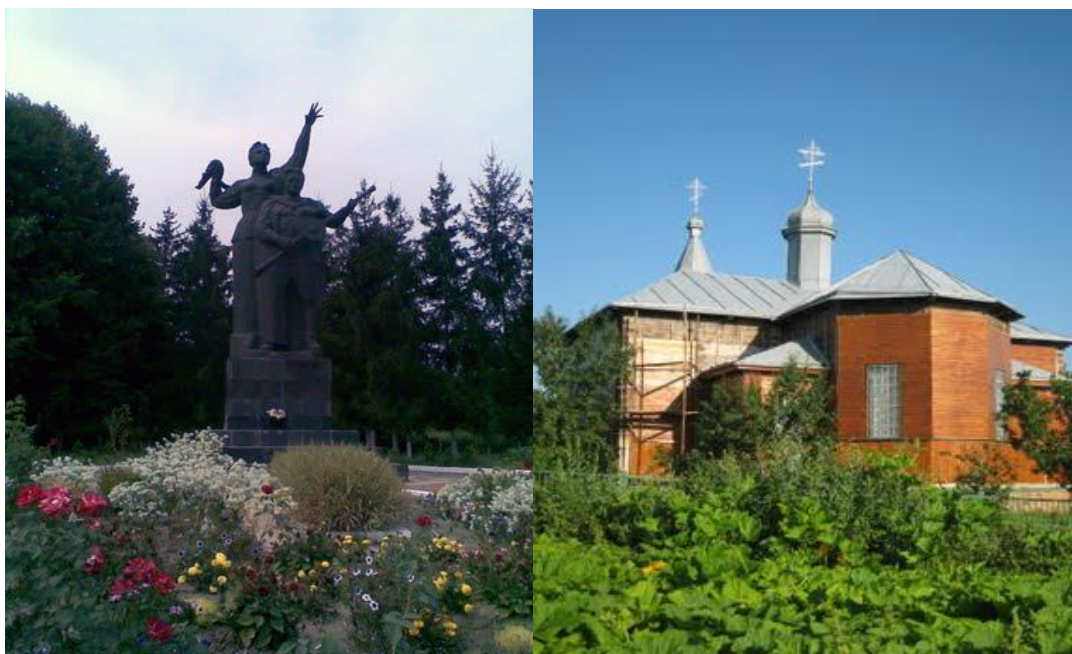


Figure 5.4 Monument in Lukashivka (left) and historic church in Vasylivka (right)

5.9 SOCIAL BASELINE

GENERAL AREA

The project area is located in the Vinnytsia Oblast, approximately 70 km to the south-east of the city of Vinnytsia.

Nearby major settlements include Ladyzhyn (town), and nearby villages of Bohdanivka, Olyanytsya, Chetvertynivka, Hubniyk, Trostyanets and Hordiivka.

POPULATION

As of 1st January 2016, the population of Ukraine was estimated to be 42,760,500 people. This is an increase of 0.38% compared to 2015 (42,836,922 people). Among the total population, 69.1% live in urban areas and 30.9% live in rural areas. Among the resident population, 46.3% are male and 53.7% are female. It is estimated that 15.3% are 0-15 years old, 68.8% are 16-64 years old and 15.8% are 65 or over.²⁴ As of 2015, the life expectancy was 71.38 years, with 66.37 for men and 76.25 for women.

Death rates fell between 2014 and 2015 from a total of 26,881 to 26,789 with the most notable reduction being as a result of a 2% decrease in the number of deaths resulting from diseases of the blood circulation system.

In the Vinnytsia Oblast, the population is estimated at 1,597,683 (June 2016 National Census estimates), which is 0.51% lower than the population estimated in 2015 (1,605,808). Approximately 53.5% of the population is rural and 46.5% is urban. The population has recently declined in the province due to internal and external migration driven by younger generation

²⁴ https://ukrstat.org/en/operativ/operativ2007/ds/nas_rik/nas_e/nas_rik_e.html

looking for jobs elsewhere. A specific survey to collect primary data was not undertaken during the preparation of this report as it was not included in the original scope.

ETHNICITY AND RELIGION

ETHNICITY

According to the latest available Ukrainian census data (2001)²⁵, the total population is approximately 78% Ukrainian, 17% Russian and the remaining 5% is made up of a number of other groups including Moldavians, Bulgarians and Crimean Tatars.

LANGUAGES

The official language of Ukraine is Ukrainian. The 2001 Census indicated that approximately 85.2% of the native population consider Ukrainian as their 'mother tongue' while 14.8% consider it to be Russian.

Based on site visit observations, most people were found to speak Ukrainian language in the project area and this was reported in discussions to be the preferred language. However, it should be recognised that for consultation and other stakeholder engagement purposes, other languages could be preferred and the approach should be adjusted based on the specific engagement activity and audience.

RELIGION

As of January 1, 2011, Ukraine had 33,977 churches and religious organisations. Today, more than 97% of the registered religious communities in Ukraine are Christian. About half of them are Orthodox. The other half is split among Catholics and Protestants. The category of "traditional" churches has three major Orthodox jurisdictions, the Ukrainian Greek Catholic Church, the Roman Catholic Church. In addition to these are the Armenian community, and the communities of Lutherans, Calvinists, Baptists, Pentecostals and Adventists.²⁶

In the Vinnytsia region, 45.75% are Orthodox, 16.09% are Protestants, 4.68% are Catholics and less than 1% is Jews, Muslims, Eastern, Pagan and Syncretic.²⁷ As of 2004, there were 1046 Orthodox churches, 14 Greek Catholic churches, 126 Roman Catholic churches, 334 Protestant churches and 50 other churches in the Vinnytsia region.²⁸

LAND USE AND LAND LEASE PROCESS

Ukraine is the world's third largest exporter of corn and fifth largest exporter of wheat. When Ukraine separated from the Soviet Union in 1990, collectivised farms were disbanded and land was distributed in parcels of approximately four hectares per person to people living on these farms. However, it has been identified that there were significant issues in the decade following these reforms. For instance, most people received notice of their claim to land but were not designated a specific plot of land, making cultivation nearly impossible.

In 2001, Ukraine passed its Land Code – legislation that gave people functional titles to land. Since then, there has been a moratorium on the sale of land, which was extended through 2018. Under the moratorium, farmland can typically be leased for up to 49 years at a time. The land

²⁵ The 2012 National Census was postponed and then in Dec 2015 it was postponed again until 2020.

²⁶ <http://risu.org.ua/en/index/reference>

²⁷ http://risu.org.ua/en/index/reference/religiografia/vinnytsia_info

²⁸ <http://risu.org.ua/en/index/resourses/statistics/ukr-reg2004>

selected by MHP for the proposed development was either previously owned by individual owners, swapped with them for other land plots which they can cultivate (see consultation) or leased for 49 years. All of the sites selected for the proposed developments are agricultural land which used to contain crops (rapeseed, wheat, maize) but have been unused since the last harvest (Figure 5.5).²⁹



Figure 5.5 Example of the typical land use of proposed brigade sites (brigade 14)

No physical displacement is expected as a result of the proposed development. The sites selected have been used as agricultural fields for a number of decades in the past thus physical displacement is not applicable. The project might however result in minor economic displacement. The site area includes vulnerable people such as elderly, widows and seasonal workforce who could be particularly vulnerable in the context of land transfers. In the case of economic displacement, MHP have a process in place for negotiating and finalising land lease agreements with local land owners, on average, for the duration of 49 years. In particular, MHP has a 27 steps procedure, which is followed by MHP during the land acquisition process (**Appendix B**)

The process of site selection was undertaken in a collaborative approach. MHP would approach communities to see if they would be interested in leasing their land. In the case of a positive answer, negotiations would start with the land owner or wider community (in case of collective ownership) on the terms of contract. Where no interest was shown, MHP would stop considering the site and will continue looking for alternatives.

During consultation in Vasilivka, it was reported that MHP would offer three payment options: yearly payment, one off payment, or, if beneficial to the land owner, the possibility to swap land with MHP. In terms of acquisition timing, it was mentioned that in the cases where the land was previously leased, then the acquisition would happen at the end of the contract; if the land was being used for short harvesting crops, then MHP would wait for the harvest to be undertaken before acquisition; and, if the land was being used for long harvesting crops, then compensation would be offered for the crops.

EMPLOYMENT AND INCOME

As of March 2016, the employment rate within Vinnytsia province was 64.3%, which is close to the national average (63.4%). The unemployment rate for 2016 reached 11.3%, which is slightly higher than national average (10.3%). The average wage in Vinnytsia is 3,847 UAH per month,

²⁹ With the exception of site for brigade no. 19, which was still not harvested during the site visit in October 2016

which is lower than national average (4,838UAH)³⁰. There are seasonal fluctuations in wages associated with agricultural practises.

In 2015, the average size of households in the Vinnytsia province was 2.59 people, with approximately 38.2% of households having children under 18 years old. The average monthly income per households in Ukraine in 2015 was estimated to be 5,231.7 UAH, the majority of which is cash income (89.4%) coming from wages (47.2%), cash pensions and social benefits (25.2%) and cash support from relatives or other cash incomes (8.1%)³¹. The average monthly expenditure per households in Ukraine (2015 data) was 4,952.0 UAH, of which the majority would be spent in food and non-alcoholic beverages and manufactured goods and services.

LOCAL ECONOMY

The region of Vinnytsia is the national second highest in terms of food production. The main economic sectors include food (55.4%), electric power engineering (23.1%), engineering (5.0%), chemical and petrochemical (4.7%) and timber (3.2%).

More than 2 million ha are allocated to agricultural production, which makes Vinnytsia the 9th largest region³² in Ukraine, providing 4.2% of the gross agricultural production of Ukraine. The region specialises in production of beets (13.8%), but also grain (5.6%), potato, vegetables and livestock.³³

ECOLOGICAL SERVICES

Questions were asked during the consultation conducted in Vasylivka about the community's perception of the economic values of ecological resources in the area. It was mentioned that fishing was common and that fishing stocks were plentiful. Small parcels of woodland were under communal ownership with no formal management and residents occasionally hunt boar, fox, deer, rabbits and waterfowl. The consultation did not identify any direct intrinsic values placed on biodiversity resources within the area t.

TOURISM

Vinnytsia region has favourable conditions for tourism. The development of tourism, hunting, water and cycling facilities attract national tourists to this region.³⁴

VULNERABLE GROUPS

Vulnerable groups can include individuals with disabilities, elderly, women, internally displaced persons (IDPs) (conflict-affected resident population), street children and receivers of state welfare benefits and lump sum cash aid.

Conflict-affected resident population and IDPs could face shortages in food, health services, basic household items and shelter and suffer from psychological distress after the recent and on-going conflict in the eastern part of the country. Anecdotal evidence based on discussions held in Vasilivka during the October 2016 visit, demonstrates that local residents can potentially include

³⁰ https://ukrstat.org/en/operativ/operativ2016/gdn/reg_zp_p/reg_zpp16_e.htm

³¹ National Statistics data, 2015

³² Vinnytsia Oblast administrative website

³³ http://www.vin.gov.ua/web/web_oda_engl1.nsf/webgr_view/GrF2C5Z?OpenDocument&count=5&RestrictToCategory=GrF2C5Z

³⁴ http://www.vin.gov.ua/web/web_oda_engl1.nsf/webgr_view/GrNFCYF?OpenDocument&count=5&RestrictToCategory=GrNFCYF

people who moved into the Vinnytsia region as a result of the conflict in the East of the country, and are classified as internally displaced people. As there is no official data on the movement of people due to the conflict, it is difficult to say how many IDPs can potentially reside in the Vinnytsia region.

GENDER

Ukraine has a relatively low index of discrimination against women, in terms of family law, access to resources and civil liberties.³⁵ In 2012, the legal minimum age for marriage was raised to 18 for women and men, after the Ukrainian Parliament voted to amend the Family Code. Prior to this, it had been 17 for women and 18 for men. Similarly, in the Family Code, parental authority is shared by the mother and father, and parents have equal rights and responsibilities regarding their children's development and education. Both women and men continue to have equal decision-making authority over children following a divorce. Any dispute regarding child custody is decided by the court in the best interests of the child.³⁶

Women enjoy equal inheritance rights in Ukraine, as daughters and as mothers. Customary and religious laws are not considered valid sources of law under the constitution, in regard to inheritance or any other matters. Traditionally, Ukrainian customary inheritance practices do not discriminate against women. Sons and daughters inherited property equally, and a widow was the principal heir to her deceased husband's estate. The Constitution guarantees women's equal access to land and property other than land. Under the Economic Code and the Banks and Banking Act, women have equal rights to access bank loans, and a woman does not need consent from her husband or another male relative to apply for credit.³⁷

MHP offers different types of jobs which are suitable for both men and women. Although the company currently does not have a specific policy on equal opportunities and anti-discrimination, both the audit conducted in June 2016 and the site visit conducted October 2016 concluded that there is a healthy ratio of men and women working in MHP at senior management positions. Furthermore, during the consultation conducted in Vasylivka, it was evident that women were free to communicate, express their concerns and participate in the decision-making.

HEALTH

Cardiovascular disease and cancer are the two main reasons for most deaths in the country. In 2015, 594,800 people in Ukraine died from cardiovascular disease (68%), cancer (13.4%), external causes (5.8%), digestive system problems (3.8%), respiratory diseases (2.3%) or parasite-related illnesses (1.6%).³⁸

The Ukrainian health service delivery system in place is publicly financed and owned, hospital-centred, with services focused on individual acute treatments and minimal prevention. Ukraine has one of the highest standardized death rates for³⁹:

- Cardiovascular diseases (CVD) among people aged 25 to 64 (278.96 per 100,000) which is more than five times the EU-15 rate of 48.52 per 100,000 in 2011;
- ischemic heart diseases for people aged 25 to 64 are 168.19 per 100,000 which is more than seven times the EU-15 rate of 22.6 per 100,000 in 2011;

³⁵ <http://www.genderindex.org/country/ukraine>

³⁶ http://familylaw.com.ua/docs/FAMILY_CODE_OF_UKRAINE.doc

³⁷ http://www2.ohchr.org/english/bodies/cedaw/docs/ngos/WCU_Ukraine45.pdf

³⁸ https://ukrstat.org/en/operativ/operativ2007/ds/nas_rik/nas_e/nas_rik_e.html

³⁹ WB SERVING PEOPLE, IMPROVING HEALTH PROJECT in Ukraine, 2015

- external causes of injury and poisoning for people aged 25 to 64 are 117.28 per 100,000 which is more than three times the EU-15 rate of 37.68 per 100,000 in 2011; and
- cancer of the cervix among women aged 25 to 64 is 7.17 per 100,000 in Ukraine, which is more than three times higher than the EU-15 average of 2.07 per 100,000 in 2011.

The 2015 Census' data on regional health has not been officially released yet. Therefore no data on the Vinnytsia province health situation was available at the time of the report preparation.

Community safety and security

MHP has implemented management measures to minimise potential for the spread of poultry pathogens. In particular, MHP are certified to ISO9001 quality management systems and ISO22000 food safety management and are working towards GLOBALG.A.P.⁴⁰ The application of these systems throughout manufacturing processes, storage, handling and transportation are anticipated to effectively prevent the transmission of diseases related to poultry handling to the community, as well as ensuring product safety.

All new employees undergo medical examinations, undertaken by approved doctors. Site management reported that this includes physical tests (hearing, mobility, etc.), epidemiological tests for specified illnesses and allergies and eyesight testing. The results of the tests are assessed by MHP on-site medical personnel to determine role suitability.

Periodic health checks are undertaken and cover blood & urine testing for relevant biological and chemical agents, lung function tests, assessment of potential sensitisation to allergens such as wheat or feather, hearing tests and general health checks. Vaccinations are also provided for relevant employees.

Community safety has also been considered as part of the site selection process. Sites within less than 1km from residential areas have been discounted as alternative sites for the project in order to minimise biosecurity risks and comply with the Ukrainian requirements for Sanitary Protection Zones. A detailed description of MHPs biosecurity measures is given in **Appendix D**.

STAFF BENEFITS

As part of the benefits relevant to all staff, MHP provides free transport to and from main residential areas and the place of work. This was confirmed during the site visit and several MHP bus stops were observed in the villages visited by the Consultant in October 2016, as shown below (Figure 5.6).

⁴⁰ GLOBALG.A.P. (Good Agricultural Practice) is a global organisation aiming to promote a safe and sustainable agriculture worldwide. They set voluntary standards for the certification of agricultural products around the globe.



Figure 5.6 Example of bus stop shelter provided by MHP

5.10 STAKEHOLDER ENGAGEMENT AND CONSULTATIONS

In Ukraine, access to environmental information was ensured when the Parliament ratified the Aarhus "Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters" in 1999. Several regulatory acts were developed by the Ministry of Environment and Natural Resources (MENR) which specify provisions of this Convention.

The Ukrainian EIA implementation regulations contained in the Construction Standard DBN A.2.2.-1-2003 also include provisions for public consultation and information disclosure as part of the implementation of the Aarhus Convention to which Ukraine is signatory. According to the DBN 2003 Standard, for projects defined in its Annex E (i.e. with significant environmental relevance), public hearings are mandatory, while for those Projects not listed there, only the decision on the result of the Environmental Assessment needs to be made public by the regulating authority.

In 2011, a law "On Access to Public Information" was adopted by the Parliament. This law covers much broader area, and it specifies also issues of environmental information (article 13, p.2). As a rule, public consultations (hearings) should be convened with local self-government organisations, either upon developers own initiative, or upon request from community members. Such consultations could be held on any level: village (*sil'skyi shid*), town, city, and their decisions are considered as recommendations. In some cases procedures for such consultations have been approved by self-government organisations.

PREVIOUS STAKEHOLDER ENGAGEMENT AND CONSULTATIONS

MHP consulted with a wide range of communities to understand the level of interest in having a cooperative approach to the project between the company and community. MHP hold consultation events about the project plans to which they invite the local community, local authorities and NGOs.

MHP have subsequently undertaken public hearings as part the OVNOS process for brigades 42, 43, 47, 49 and 13.

Details of MHPs stakeholder engagement and consultations are given in the Stakeholder Engagement Memo. **Appendix G.**

The WSP | Parsons Brinckerhoff audit conducted in 2015 concluded that MHP were willing and proactive with regards to engagement and consultation. However, additional effort could be made with regards to appropriate information disclosure, transparency of information and ensuring

grievances are responded to and managed appropriately. During meetings with local people, questions were raised with regards to the transparency of information, particularly in relation to land lease and use agreements. Back in 2015, WSP | Parsons Brinckerhoff made recommendations and amended stakeholders engagement plan have been since then implemented by MHP, which include the following actions:

- Ensure that OVNOS are publicly available for review. Disclose the location of the OVNOS and ensure that these locations are easily accessed;
- Ensure that all stakeholders have been identified and included within the SEP;
- Prepare non-technical summaries for all OVNOS that provide a summary of the project as well as the identified environmental and social impacts and the proposed mitigation and management techniques to be implemented. Information should be presented in a clear and concise manner and meaningful to those with minimal project knowledge;
- Organise appropriately advertised public meetings, in addition to those required by law (and organised by the Regional State Administration), in an easily accessible place (provide transport where required);
- Provide training to relevant personnel at site level, to ensure awareness and implementation of the SEP;
- Record all grievances (both formal and informal) received as well as details of the responses and resolutions.

Further consultation has been undertaken by WSP | Parsons Brinckerhoff during a site visit in October 2016 (Figure 5.7). Members of the village of Vasylivka were asked general questions on their satisfaction and concerns over the land lease process. The local residents in Vasylivka reported having some concerns a year ago but being now convinced by the benefits of the project, after undertaking their own enquiries and meetings with MHP. Very positive comments were made on the donations MHP made to the local library and the water supply pipeline MHP is currently constructing along the roads of the village. One complaint was reported over the last year (unfinished road surface in the vicinity of the village), and the problem was dealt with within two months, which was considered as very satisfactory by the locals.



Figure 5.7 Consultation in Vasylivka

KEY THEMES OF COMPLAINTS DIRECTLY RECEIVED BY MHP IN 2016

For the first nine months in 2016 MHP Group has received approximately 11 complaints or concerns related to the companies operations. However, according to the register, only one of these complaints was directly associated with the Vinnytsia Poultry Farm.

The following themes feature in the concerns received across MHP Group:

- **Land lease** – MHP Group has received complaints about land lease contracts management and payments;
- **Water resources** – concerns associated with water discharge/emissions and alleged excessive water take; and
- **Labour management** – enquiries associated with prison labour employed at the Vinnytsia slaughterhouse.

PUBLIC PARTICIPATION

A new SEP has been developed by MHP Group specifically for Vinnytsia Poultry Farm. This SEP has been updated as part of this study, to further reflect the latest Project design and to steer stakeholder and public consultation activities towards the pre-construction and construction phases of the project.

The SEP and the supplementary documentation is available through designated websites and hard copies will be available in regional municipal offices. Further consultation will be held for brigades 14, 19, 50 and 51, in accordance with the SEP.

Prior to construction activities, a number of awareness raising meetings will be organised with governments and affected people. Information leaflets will be distributed in libraries and other public places. Consultation activities will discuss construction impacts and will provide updated timescales for Project implementation.

Local and regional newspapers will be used to disseminate Project information and raise awareness of construction works and potential impacts on traffic and noise. Bulletins with vacancies will be distributed in the relevant towns to ensure that local people are informed about Project related employment opportunities. The SEP requires that MHP designates a contact person responsible for the Project in general, as well as appointing a community liaison representative who is responsible for SEP activities and provide updated contact details for the grievance mechanism.

6

IMPACT ASSESSMENT

6.1 INTRODUCTION

This Chapter sets out the potential and predicted environmental and social impacts of the Project in all its phases (construction, operation and closure). It identifies the sources of the impact associated with the Project's infrastructure and activities as set out in Chapter 2, and describes the potential impacts of these and the mitigation measures required.

The Project-affected area includes the Project footprint together with the surrounding areas that may potentially be affected by impacts associated with the construction, operation and closure of the proposed poultry farm. It is anticipated that many of the impacts identified related to final decommissioning of the poultry farm are expected to be similar to the impacts posed by the poultry farm during the construction and operation phases.

6.2 IMPACT ASSESSMENT METHODOLOGY

The methodology developed and adopted for the assessment provides a tool for assessing and evaluating the significance of impacts. The identified potential impacts of the proposed Project include positive and negative impacts of higher or lower significance. Impact significance is based on the following criteria.

- Magnitude of impact – the level or intensity of changes caused by the project activities with regard to baseline conditions. An impact of high magnitude would mean major changes for a large amount of biophysical resources and / or people.
- Area of impact – the area where the changes occur.
- Duration of recovery – estimated time required for returning to pre-impact conditions after the impact has ceased.

From the viewpoint of significance, the impacts can be negligible, minor, moderate or major. Definitions of these levels of significance are described in Table 6.1 below.

Table 6.1 Impact Significance Levels

LEVEL	IMPACT ON BIOPHYSICAL RESOURCES	IMPACT ON SOCIO-ECONOMIC CONDITIONS
Negligible	Almost no changes in the environment; the effects can be recovered within a few days.	Almost no changes in socio-economic conditions or commercial activities, the effects can be recovered within a few days.
Minor	Isolated change in biophysical conditions within a limited area (radius of 100m or so); the recovery takes a few months; no residual effects observed.	Isolated change in socio-economic conditions and/ or commercial activities lasting for a few days to a few months with no residual effects,
Moderate	Observable change in biophysical environment lasting for a few months to a few years before recovery. Considerable affected area is within a radius of 0.5 km or a lesser impact over a larger area.	Considerable change in socio-economic conditions and/ or commercial activities of up to 10% of present in Vinnytsia Oblast and Vinnytsia City or lesser change for 50% of persons.

LEVEL	IMPACT ON BIOPHYSICAL RESOURCES	IMPACT ON SOCIO-ECONOMIC CONDITIONS
Major	Changes in biophysical conditions observable within a radius beyond 0.5 km or a considerable change in a smaller area not recoverable within a few years.	Considerable changes in socio-economic conditions and/ or commercial activities of more than 50% of persons present in Vinnytsia Oblast and Vinnytsia City or noticeable changes for persons outside Vinnytsia Oblast and Vinnytsia City.

RESIDUAL IMPACTS AFTER MITIGATION

Adverse effects rated as “significant” must be mitigated in order to reduce the level of significance of the residual impact. Monitoring measures must also be defined to assess the efficacy of the mitigation measures.

The potential impacts, with mitigation imposed, have then been reassessed to derive residual effects as a result of Project activities. This assessment is based on the same Impact Significance Matrix (Table 6.2) as used to assess unmitigated impacts. The residual effect is determined as a result of the impact and implemented through appropriate risk analysis.

APPLICATION OF THE METHODOLOGY FOR SPECIFIC ENVIRONMENTAL AND SOCIAL ASPECTS

Defining the significance of the effects has been used as the basis for determining the appropriate mitigation strategies in combination with identifying the need and scope of management plans.

DETERMINATION OF POTENTIAL IMPACTS

In addition to the above approach, prospective harmful substances to land, water and air have been assessed to the extent possible based on current information / data from the previous studies undertaken by MHP. This information is presented in Chapter 7.

6.3 ECOLOGY

Impact Assessment on ecology (flora and fauna) detailed for every stage of the project is not required by the national EIA/OVNOS regulation.

To fill in this gap, this section comprises detailed assessment of overall impacts upon receptors of ecological importance in relation to the poultry farm and its operation in the Vinnytsia region.

During construction, the developments has the potential to result in effects on ecology and nature conservation as a result of the potential impacts and pathways detailed in Table 6.2, particularly:

- Permanent and temporary habitat loss, damage or fragmentation from all elements of the project;
- Direct mortality or injury during site clearance and construction from all elements of the project;
- Direct and indirect disturbance from construction relating to all elements of the project; and
- Pollution or contamination caused by hazardous materials and incidental release of chemicals, fuels, waste materials and / or excess dust relating to all elements of the project.

CONSTRUCTION

Table 6.2 Ecological Assessment

SITE	IEF	ECOLOGICAL IMPACT ASSESSMENT IN THE ABSENCE OF MITIGATION
Waste Water Treatment	Inland Wetland Habitat	No direct impacts are anticipated to wetland habitats as a result of the construction works in this location as the Sel'nytsya River is located approximately 500m from the site. Although the river is located outside of the 500m ZoI, evidence of hydrological pathways across the adjacent arable field were noted. No changes in vegetation cover or drainage regime will occur. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the site, which is further buffered by approximately 500m of arable farm land. As such, construction will result in a probable negligible effect on this habitat.
	Birds	Construction activities have potential to disturb birds within neighbouring habitats. Species of conservation importance are likely to be associated with wetland habitats situated over 500m from the site. Common species are likely to use the immediate arable and urban habitats. Any temporary displacement of these species will not affect the conservation status of bird assemblages due to the abundance of similar habitats in the immediate landscape and wider region. As such, construction will result in a certain negligible effect on bird assemblages.
	Mammals	The built up environment and arable habitats have limited potential to support mammal species of conservation importance. No suitable vegetation or sheltering opportunities exists for small mammals on site. Mammals are likely to be associated with semi-natural habitats associated with the Sel'nytsya River, which is located approximately 500m from the proposed works and will not be affected during construction. As such, construction will result in a certain negligible effect on mammal species.
	Bats	No potential bat roosts are located within, or immediately surrounding, the construction areas. No removal of habitat feature considered suitable or important for bats (for foraging, commuting or roosting) will be affected or removed during construction. The site is not directly connected to suitable habitats (to support bats) associated with Sel'nytsya River, which is also located at such a distance where indirect construction disturbance is not anticipated. As such, construction will result in a certain negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats exist within or immediately adjacent to the construction areas. Reptiles may use field boundaries and amphibians are more likely to be associated with wetland areas adjacent to Sel'nytsya River. These features will not be affected during construction. As such, construction will result in a certain negligible effect on reptile and amphibian species.
	Fish	No aquatic habitat loss or direct disturbance of Sel'nytsya River through drainage, pollution, lighting or vibration will occur as a result of construction as the river and associated wetland habitats are located 500m from the site. It is anticipated that indirect construction impacts such as dust, noise, vibration and temporary lighting will dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on fish species.
	Slaughter House and Render Facilities	Temperate Forest

		habitat.
	Birds	Extension of the slaughterhouse and render facilities has resulted in no loss of bird nesting or foraging habitat. Construction activities have potential to disturb birds within neighbouring habitats. Species of conservation importance are likely to be associated with forest habitats situated 171m from the site. Common species are likely to use the immediate arable and urban habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on bird species.
	Mammals	The urban environment has limited potential to support mammal species of conservation importance. No suitable vegetation or sheltering opportunities exists for small mammals on site. Mammals are likely to be associated with forest habitats located 171m from the works and will not be affected as a result of construction activities. Furthermore, the compound is fenced making it more unlikely that species would use the built up areas. As such, construction will result in a certain negligible effect on mammal species.
	Bats	No potential bat roosts are located within, or immediately surrounding, the construction areas. No removal of habitat feature considered suitable or important for bats (for foraging, commuting or roosting) will be affected or removed during construction. The site is not directly connected to suitable habitats (to support bats) associated with forest habitats, which is also located at such a distance where indirect construction disturbance is not anticipated. As such, construction will result in a certain negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats exist within or immediately adjacent to the construction areas. Reptiles may use woodland boundaries beyond the immediate urban habitats. These features will not be affected during construction. As such, construction will result in a certain negligible effect on reptile and amphibian species.
Hatchery	Temperate Forest	Forest habitats are located c.300m north and west of the proposed construction works, which have potential to give rise to indirect effects leading to the degradation of this habitat. Existing Hatchery Buildings and arable habitats will act as a buffer between proposed construction and forest habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on this habitat.
	Birds	Extension of the hatchery facilities will result in the loss of approximately 0.5ha of hard standing and managed grassland within an urban area. These habitats have limited potential to support bird species of conservation importance. Construction activities have potential to disturb birds within neighbouring habitats. Species of conservation importance are likely to be associated with forest habitats situated 300m from the site. Common species are likely to use the immediate arable and urban habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on bird species.
	Mammals	The urban environment has limited potential to support mammal species of conservation importance. Opportunities for common small mammal species and rodents exist within managed grassland areas; however these areas are regularly disturbed through access and maintenance. Mammal species are likely to be associated with forest habitats located 300m from the works and will not be affected as a result of construction activities. Furthermore, the compound is fenced making it more unlikely that species would use the built up areas. As such, construction will result in a certain negligible effect mammal species.
	Bats	No potential bat roosts are located within, or immediately surrounding, the construction areas. No removal of habitat features considered suitable or important for bats (for foraging, commuting or roosting) will

		be affected or removed during construction. The site is not directly connected to suitable habitats (to support bats) associated with forest habitats, which is also located at such a distance where indirect construction disturbance is not anticipated. As such, construction will result in a certain negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats exist within the construction areas. Reptiles may use woodland boundaries are more likely to be associated with habitats outside of the urban habitats. A dry drainage area located 70m from the site has potential to support common reptile and amphibian species. These features will not be affected during construction. As such, construction will result in a certain negligible on reptile and amphibian species.
Fodder Plant	Temperate Forest	Forest habitats are located c.200m north of the proposed construction works, which have potential to give rise to indirect effects leading to the degradation of this habitat. However, indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on this habitat.
	Birds	Extension fodder plant facilities through the construction of a rail line and storage building will result in the loss of approximately of hard standing and managed grassland within an urban area. These habitats have limited potential to support bird species of conservation importance. Construction activities have potential to disturb birds within neighbouring habitats. Species of conservation importance are likely to be associated with forest habitats situated 200m from the site. Common species are likely to use the immediate arable and urban habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on bird species.
	Mammals	The urban environment has limited potential to support mammal species of conservation importance. Opportunities for common small mammal species and rodents exist within managed grassland areas; however these areas are regularly disturbed through access and maintenance. Mammal species are likely to be associated with forest habitats located 200m from the works and will not be affected as a result of construction activities. As such, construction will result in a certain negligible effect on mammal species.
	Bats	No potential bat roosts are located within, or immediately surrounding, the construction areas. No removal of habitat features considered suitable or important for bats (for foraging, commuting or roosting) will be affected or removed during construction. As such, construction will result in a certain negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats exist within the construction areas. Reptiles may use woodland boundaries are more likely to be associated with habitats outside of the urban habitats. Forest habitats and associated fringes will not be affected during construction. As such, construction will result in a certain negligible effect on reptile and amphibian species.
	Brigade 13	Temperate Forest
Birds		Noise from construction will be short-term; however has potential to displace woodland bird species. In the long-term, it is considered that any persistent noise and visual disturbance will be negligible. Based on the mobility of birds and the size of the woodland, temporary displacement of bird species will not affect the conservation status of

		species present as the construction will not affect their ability to feed or reproduce. Temporary displacement of bird species will result in a probable negligible effect on the conservation status of bird assemblages.
	Mammals	The construction of Brigade 13 has resulted in the loss of approximately 25ha of arable habitat, which is considered to be of low suitability to support mammal species of conservation importance. Furthermore, the overwhelming dominance of agricultural habitat in the region means that any displacement of mammal species, as a result of construction, will likely result in a probable negligible effect on mammal species.
	Bats	Any increase in light levels and construction traffic has potential to affect any bat activity utilising the adjacent forest habitat. Construction will not occur outside of daylight hours. Furthermore, indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. Trees within the edge of the forest habitats appeared to be in good condition with few features considered suitable to support roosts. As such, construction, will likely result in a probable negligible effect on bat species.
	Reptiles and Amphibians	No suitable habitats to support reptile or amphibian species exist within the construction areas. Reptiles may use woodland boundaries are more likely to be associated with habitats located 80m from the site. Forest habitats and associated fringes will not be affected during construction. As such, construction will result in a certain negligible effect on reptile and amphibian species.
Brigade 14 and Brigade 19	Birds	Construction activities have potential to disturb birds using arable habitats. Common species are likely to use the immediate arable habitats. Any temporary displacement of these species will not affect the conservation status of bird assemblages due to the abundance of similar habitats in the immediate landscape and wider region. As such, construction will result in a certain negligible effect on bird assemblages.
	Mammals	The arable habitats have limited potential to support mammal species of conservation importance. No suitable vegetation or sheltering opportunities exists for small mammals on site. Displacement of species such as using arable habitats such as hares, shrews and voles will not affect the conservation status of these mammal species due to the abundance of similar habitats in the immediate connecting landscape and wider region. As such, construction will result in a certain negligible effect on mammal species.
Brigade 42	Temperate Forest	Construction of Brigade 42 has potential to give rise to indirect edge effects and disturbance on immediately adjacent forest habitats located on the south and west boundary of the site. The more disturbed habitat edges become, the higher the risk of changes in edge temperatures and wind speeds, greater disturbance, increased water loss, the presence of non-woodland species all of which impact on the ecology of the forest concerned. The indirectly affected forest edge represents c.15% of the total boundary of this habitat. Short term disturbance of these areas are unlikely to affect the integrity of the forest habitat and any indirect effect during construction would recover following completion of the development. Increased disturbance will result in a probable slight adverse effect of minor negative magnitude .
	Inland Wetland Habitat	The river is located 300m south of the site with woodland habitat buffering the proposed construction activities from the aquatic habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will not compromise the integrity of this habitat and will result in a certain negligible effect on this habitat.
	Birds	Noise from construction will be short-term; however has potential to displace woodland bird species. In the long-term, it is considered that

		any persistent noise and visual disturbance will be negligible. Based on the mobility of birds and the size of the woodland, temporary displacement of bird species will not affect the conservation status of species present as the construction will not affect their ability to feed or reproduce. Temporary displacement of bird species will result in a probable negligible effect on the conservation status of bird assemblages.
	Mammals	The construction of Brigade 42 has resulted in the loss of approximately 25ha of arable habitat, which is considered to be of low suitability to support mammal species of conservation importance. Furthermore, the overwhelming dominance of agricultural habitat in the region means that any displacement of mammal species, as a result of construction, will likely result in a probable negligible effect on mammal species.
	Bats	No roosts or important habitat features for bats will be lost as part of this development. Any increase in light levels and construction traffic has potential to affect any bat activity utilising the adjacent forest habitat. Construction will not occur outside of daylight hours. As construction is being undertaken in the winter months and trees in the periphery of the forest are unlikely to support hibernation roosts due to their relative size, maturity and potential roost features, disturbance from construction will result in a probable negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats to support reptile or amphibian species exist within the construction areas. Reptiles may use woodland boundaries adjacent to the site. Forest habitats and associated fringes will be indirectly affected during construction and subject to disturbance and degradation effects. Arable transition to forest habitats is abrupt in this area with no fringe habitats recorded. No areas suitable for hibernation were recorded with cultivated arable land, which extends up to the border of the forest. As such, no potential hibernacula will be affected during the works and any temporary displacement of species into adjoining habitats will not affect the conservation status of these species. Therefore, construction is likely to result in a probable negligible effect on reptile and amphibian species.
	Fish	The river is located 300m south of the site with woodland habitat buffering the proposed construction activities from the aquatic habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will not compromise the conservation status of fish species and will result in a certain negligible effect on fish assemblages.
Brigade 43	Temperate Forest	At its closes point, construction activities are located within 300m of this forest habitat. Arable habitats are situated between proposed construction areas and forest habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a probable negligible effect on this habitat.
	Birds	Construction of Brigade 43 will result in the loss of arable habitat only. These habitats have limited potential to support bird species of conservation importance. Construction activities have potential to disturb birds within neighbouring habitats. Species of conservation importance are likely to be associated with forest habitats situated 300m from the site. Common species are likely to use the immediate arable and urban habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on bird species.
	Mammals	The arable environment has limited potential to support mammal species of conservation importance. Opportunities for common small mammal species and rodents exist; however these areas are regularly disturbed through ploughing, harvesting, drilling and other agricultural practices. Mammal species are likely to be associated with forest habitats located 300m from the works and will not be

		affected as a result of construction activities. As such, construction will result in a certain negligible effect on mammal species.
	Bats	No potential bat roosts are located within, or immediately surrounding, the construction areas. No removal of habitat features considered suitable or important for bats (for foraging, commuting or roosting) will be affected or removed during construction. As such, construction will result in a certain negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats exist within the construction areas. Reptiles may use woodland boundaries are more likely to be associated with habitats 300m beyond the immediate arable habitats. Forest habitats and associated fringes will not be affected during construction. As such, construction will result in a certain negligible effect on reptile and amphibian species.
Brigade 47	Temperate Forest	Construction of Brigade 47 has potential to give rise to indirect edge effects and disturbance on immediately adjacent forest habitats located on the north east boundary of the site. The more disturbed habitat edges become, the higher the risk of changes in edge temperatures and wind speeds, greater disturbance, increased water loss, the presence of non-woodland species all of which impact on the ecology of the forest concerned. The indirectly affected forest edge represents c.21% of the total boundary of this habitat. Short term disturbance of these areas are unlikely to affect the integrity of the forest habitat and any indirect effect during construction would recover following completion of the development. Increased disturbance will result in a probable slight adverse effect of minor negative magnitude .
	Birds	Noise from construction will be short-term; however has potential to displace woodland bird species. In the long-term, it is considered that any persistent noise and visual disturbance will be negligible. Based on the mobility of birds and the size of the woodland, temporary displacement of bird species will not affect the conservation status of species present as the construction will not affect their ability to feed or reproduce. Temporary displacement of bird species will result in a probable negligible effect on the conservation status of bird assemblages.
	Mammals	The construction of Brigade 47 has resulted in the loss of approximately 25ha of arable habitat, which is considered to be of low suitability to support mammal species of conservation importance. Furthermore, the overwhelming dominance of agricultural habitat in the region means that any displacement of mammal species, as a result of construction, will likely result in a probable negligible effect on mammal species.
	Bats	No roosts or important habitat features for bats will be lost as part of this development. Any increase in light levels and construction traffic has potential to affect any bat activity utilising the adjacent forest habitat. Construction will not occur outside of daylight hours. As construction is being undertaken in the winter months and trees in the periphery of the forest are unlikely to support hibernation roosts due to their relative size, maturity and potential roost features, disturbance from construction will result in a probable negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats to support reptile or amphibian species exist within the construction areas. Reptiles may use woodland boundaries adjacent to the site. Forest habitats and associated fringes will be indirectly affected during construction and subject to disturbance and degradation effects. Arable transition to forest habitats is abrupt in this area with no fringe habitats recorded. No areas suitable for hibernation were recorded with cultivated arable land, which extends up to the border of the forest. As such, no potential hibernacula will be affected during the works and any temporary displacement of species into adjoining habitats will not affect the conservation status of these species. Therefore, construction is likely to result in a probable negligible effect on reptile and amphibian species.
Brigade 49	Temperate	At its closes point, construction activities are located within 250m of

	Forest	this forest habitat. Arable habitats are situated between proposed construction areas and forest habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a probable negligible effect on this habitat.
	Birds	Construction of Brigade 49 will result in the loss of arable habitat only. These habitats have limited potential to support bird species of conservation importance. Construction activities have potential to disturb birds within neighbouring habitats. Species of conservation importance are likely to be associated with forest habitats situated 250m from the site. Common species are likely to use the immediate arable and urban habitats. Indirect construction impacts such as dust, noise, vibration and temporary lighting will only dissipate a short distance from the construction site. As such, construction will result in a certain negligible effect on bird species.
	Mammals	The arable environment has limited potential to support mammal species of conservation importance. Opportunities for common small mammal species and rodents exist; however these areas are regularly disturbed through ploughing, harvesting, drilling and other agricultural practices. Mammal species are likely to be associated with forest habitats located 250m from the works and will not be affected as a result of construction activities. As such, construction will result in a certain negligible effect on mammal species.
	Bats	No potential bat roosts are located within, or immediately surrounding, the construction areas. No removal of habitat features considered suitable or important for bats (for foraging, commuting or roosting) will be affected or removed during construction. As such, construction will result in a certain negligible effect on bats.
	Reptiles and Amphibians	No suitable habitats exist within the construction areas. Reptiles may use woodland boundaries are more likely to be associated with habitats 250m beyond the immediate arable habitats. Forest habitats and associated fringes will not be affected during construction. As such, construction will result in a certain negligible effect on reptile and amphibian species.
	Bypass Road No.1: Access Road from Brigade 49 to Brigade 50	Inland Wetland Habitat
Temperate Forest		Improvement of an existing track for approximately 200m borders a forest habitat (plantation woodland). Based on assumptions for the design of existing bypass roads, it is assumed that the construction may require the removal of a 2m wide buffer from the northern edge of this habitat. This has potential for the removal of a 400m ² area of forest, which represents 0.1% of this habitat parcel. The conservation status of forest habitat is dependent on maintaining, amongst other things, its extent and species composition and connectivity to similar habitat. When considering the potential supporting value of this habitat, it is considered probable that the loss would be result in a slight adverse effect at a minor negative magnitude .
Birds		Widening of the existing track bordering woodland habitat would result in the minor loss of nesting bird habitat suitable for common song

		birds. Based on the small proportion of this habitat being affected (0.1%), it is unlikely that the conservation status of bird species will be affected due to the availability of similar habitats in the immediate vicinity. Nevertheless, the loss of nesting habitat represents a slight adverse effect at a minor negative magnitude .
	Mammals	Construction works and associated site clearance of forest margins will result in a short to medium term impact on mammals that uses the scattered trees and woodland edges as places of shelter or breeding sites. The loss of these ecological resources, for species such as dormouse, badger, boar and deer, has potential to be regionally important, and is likely to represent a slight adverse effect at a minor negative magnitude during clearance and construction period. This impact is unlikely to be significant to the long-term conservation status of the species as suitable connected habitats exist in the wider area.
	Bats	There will be, at most, a minor loss of roosting sites through the loss of trees to any proposed road widening. Such impacts may have an effect on the distribution and abundance of bat species on the site; particularly as these areas are closely linked to aquatic habitats associated with the Sel'nytsya River. From aerial imagery, this parcel of woodland shows a linear and homogenous plantation, possibly an orchard or an agricultural plantation. As such the likelihood of suitable trees supporting a maternity or hibernation roost is considered low. Nevertheless, the loss of bat roosting sites represents a slight adverse effect at a minor negative magnitude .
	Reptiles and Amphibians	The conservation status of reptiles and amphibians generally depends on the presence suitable connecting terrestrial and aquatic habitats including woodland, scrub and grassland. The loss forest edge and provision of a bypass may affect the continuity of terrestrial habitats, which provide links between habitats such as the forest and impounded section of the river to the north of the proposed bypass. Removal of forest edge areas may result in the monitor loss of sheltering and/or hibernation sites for the species. As such, loss of terrestrial habitats and potential fragmentation effects, would result in probable, slight adverse effect at a minor negative magnitude
	Fish	The ecology of the watercourse is likely to be degraded by construction activities, both in-channel and bankside, through siltation, discharges, and other water quality effects. The change in hydrological regime may affect (upstream and downstream) habitats and species in the immediate area, but it is unlikely to affect the integrity of the whole aquatic system as the majority of fish is mobile and can be displaced temporarily into up and downstream stretches. The temporary effect resulting from changes in drainage, water quality, and sediment loads on fish is considered probable to be a slight adverse effect at a minor negative magnitude .
Bypass Road No.2: Olynisca Bypass Road	Temperate Forest	The middle section of this bypass has resulted in the loss of 0.28ha of forest habitat through the widening of an existing track from 6m to 10m in a 700m section of road. Semi-mature species were recorded in the woodland, including sycamore, oak and maple. The woodland appeared to be managed and uniform in character, with little ground flora present. The loss of woodland represents c.0.04% of this forest parcel and is unlikely to affect the overall integrity of the habitat. When considering the small scale forest habitat losses, it is considered probable that this has resulted in a slight adverse effect at a minor negative magnitude .
	Temperate Shrubland	A 500m length of the bypass routes through a former orchard, where the clearance width was up to 30m. This has resulted in the direct loss of 1.5ha (6.5%) of this habitat. The former orchard comprised a range of scrub species and thicket vegetation, likely to be important for a range of species. Although these habitats succeed and recover at a fast rate, based on the relatively low occurrence-frequency of scrub vegetation in comparison to forests in the region, loss of this habitat type is considered a slight adverse effect at a minor

		negative magnitude.
	Birds	Widening of the existing track bordering woodland and scrub habitat would result in the moderate loss of nesting bird habitat suitable for a range of bird species. Loss of habitat through the former orchard has seen a localised reduction in a winter food source for bird species. The loss of nesting habitat and food resources represents a slight adverse effect at a minor negative magnitude.
	Mammals	Construction works and associated site clearance of scrub habitats has likely resulted in a short to medium term impact on mammals that used the former orchard. The loss of these ecological resources, for species such as dormouse, stoat, polecat, badger, boar and deer, has potential to be regionally important, and is likely to represent a slight adverse effect at a minor negative magnitude during clearance and construction period. This impact is unlikely to be significant to the long-term conservation status of the species as suitable connected habitats exist in the wider area.
	Bats	There will be, at most, a minor loss of roosting sites through the loss of trees to any proposed road widening. Such impacts may have an effect on the distribution and abundance of bat species on the site. The loss of bat roosting sites represents a slight adverse effect at a minor negative magnitude.
	Reptiles and Amphibians	Forest fringe and scrub habitats are likely to be suitable for reptile and amphibian species including green lizard, southern smooth snake, Aesculapian ratsnake, slow worm, newts, frogs and toads. As such, loss of terrestrial habitats and potential fragmentation effects the bypass would have on the woodland and scrub areas, would result in probable, slight adverse effect at a minor negative magnitude
Bypass Road No.3: Access Road to Brigade 19		The bypass requires a new crossing to be constructed over the Nedoteka River. From aerial imagery, it appears that the river crossing point represents a canalised diversion channel, likely to be created for irrigation purposes. The channel appears to be linear and uniform at the proposed crossing point, whilst evidence of the historical channel, in the form of naturalistic meandering treelines, is present 100m to the south. The river and associated wetlands, although modified in this area, has potential to support a range of flora and fauna, is likely to be important for fish, and presents an important wildlife corridor in an otherwise intensively farmed landscape.
	Inland Wetland Habitat	The ecology of the watercourse is likely to be degraded by any culverting or bridging works as it results in the loss of natural in-stream and bankside habitats through direct removal and shading. Culverts can be impassable to riverine fauna and can create barriers to the movement of fish. Culverted sections may create or exacerbate downstream or upstream bank and bed erosion or promote sediment deposition, as a result of altered water velocities and disruption to the natural transport of sediment. When considering that any culverting will be an extension of an existing structure, the localised loss of c.10m of open channel is unlikely to affect the integrity of the aquatic system as the majority of flora and fauna are mobile and can be displaced and colonise in up and downstream stretches. The loss and severance of aquatic habitat resulting from the river crossing is considered probable to have a permanent large adverse effect of intermediate negative magnitude.
	Temperate Forest	The bypass does not intersect any forest habitat. A small section of the bypass (c.100m) runs adjacent to the western edge of a small parcel of forest habitat, which borders arable fields. The indirectly affected forest edge represents c.11% of the total boundary of this habitat. Short term disturbance (dust, hydrological and edge effects) of these areas are unlikely to affect the integrity of the forest habitat and any indirect effect during construction would recover following completion of the development. Increased disturbance will result in a probable slight adverse effect of minor negative magnitude.

	Birds	Construction of a bypass bordering woodland habitat and crossing over aquatic habitat would result in the minor loss of nesting bird habitat suitable for common song birds and waterfowl. Based on the small proportion of this habitat being affected, it is unlikely that the conservation status of bird species will be affected due to the availability of similar habitats in the immediate vicinity. Nevertheless, the loss of nesting habitat represents a slight adverse effect at a minor negative magnitude .
	Mammals	Culverting or bridging works over the Nedoteka River is likely to result in the loss of suitable habitat for species such as water vole, otter, water shrew and other riparian mammals. As the crossing is localised, point source impacts are unlikely to affect the conservation status of these species as mammals are mobile along the length of the river corridor and associated habitats. Nevertheless, disturbance or immediate loss of potential breeding sites within or in close proximity of the crossing point will result in a probable slight adverse effect of minor negative magnitude .
	Bats	Loss of a small number of trees in proximity to the Nedoteka River, to facilitate the bypass road, at most, would lead to the minor reduction in potential bat roosting sites. Construction activities in close proximity to the river will not occur outside of daylight hours and therefore disturbance to commuting and foraging routes is not anticipated. The status of trees and potential roost sites, as well as the extent of clearance required, is unknown at this stage. As such, a precautionary assessment of the loss of a small number of bat roosts is likely to result in a probable moderate adverse effect of intermediate negative magnitude .
	Reptiles and Amphibians	Excavation, clearance and construction in vicinity of the river corridor and associated wetland habitats are likely to affect areas suitable to support reptile and amphibian species, including potential basking, foraging and hibernation sites. Construction of the road would lead to localised short term impacts such as reduction in suitable habitat areas, fragmentation effects / barriers to dispersal and incidental killing and injury of individual animals. The ability for amphibian and reptiles to disperse in to adjoining habitats means that construction is unlikely to affect the conservation status of the species. Construction within areas between the Nedoteka River and the historical channel and associated habitats to the south are likely to result in a probable slight adverse effect of minor negative magnitude on reptile assemblages in the area.
	Fish	The crossing over the Nedoteka River is likely to result in the loss of open channel. The ecology of the watercourse is likely to be degraded by construction activities, both in-channel and bankside, through siltation, discharges, and other water quality effects. The change in hydrological regime may affect (upstream and downstream) habitats and species in the immediate area, but it is unlikely to affect the integrity of the whole aquatic system as the majority of fish is mobile and can be displaced temporarily into up and downstream stretches. The temporary effect resulting from changes in drainage, water quality, and sediment loads on fish is considered probable to be a slight adverse effect at a minor negative magnitude .

The predicted impacts for each IEF affected by the proposed development, but without mitigation, are summarised in Table 6.3:

Table 6.3: Summary of Predicted Impacts without Mitigation

SITE	IEF	IMPACT	MAGNITUDE	SIGNIFICANCE
Brigade 42	Temperate Forest	Disturbance	Minor Negative	Slight Adverse
Brigade 47	Temperate Forest	Disturbance	Minor Negative	Slight Adverse
Bypass Road No.1	Inland Wetland Habitat	Disturbance	Minor Negative	Slight Adverse
	Temperate Forest	Habitat Loss / Disturbance	Minor Negative	Slight Adverse

SITE	IEF	IMPACT	MAGNITUDE	SIGNIFICANCE
	Birds	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Mammals	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Bats	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Reptiles and Amphibians	Habitat Loss / Disturbance / Fragmentation	Minor Negative	Slight Adverse
	Fish	Disturbance	Minor Negative	Slight Adverse
Bypass Road No.2	Temperate Forest	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Temperate Shrubland	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Birds	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Mammals	Habitat Loss / Disturbance / Fragmentation	Minor Negative	Slight Adverse
	Bats	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Reptiles and Amphibians	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
Bypass Road No.3	Inland Wetland Habitat	Habitat Loss / Disturbance	Intermediate Negative	Large Adverse
	Temperate Forest	Disturbance	Minor Negative	Slight Adverse
	Birds	Disturbance	Minor Negative	Slight Adverse
	Mammals	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Bats	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Reptiles and Amphibians	Habitat Loss / Disturbance	Minor Negative	Slight Adverse
	Fish	Habitat Loss / Disturbance	Minor Negative	Slight Adverse

OPERATION

The proposed development sites and poultry units will operate continuously and therefore, noise, vibration, movement and lighting disturbances from the sites are envisaged throughout the year.

During operation, impacts to ecology and nature conservation may result due to:

- Water abstraction and discharge into the Pivdennyi Buh River, abstracting from an existing intake upstream of the Ladyshyns'ke Reservoir and discharging at an existing outfall at a downstream location.
- Emissions of pollutants to the air from the Render Plant operations;
- Emissions of pollutants to water plant disinfecting, surface water and plant operations;
- Emissions of noise from machinery, vehicles and delivery operations;
- Movement and vibrations of site plant equipment, rail deliveries and personnel associated within all elements of the Project; and
- Lighting also associated with all elements of the project.

The envisaged operational impacts assessed do not include affects which that will are likely to persist throughout the operational phase but which were created or are a result of the construction works; habitat fragmentation for example. Such long term impacts have been fully assessed within the construction phase section above. The following impacts relate to those created or are resultant of the operational works only.

PROTECTED AREAS

Direct impacts are possible through the water abstraction and discharge to and from the Pivdennyi Buh River. The river in this section is impounded for hydroelectric power and heavily modified. No changes in water quality, chemistry and temperature are anticipated. Furthermore, Ladizhins'kiy Regional Zakaznik is located upstream of the abstraction point and is unlikely to be affected. No operational impacts are envisaged on any designated sites or Protected Areas.

HABITATS

The impact on the rivers within and around the access roads and proposed brigades during the operational phase would be through atmospheric and water borne pollution. Through sensitive drainage design, measures will be included within the project to ensure that there is no risk of pollution release into the adjacent watercourses. No changes in drainage regimes are proposed for the sites. The predicted impacts of contamination on habitats will be negligible and therefore not significant.

SPECIES

Disturbance through increased human activity, lighting and noise is envisaged on species inhabiting the surrounding and adjacent areas during the operational phase. These disturbances and the construction of security fences are likely to fragment movement across the site. This impact will be permanent for the duration of the operational phase but is reversible. Such fragmentation will reduce access but is not likely to restrict animal movements within the area.

As the sites are generally operational 24 hours a day it will be unavoidable that the area will be subject to increased levels of noise and artificial lighting. These impacts will be permanent yet reversible for the duration of operations at the plant. The mitigation design requirements will ensure the light and noise levels will be a key consideration during the final design of the developments. Such disturbance will therefore be minimised across the site and when in close proximity to the sensitive areas such as forests potentially containing bat roosts.

Noise levels will increase within the sites but not beyond an additional 10 dB(A) and will quickly dissipate beyond the site boundary. The levels within a typical brigade could disturb adjacent species; however with the dominance of agricultural practices in the region, animals that inhabit the areas are likely to tolerate large sudden increases in noise and vibration and are likely accustomed to disturbances from ploughing, fertilising, drilling and other farming activities.

DECOMMISSIONING

During decommissioning, temporary impacts to ecology and nature conservation are likely to arise. These will be similar to those described above for construction, as similar methodologies will be employed. A specific decommissioning assessment should be undertaken and the likely impacts confirmed nearer the time when more accurate design details are available.

6.4 AIR QUALITY

The project has the potential to affect air quality during both construction and operation due to:

- During Construction
 - Emissions of dust and particulate matter from construction works

- Emissions of multiple pollutants from construction plant and traffic
- During Operation
- Odorous and dust emissions from livestock processes
 - Combustion emissions from heating plant
 - Emissions of multiple pollutants from operational traffic
 - Emissions to air from the waste water treatment plant

CONSTRUCTION

Dust comprises particles typically in the size range up to 75 micrometres (μm) in aerodynamic diameter. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore, is unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused. In addition, the soiling of vegetated surfaces can have an adverse effect on sensitive ecosystems. Any process that generates dust will also generate fine particulate matter (in the size range up to 10micrometres). Such particles can be inhaled and can result in significant health effects.

An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM_{10} during the construction phase has been undertaken using: the relevant assessment methodology published by the UK's Institute for Air Quality Management (IAQM), the available information for this phase of the project; and, professional judgement.

The IAQM methodology assesses the risk of potential dust and PM_{10} impacts from the following four sources: demolition; earthworks; general construction activities and track-out. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM_{10} levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined. Under the guidance, significance of effects is not assessed prior to mitigation.

Importantly, the guidance includes a first stage screening process whereby an assessment of dust impacts will normally only be required where there are:

- 'human receptors' within 350m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or
- 'ecological receptors' within 50m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is "negligible". Table 6.4 shows the initial screening of the various elements of the project for dust risk.

Table 6.4 Dust risk assessment screening based on proximity to receptors

PROJECT ELEMENT	HUMAN RECEPTORS	ECOLOGICAL RECEPTORS	SCREENED AS NEGLIGIBLE RISK
Waste water treatment	>350m distance)	(screening >500m	Yes
Slaughter House & Render Plant	>350m	>100m	Yes
Hatchery	>350m	>300m	Yes
Fodder Plant	>350m	>200m	Yes
Brigade 13	>350m	>80m	Yes

PROJECT ELEMENT	HUMAN RECEPTORS	ECOLOGICAL RECEPTORS	SCREENED AS NEGLIGIBLE RISK
Brigade 14 & 19	>350m	>500m	Yes
Brigade 42	>350m	Adjacent to temperate forest	Yes (Human Receptors) No (Ecological Receptors)
Brigade 43	>350m	>300m	Yes
Brigade 47	>350m	Adjacent to temperate forest	Yes (Human Receptors) No (Ecological Receptors)
Brigade 49	>350m	>250m	Yes
Bypass 1	Adjacent to properties	Adjacent to temperate forest	No
Bypass 2	Properties within 150m	Adjacent to temperate forest	No
Bypass 3	>350m	Adjacent to temperate forest (short section)	Yes (Human Receptors) No (Ecological Receptors)

After screening for the sensitivity to air quality impacts from dust and particulate emissions, only Bypass 1 and 2 require assessment of risks relating to nuisance dust and particulate matter in relation to human health, whilst Brigades 42 and 47 and Bypasses 1, 2 and 3 require assessment for dust impacts on ecological receptors.

Construction activities associated with the project that have the potential to generate and / or re-suspend dust are likely to include:

- Preparation of access routes and new bypasses;
- Earthmoving and drilling;
- Movement of vehicles and construction traffic;
- Materials handling, storage, stockpiling, spillage and disposal;
- Grinding, sanding and sandblasting of surfaces; and
- Construction of new buildings and structures.

Bypass 1 only passes close to existing properties where the works involve the upgrade of existing roads to the south of Bilousivka. Where entirely new roads are to be constructed, the properties are >350m away. Road upgrading involves potentially dusty construction works but the likely magnitude of dust emissions is only moderate since there are no extensive earthworks, stockpiling, movement of vehicles on unconsolidated surfaces. The risk of impacts from nuisance dust or increased particulate matter concentration is therefore low and can, therefore, be mitigated with standard dust mitigation measures (as outlined below). It is particularly important that measures to avoid the track-out of dust and mud onto the public highway are avoided by having methods for wheel cleaning for heavy construction plant and vehicles and, if necessary, road and dust damping with water during prolonged dry and windy periods. Moreover the risk is temporary and limited to the period of road upgrade works. With mitigation, **no significant effects** are likely.

Bypass 2 involves the construction of new road, but there are no properties lying alongside the route, rather there are properties lying around 150 of the northern end of the bypass, just to the south of Lukashivka. Whilst there is a large potential for dust emissions from the construction of a new road, the risk of impacts on the nearest properties is low due to their distance from the works. As such, as for Bypass 1, the temporary risks can be mitigated with standard dust mitigation measures and **no significant effects** are likely.

In relation to ecological receptors, in the absence of mitigation, there is large potential for dust emissions from the construction of both brigades (42 and 47) and bypasses (1, 2 and 3) due to the scale of the developments (>30ha for brigades) and (>10km for the bypasses) and the requirements for earthworks. Given the proximity of the works to the potentially sensitive habitat (temperate forest), the risk of impacts in the absence of mitigation is large but any effects can be reduced to **temporary, minor negative** with appropriate application of mitigation measures. Moreover, these effects are unlikely to extend more than 20m from the works. The required

measures are set out below, but in the vicinity of the forest habitats it is particularly important that speed limits of 10kph and 15kph are imposed on construction vehicles travelling on unconsolidated and hard surfaced roads respectively, since the movement of vehicles and plant will be the most significant source of emissions to air.

In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the project area and in the vicinity of the construction works. A qualitative assessment of their impact on local air quality has been undertaken using professional judgement and by considering the following:

- The number and proximity of sensitive receptors to the works and along the likely routes to be used by construction vehicles; and
- The number and type of construction traffic and plant likely to be generated by this phase of the works;
- The likely duration of the construction phase and the nature of the construction activities undertaken.

Given the temporary nature of construction works and the intermittent emissions of pollutants due to the various elements involved, impacts from emissions of vehicles and plants are mainly of concern to human health and due to short term (acute) exposure to pollution. Impacts on ecological receptors from air pollutants other than dust (which is considered above) rarely relate to acute exposure rather they relate to species competition and require long term exposure. As such, effects on ecological receptors will not be significant from construction vehicle/plant emissions. Moreover, due to the distance of human receptors from the works (all sites except bypass 1) and the relatively low numbers of vehicles likely to be involved (bypass 1), no significant effects on human health are expected. The risks can be mitigated through the use of well-maintained construction vehicles.

In summary, during construction, provided mitigation is appropriately applied, **no significant effects** on human receptors are expected for any aspects of the works and only **temporary, minor negative effects** are likely on ecological receptors where sensitive habitats are present adjacent to works. The effectiveness of the mitigation of dust impacts will need to be monitored by daily visual inspections alongside bypass 1 (near Bilousivka) and along stretches of new road (bypasses 1, 2 and 3) and brigades (42 and 47 only). Elsewhere good site practice should be maintained but formal daily inspections are unlikely to be required.

OPERATION

Emissions to atmosphere will occur during the operation of the project. Such emissions include releases of odours, air quality pollutants and greenhouse gases (GHGs). MHP has adopted BAT for its operations and these are detailed in **Appendix C**.

ODOUR

CONSTRUCTION

Earthworks and civil works are not among the activities considered likely to generate significant odour emissions. It is considered unlikely that activities associated with the construction phase would result in the generation of odours other than odours from vehicles and construction machinery / equipment exhausts. The closest residential properties which may be subjected these odours are located approximately 125m northeast of the proposed hatchery. At this distance, it is considered unlikely that any odours generated by exhaust emissions will be detectable. All other properties are located further from the site and it is therefore considered that the odour impact during the construction phase would be of **negligible** significance prior to mitigation. A summary of proposed mitigation measures related to odour are described in Chapter 7.

OPERATION

Due to the nature of the proposals, once operational, a number of processes in the project area will have the potential to be sources of odour nuisance. These include:

- WWTP;
- Manure storage area, and temporary manure storage in fields;
- Slaughter / processing plant;
- Brigades ; and
- Movement of waste from broiler sheds to manure storage, or direct to field application, at end of growing cycle.

The likelihood of odours generated by the site once operational causing a nuisance depends on a number of factors, including the frequency, intensity, duration, unpleasantness of odours and the location of human receptors in relation to these. This can be judged by taking into account the location of the source relative to sensitive receptors (distance and direction), and the effectiveness of dispersion / dilution. Meteorological conditions play an important part in whether or not offensive odour will be experienced (wind direction and speed being particularly important), and available local meteorological data have therefore been considered (Table 6.5).

Table 6.5 Average Annual Wind Direction Frequency

DIRECTION	FREQUENCY OF OCCURRENCE (%)
North	4
Northeast	3
East	5
Southeast	7
South	19
northwest	45
West	7
southwest	9

The site will be operational throughout the year, and therefore there is a risk of odours to be generated at all times. The wind direction data indicate that the predominant wind direction in the area is north-western sector (56% in total). Therefore, for the majority of the time, the greatest potential for any odours generated to be detected will be at the receptors located to the south through to the southeast. The closest property lies approximately 1km from the proposed hatchery building; however this is unlikely to be a significant source of odours given the nature of the activities.

How offensive an odour is perceived to be is subjective, and varies from person to person. Odours associated with waste water, faeces, and rendering activities are considered to be highly unpleasant, whilst odours from composting are considered as moderately unpleasant. Odour emissions from composting are an indication of suboptimal conditions, and will be controlled through regular turning of composting matter.

Based on the distance between the potentially odorous activities and the sensitive receptors, there is the opportunity for significant dispersion and dilution by the wind, and it is considered unlikely that significant odours will be perceived by residents in the area surrounding the Proposed Development. This being the case, odour impacts are considered to be of **Minor Negative** significance prior to mitigation. A summary of proposed mitigation measures related to odour are described in Chapter 7.

Odorous emissions from vehicles transporting livestock and/or waste products could also occur. However, whilst the routes used could at times take vehicles along routes with nearby residential properties, exposure to such emissions would be highly limited and intermittent. As such, any effects would be of **negligible** significance.

DECOMMISSIONING

The environmental impacts associated with the closure of the site will be similar to the impacts that occur during the construction of the Project. Accordingly, impacts are considered to be of **negligible** significance prior to mitigation. A summary of proposed mitigation measures related to odour are described in Chapter 7.

DUST AND SMOKE GENERATION

CONSTRUCTION

Dust comprises particles typically in the size range 1-75 micrometres (μm) in aerodynamic diameter. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore, is unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused.

Construction activities associated with the Proposed Development that have the potential to generate and / or re-suspend dust are likely to include:

- Preparation of access routes and internal road network;
- Earthmoving and drilling;
- Demolition of existing buildings on Site;
- Materials handling, storage, stockpiling, spillage and disposal;
- Grinding, sanding and sandblasting of surfaces;
- Movement of vehicles and construction traffic within the site; and
- Construction of new buildings and structures.

The majority of the releases are likely to occur during the Mon-Fri period. However, for some potential release sources (e.g. exposed soil produced from significant earthwork activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place. The construction will involve potentially dusty materials such as concrete, crushed stone, and gravel.

All local villages are located over 1 km away from the brigades and min 500m away from other project facilities (following compliance with the Ukrainian legislation). The area is therefore considered to be of low sensitivity to dust generated by construction activities, and therefore low risk of experiencing significant dust impacts during construction. Consequently, dust generation impacts during construction on ambient air quality are considered to be of **negligible** significance prior to mitigation. A summary of proposed mitigation measures related to dust are described in Chapter 7.

OPERATION

Controls used for emissions abatement are further discussed in the site 'Best Available Techniques / Good International Practice Assessment contained in section C. During operation, dust may be generated as a result of a number of processes carried out on site. These include:

- Feed mill operations;
- Preparation of litter (sunflower husks which is a by-product of the feed mill operations straw);
- Litter spreading within rearing sheds pre-cycle; and
- Removal of waste from rearing sheds at end of cycle and transportation to composting pad.

On a daily basis, dust emissions originate from the feed, bedding material and from the animal activities. Waste removal occurs after each (44 days) cycle. The amount of airborne dust will vary significantly throughout the day depending on:

- The amount of ventilation;
- The activity of the birds;
- Type and quantity of litter;
- The type and the consistency of feedstuff; and
- The humidity in the broiler shed.

The proposed new processing line in the current fodder plant located approximately 0.2km north to Ladyzhyns'ke. There is therefore a risk that dust generated and emitted from the processes associated with the feed mill will affect the closest residential properties. However, the exhaust will be fitted with bag filters; these filters, fitted in line with BAT which are given in further detail in **Appendix C**, will significantly reduce the risk of dust impacts in the surrounding area.

The ventilation regime is controlled in order to ensure optimal growth conditions are maintained within the building (and varies throughout the day and depending on season / external conditions to ensure the internal temperature is maintained appropriately). Consequently, dust impacts during operation on ambient air quality are considered to be of **moderate** significance prior to mitigation. A summary of proposed mitigation measures related to dust are described in Chapter 7.

DECOMMISSIONING

The environmental impacts associated with the closure the site will be similar to the impacts that occur during the construction of the Project. Accordingly, impacts are considered to be **Minor** significance prior to mitigation. A summary of proposed mitigation measures related to dust are described in Chapter 7.

OTHER EMISSIONS TO AIR

CONSTRUCTION

The greatest potential impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the site access and the site boundary. The construction vehicles movement likely to be generated is not known, however, given that existing air quality within the vicinity of the site is likely to be good, and that there are limited residential properties in the vicinity of the site, there are unlikely to be any significant changes in air quality at residential properties.

Final details of the exact construction plant and equipment likely to be used on the Site will be determined by the appointed contractor, it is considered likely to comprise bulldozers, road rollers, cranes, and excavators. The number of plant and their location within the site are likely to be variable over the construction period. There will also be emissions relating to welding, roofing and painting, however, these are unlikely to be released in significant volumes, and will be temporary in nature, and any impacts will be highly localised.

Based on the proximity of sensitive receptors to the roads likely to be used by construction vehicles and the Proposed Development site boundary, the impacts are therefore considered to be of **negligible** significance prior to mitigation. A summary of proposed mitigation measures related to emissions to air are described in Chapter 7.

OPERATION

During operation, emissions of air pollutants may be generated as a result of a number of processes and activities carried out as a result of the Proposed Development. These include:

- Emissions from vehicles operating on-site, as well as vehicles travelling to and from the Site;
- Emissions from on-site heaters
- Emissions from the broiler houses due to physical processes;
- Emissions from composting; and
- Emissions from the disinfection process.

Vehicle exhaust emissions likely to be generated by the project (deliveries, transportation of produce and staff movements) have the potential to negatively impact on local ambient air quality. It is understood that, once operational, the site will generate up to 60 vehicle movements per day, associated with deliveries, transportation of the processed product off site, and staff travel. In order for a change in traffic flows to have a potentially significant impact on air quality, the total daily flow must increase by 1,000 vehicles per day, or Heavy Duty Vehicles (HDV; >3.5 tonnes) must increase by 200 vehicles per day, on roads where the existing traffic flows exceed 10,000 vehicles per day⁴¹. Where the increases in traffic flows do not exceed these thresholds, impacts on air quality can be judged to be insignificant. The estimated traffic flows associated with the operation of the site are significantly below the threshold.

In addition to electric boilers, a number of boilers operating on LPG will be installed across the site. Each brigade will have a 100kW boiler installed, with larger boilers provided in each of the other buildings on the Site (office, feed mill, processing plant and hatchery). Emissions associated with combustion of LPG include oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter. **Given the small scale of the proposed boilers, it is considered unlikely that these emissions will have a significant impact on concentrations at the closest residential properties (located some distance from the majority of boilers proposed).** It is intended that the source of fuel will change to natural gas (timescales unknown); this **will reduce the risk of SO₂ and particulate matter emissions (which are negligible from natural gas).** **Impacts on air pollution related to the boilers are judged to be insignificant.**

With the detailed information on boilers not being available at the time and GHG calculations being outside of this Supplementary ESIA scope, it was not possible to provide further estimates of LPG and GHG.

AMMONIA

The key odorous emission to air produced in animal housing systems is ammonia, the main source of which is the rapid hydrolysis of urea contained in urine by the urease; within brigades, optimal conditions (temperature and moisture content) arise for ammonia production. Due to its reactive nature, ammonia is rapidly deposited and therefore ammonia concentrations rapidly

⁴¹ Based on the "Design Manual for Roads and Bridges", Volume 11, Section 3, HA207/07 Air Quality, The Highways Agency (UK)

decrease with distance from the source. Ammonia is not a human health issue unless at very high concentrations; concentrations are unlikely to reach these levels even within the broiler sheds, as this would be harmful to both on site staff and the health / growth of the broilers themselves. The ventilation management ensures that concentrations do not reach levels which are harmful to human health. After emission from the broiler sheds, the ammonia concentrations and associated odour will rapidly decrease. Consequently, concentrations are unlikely to be significant at the closest residential properties to the brigades, which are located over 1 km away.

BIOAEROSOLS

Composting facilities can also be sources of bioaerosols and dust and particulate matter. Given the distance of human receptors from the composting pads, any increase in composting due to the increase in size of the project will be unlikely to have a significant impact on bioaerosol generation. The UK Environment Agency imposes a 500m cordon around composting facilities. The nearest residential properties to composting facilities are over 1km from the project elements. This is outside of the 500m cordon. Any effects from bioaerosols will be **Negligible**.

DECOMMISSIONING

The environmental impacts associated with the closure of the site will be similar to the impacts that occur during the construction of the Project. Accordingly, impacts are considered to be of **negligible** significance prior to mitigation. A summary of proposed mitigation measures related to pollutant emissions are described in Chapter 7.

EMISSIONS FROM TRAFFIC

The project will generate additional traffic movements during operation through delivery of feedstock and raw materials, movement of waste products, livestock and end-products. In addition, the bypasses will result in the redistribution of traffic. As such, there is the potential for both adverse and beneficial impacts from traffic.

Vehicle exhaust emissions contain a number of important air pollutants including nitrogen oxides, carbon monoxide, particulate matter (also from brake and tyre wear and tear), sulphur dioxide and hydrocarbons (in unburnt fuel). All are of concern in relation to human health, while nitrogen oxides, sulphur dioxide (and ammonia) are of concern in relation to ecosystems.

In general, the impacts of an individual road decrease rapidly from the roadside and will be insignificant beyond a distance of 200m from the roadside (UK's Design Manual for Roads and Bridges). Since the bypass roads are, in general, over 200m from human receptors, the redistribution of traffic will have an overall beneficial impact since they remove traffic from existing village roads where a greater number of potential receptors for impacts are present.

Bypass 1 involves the upgrade of existing roads to the south of Bilousivka where there are receptors at the roadside. The upgrade of the road surface is likely to smooth the flow of traffic and reduce the number of periods of acceleration during travel along the residential road. This should have a beneficial impact on air quality which may, in part, offset any increase in traffic levels.

The traffic generation from the project elements is unlikely to result in a significant deterioration in local air quality since the traffic generation will be intermittent and be distributed throughout the entire project area. A significant impact would require an increase in traffic of 500 light duty vehicles and/or 100 heavy duty vehicles per day, as an annual average, along an individual road (UK Institute for Air Quality Management Guidance, 2015). No roads have been identified that are likely to experience traffic growth at this level.

Overall, therefore, the effects of the generation of traffic by the project are likely to be **Minor Adverse** but **Moderate Beneficial** in villages bypassed by new roads e.g. Bondanivka (bypass 1), Olyanytsya (Bypass 2), Hordivka (Bypass 3). Similarly, the impacts on ecosystems will vary from **Moderate Adverse** to **Moderate Beneficial** depending on the proximity of the ecosystems to existing roads and bypasses. Mitigation of these impacts will depend on reducing emissions from vehicles over time as newer, cleaner vehicles enter the fleet. Any new vehicles required for the project itself should conform to current vehicle emissions standards and all vehicles used for the movement of products should be regularly serviced.

EMISSIONS FROM COMBUSTION PLANT

Potential emissions to air from combustion plant include nitrogen oxides, carbon monoxide and depending on the fuel, sulphur dioxide and particulate matter.

Various elements of the project will require additional combustion plant, including the brigades. The size of the plant is unlikely to exceed 100kW. Given the small scale of the proposed boilers, it is considered unlikely that these emissions will have a significant impact on concentrations at the closest residential properties (>1km from plant). If possible, the fuel used should be changed to natural gas (timescales unknown); since this will reduce the risk of SO₂ and particulate matter emissions (which are negligible from natural gas). Impacts on air pollution related to the boilers are judged to be **Negligible**.

DECOMMISSIONING

The environmental impacts associated with the closure of the site will be similar to the impacts that occur during the construction of the Project. Accordingly, impacts are considered to be of **negligible** significance with mitigation.

MITIGATION

CONSTRUCTION

The following best practice measures should be applied at all construction sites and are further described in Section 7:

- Site Planning
 - Consideration of weather conditions prior to daily commencement of works;
 - Plan site layout to maximise distance from plant / stockpiles etc. to sensitive receptors (ecological);
 - Dusty materials should be removed from site as soon as possible.
- Construction Traffic
 - Loads entering and leaving the site with dust generating potential should be covered and wheel cleaning facilities made available;
 - No idling of vehicles;
 - Vehicles to comply with site speed limits (20kph on hard surfaces, 10kph on unconsolidated surfaces);
 - Water assisted sweeping of local roads to be undertaken if material tracked out of site; and
 - Install hard surfacing as soon as practicable on site and ensure that they are maintained in good condition.
- Site Activities
 - Exposed soils should be revegetated as soon as practicable.

- Minimise dust generating activities, particularly near residential receptors / sensitive ecosystems during prolonged dry, dusty weather unless damping / other suppressants are used;
- Ensure an adequate water supply to site and use water as dust suppressant where applicable;
- Ensure any site machinery is well maintained and in full working order;
- Ensure equipment available for cleaning spills etc. available at all times; and
- Sand and aggregates should be stored away from sensitive receptors.

In addition, the following site specific measures are required

- Daily, formal inspections of dust deposition outside the site should be undertaken alongside the following sites:
 - Bypass 1 – along section of existing road through Bilousivka and along sections of new road through temperate forest
 - Bypass 2 - along sections of new road through temperate forest and on the existing highway at the northern end of the bypass, just south of Lukashivka.
 - Bypass 3 - along sections of new road through temperate forest
 - Brigade 42 – along boundary with temperate forest
 - Brigade 47 – along boundary with temperate forest
- Where visual dust deposition is evident, the mitigation measures should be reviewed and additional or more frequent application of dust suppression (damping down) should be applied. If the additional mitigation does not significantly reduce dust generation and offsite deposition, a temporary cessation of works may be required.

OPERATION

The following best practice measures should be applied at all brigades

- Control of the climate and litter quality within the poultry housing unit inc temperature, dust concentrations, stocking density, feed;
- Management of ventilation system including filtration;
- Periodic (annual) monitoring of efficiency of filtration;
- Housing unit cleaning at the end of each cycle with manure stored in housing units until movement to final storage/processing system;
- Sites should be subject to regular cleaning (outside of units) with paved areas cleaned by sweeping and/or spaying with water; and
- Regular (weekly) visual inspections of dust deposition outside the site boundaries, with particular attention paid to soiling of sensitive forest habitats.

The following best practice measures should be applied to reduce transport emissions

- New vehicles associated with the project should conform to best available emissions standards; and
- All vehicles should be regularly serviced and maintained.

The following best practice measures should be applied to reduce emissions from combustion plant

- Plant should be well maintained and operated in accordance with manufacturer's recommendations.

The following monitoring requirements are recommended:

- Visual inspections of offsite dust deposition (weekly)
- Ambient air quality monitoring (nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter) undertaken for the main feed plant should be continued. Consideration should be given to the upgrading of the data collection to a continuous monitor
- Periodic ambient air quality samples (quarterly, nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter) should be undertaken in the vicinity of any combustion plant with a combined output in excess of 1MW (where combination applies to a single project element e.g. 1 brigade, WWTP, Rendering Plant etc).

EFFECTS FROM EMISSIONS OF GREENHOUSE GASES (GHG)

CONSTRUCTION

During the construction phase, the primary sources of greenhouse gases are CO₂ generated from combustion sources. However, there could potentially be limited GHG releases from the site associated with:

- On-site use of temporary construction facilities (office , engineer's facilities and associated amenities);
- Extraction and manufacture of materials required to construct the proposed development;
- Transport of materials and labour from the assumed point of production to the poultry farm locations;
- On-site use of plant and equipment; and
- Indirect impact of grid electricity generated by fossil fuels.

Overall, the potential impact of greenhouse gas emissions during construction is considered to be of **negligible** significance.

OPERATION AND MAINTENANCE

During the operation of the site GHG emissions will be generated from the following activities:

- The poultry farm broiler houses and hatchery;
- Transport of raw materials and labour to the farms and associated waste and products from the farms;
- On-site use of associated liquid petroleum gas fired boiler plant and other equipment;
- Composting of the chicken litter and subsequent land spreading;
- Wastewater treatment process; and
- Indirect impact of grid electricity generated by fossil fuels.

Greenhouse gases have an effect on global warming in relation to their potential for trapping heat in the atmosphere. Methane (CH₄) and nitrous oxide (N₂O) are the most important greenhouse gases associated with animal farming and their GWP for a time horizon of 100 years is 25 (CH₄) and 298 (N₂O) times greater than CO₂.

When manure is stored or treated as a liquid (e.g. in lagoons, tanks, or pits), it decomposes anaerobically and can produce a significant quantity of CH₄ . The amount of methane

generated is affected by the extent of anaerobic conditions present, the temperature of the system, and the retention time of organic material in the system. The liquid effluent from the slaughterhouse and rendering plant will be treated in the wastewater treatment plant and should not be retained in the reception chambers for long periods of time in order to generate anaerobic conditions.

When manure is handled as a solid (like the windrows proposed at the site) or when it is deposited on agricultural land as proposed, it tends to decompose under more aerobic conditions and less CH₄ is produced.

Most of the nitrous oxide in livestock systems occurs through the microbiological transformation of nitrogen and this involves three main processes:

- Nitrification under aerobic conditions;
- Denitrification under anaerobic conditions; and
- Autotrophic nitrifier denitrification, believed to be similar to denitrification.

Under partial or transient anaerobic conditions, the denitrification reaction is uncompleted, resulting in the production of NO and N₂O. Apart from the lack of oxygen availability, denitrification is also favoured by the presence of an available carbon source and warm temperatures, among others. Because of this dependence upon such site-specific factors, emissions of N₂O exhibit a rather high degree of spatial and temporal variability and are mainly part of the natural cycle. .

Soil microbial processes (denitrification processes) produce nitrous oxide from the breakdown of nitrate in the soil, whether derived from manure, mineral fertilisers or the soil itself, but the presence of manure encourages this process. Livestock housing itself, particularly littered systems, is an additional source of N₂O emissions

It is recommended as part of the ESAP that when the poultry farm and associated infrastructure is operational, a greenhouse gas inventory be calculated using actual data and monitored and reported on an annual basis. This will allow benchmarking of actual emissions against values in European Guidance Note BAT Reference Document for the Intensive Rearing of Poultry or Pigs Final Draft August 2015 and a programme of ongoing reductions to be developed.

From the above the impact of greenhouse gas emission during the operation of the poultry farm and associated infrastructure is considered to be of Minor Negative significance which will reduce over time with mitigation through the ESAP.

DECOMMISSIONING

Greenhouse gas emission impacts associated with the closure of the poultry farm will be associated with the decommissioning and removal of the facilities and would be similar in nature to those during construction although it would be expected that it would be for a shorter duration.

Accordingly, impacts are considered to be **negligible** significance.

CLIMATE CHANGE AND ADAPTATION

CONSTRUCTION

The construction works are planned to be carried out throughout the year, and as such the probability of hot temperatures but also winter frosts and heavy snow should be addressed during the planning of equipment and construction site maintenance. The impact of construction of the Project to climate change and adaptation is considered to be **Negligible**.

OPERATION AND MAINTENANCE

Operation of poultry farm will be carried out according to procedures developed for the climate conditions during its design. However, the poultry farm design and development based on the best international practice will allow for mitigation of the impacts of extreme temperatures (e.g. lengthy too hot or too cold periods) or precipitation pattern (e.g. heavy rain, thick snow, drought), so that they are negligible for areas adjacent to the poultry farm. The poultry farm operational procedures will be updated, if necessary, according to the climate change trends, e.g. for back-up heat supply and feed movements during extended periods of inclement weather. More details for water resource assessment can be found in the Section Water Environment in the sub-chapter 5.6.

Based on the above, the impact of operation and maintenance of the poultry farm to climate change and adaptation is considered to be **Negligible**.

DECOMMISSIONING

Climate change and adaptation impacts associated with the closure and decommissioning of the poultry farm will be similar to the impacts that occur during the construction and operation of the Project, and on this basis are considered to be **Negligible**.

CLIMATE RESILIENCE CONSIDERATIONS – VINNYTSIA FACILITY.

In order to assess future considerations for the development of the Vinnytsia project related to potential climate change scenarios, a high level assessment of future climate resilience issues on the project have been assessed and set out below. This is also a key consideration in the section on water resources in **Section 6.9**, although a further action plan item has been proposed for the further evaluation of water scarcity scenarios in this area.

Future Climate Considerations

Average temperatures⁴² within the Vinnytsia region are forecast to increase over the design life of the project. Under a high emissions scenario⁴³, worse case temperatures are forecast to potentially increase 2.6°C by the 2050's, and 4.25°C by 2080's.

Average precipitation is forecast to slightly increase by the 2050's, followed by a slight decrease by the 2080's. However, the climate modelling for this region of Ukraine, shows a decrease in precipitation over the summer (-6% change in July), and an increase over the winter (+16% in December).

Climate Resilience Considerations on the Project

Water availability in the region is an area of consideration. Current sustainable water availability and use is considered in Section 5.7, and there is an action plan item to assess future water scarcity scenarios in more detail. However, the climate predictions for the region do not consistently predict overall reduced water availability, with winter seasons, key for regional water resources replenishment, being expected to increase in precipitation levels. Further, the source of water supply for the Vinnytsia Project has been shown to be a major river in the region, of high

⁴² The following forecasts have been obtained from data available on Climate Wizard, a free tool developed by the Nature Conservancy and The University of Washington.

⁴³ Emissions Scenario families contain individual scenarios with common themes. The six families of scenarios discussed in the IPCC's Third Assessment Report (TAR) and Fourth Assessment Report (AR4) are A1FI, A1B, A1T, A2, B1, and B2.

resource availability level and it has been demonstrated that an overall abstraction demand of low overall significance will be present even following the development of Stage 2 of the Vinnytsia Facility. This is discussed further in Section 6.9, with an additional action recommended as a purely precautionary approach in this important consideration area.

Poultry production has a level of vulnerability to climate change, because birds can only tolerate narrow temperature ranges. Housing systems will need to be continued to be managed to maintain optimal seasonal temperatures and reduce the risk of heat stress. The rearing houses and other features of the farm operations currently are designed for current high peak summer temperature, including in particular arrangements for the ventilation of poultry houses and the detailed active monitoring of internal temperatures.

Stocking density in housing could need to be updated in the case of future extreme temperature changes, although this would be aligned to updates and changes within animal welfare standards on stocking density. Good ventilation is currently in place for transportation vehicles but any future changes in standards would be applied here also.

Building design has considered the need to ensure that environmental conditions within the various poultry production facilities are able to deliver compliant internal conditions across the very wide range of current climatic conditions experienced in Ukraine. However, the forecast for increased occurrence of extreme high temperatures may require increased use of ventilation systems in the future.

There are also risks considerations associated with crop yields for grain production. Central Ukraine holds a leading position in terms of size of cultivated area, they do not lead in terms of yield and gross yield indicators of major crops. An important climate factor for achieving stable grain production yields, is the amount and timing of precipitation. According to various studies, the productivity of major agricultural crops (such as wheat and barley) are substantially dependent on good precipitation. MHP look to manage this risk area through the growing of a wide variety of crops across the region. Experience in the success of grain production is also used in the forward planning of specific crop planting. Therefore, if the results of climate models do show higher temperatures and some reduce planting season rainfall, the planting strategies will need to take this into account.

Overall, it is considered that climate resilience risk areas relevant to the project are of low risk overall, and specific adaptation requirements will be delivered through good ongoing management and controls, to evolve as demand requires, rather than the requirement for specific climate change adaptation specific investment areas to be specifically required. However, a further study on future water scarcity scenarios will be undertaken as a specific precautionary undertaking.

6.5 NOISE IMPACTS

CONSTRUCTION

The primary source of noise during construction will be heavy equipment (e.g. bulldozers, graders, excavators, dump trucks, etc.) and vehicular traffic. The magnitude of construction noise impacts depend upon the specific plant used, its duration of use during a typical day and the distance between construction works and sensitive receptors.

The OVNOS has identified the following construction equipment that is likely to be used:

- Bulldozers, 79 kW/HP/108 ;
- Diesel hammers;

- Self-propelled road rollers are smooth;
- 8 t mobile compressors with internal combustion engine pressure up to 686 kPa;
- Gantry cranes at work on the installation of technological equipment;
- Various mobile / crawler cranes from 10t to 100t;
- 35 t (tractors, crawler, q/t) self-propelled scaffoldings, lifting height of 12 m (tractors, crawler, d/ton);
- Excavators diesel Caterpillar; and
- Wheeled 25 t. tractors

The closest residential receptor and other surrounding villages are at least 1.2km from any part of the development.

In the absence of a specific construction program, it is not practicable to determine accurate noise level predictions at the residential receptors. However, construction noise levels are only likely to cause isolated changes to the existing environment within a distance of 1km from the works and when all construction plant is operating at the same location simultaneously.

Given the distances to the surrounding residential areas and the fact that construction noise impacts would cease as soon as the works have been completed, any potential noise impacts would be temporary and therefore considered to be of **negligible significance** at all identified receptors.

Construction noise can be managed with proper planning and **a summary of proposed mitigation measures related to noise are described in Chapter 7.**

OPERATION AND MAINTENANCE (TRAFFIC NOISE)

The primary noise sources during operation are assumed to be mechanical services equipment and vehicular traffic on the road networks.

It is understood that under Ukrainian law, noise calculations are not required during the design development stages and that exact locations and specification of mechanical services equipment are therefore not provided until after the commissioning stage.

For the purpose of the noise impact assessment, mechanical services equipment noise levels have been assumed, based on similar facilities in the UK and are summarised below in Table 6.6:

Table 6.6 Assumed noise generating equipment

SITE	IDENTIFIED NOISE GENERATING EQUIPMENT	ASSUMED NOISE LEVEL (SOUND POWER)
Hatchery	Ventilation fans on Hatchery Building	12 No per building at 84 dB(A) each
	Air conditioning plant for Hatchery Building	2 No at 78 dB(A) each
	Boiler	85 dB(A)
	Stand-by Diesel Generator	102 dB(A)*
Brigades	Ventilation fans for brigades (38 structures per each brigade)	16 No per house at 84 dB(A) each
	Transformers (2 No per brigade)	60 dB(A) each
	Stand-by Diesel Generators (2 No per	102 dB(A) each*

SITE	IDENTIFIED NOISE GENERATING EQUIPMENT	ASSUMED NOISE LEVEL (SOUND POWER)
	brigade)	
	Boilers for Broiler houses	1 No per house – 76 dB(A) each
Slaughterhouse	Ventilation fans for process building	12 No at 84 dB(A) each
	Air conditioning plant for process building	4 No at 78 dB(A)
	Ventilation fans for Laboratory	2 No at 84 dB(A) each
	Ventilation fans for Warehouse	4 No at 84 dB(A) each
	Ventilation fans for Garage and workshop	7 No at 84 dB(A) each
	Compressor house	102 dB(A)
	6800kW Boiler	100 dB(A)
	Transformer	60 dB(A)
	Forklift (assume 50% on-time)	104 dB(A)
Fodder plant	Grinders/mixers/conveyors	6 No at 97 dB(A) each
	Silo loading/unloading	36 No at 95 dB(A) each
	Ventilation fans	36 No at 84 dB(A) each
Wastewater Plant	Pumps	90 dB(A)
Road Network	Light-Medium Goods Vehicles	Approx. 1 movement per hour
	Heavy Goods Vehicles	Approx. 1 movement per hour

*Note : For the purpose of the assessment, stand-by generators are assumed to operate for 10% of the day

Following MHP's compliance with the sanitary zone requirements (i.e. for brigades the minimum distance is at least 1.2 km distance from residential areas) all residential areas are at least 1.2km distance from the proposed development. However, the residential receptors closest to the road network used by vehicles associated with the proposed development could experience an exceedance of the night-time limit of 45 dB(A), particularly at the end of each cycle, for a period of 5 days.

Table 6.7 provides an estimated distance of sensitive noise receptors to the proposed development facilities (based on the created GPS map of the facilities, Figure 2-2). Based on the GPS data, Mikhalevka, Man'Kovka, Vasylivka, Likashevka, Bohdanivka, Olyanstsya and Hordiivka villages are located less than 500 m from the road network used by vehicles associated with the proposed development. The proposed two by-pass roads thus will divert traffic away from Bohdanivka, Olyanysya and Hordiivka, and as a result these three villages will be further away from the road network traffic. However, the Belousovka village (currently 1.7km away from road traffic), will be closer to road traffic (0.15km) as a result of the proposed by-pass no. 2.

Table 6.7 Distance to noise receptors

RECEPTOR LOCATION	DISTANCE TO SITE	CURRENT DISTANCE BETWEEN THE VILLAGE BORDER AND THE ROAD NETWORK (WITHOUT PROPOSED BY-PASS ROADS)	DISTANCE BETWEEN THE VILLAGE BORDER AND THE ROAD NETWORK (WITH PROPOSED BY-PASS ROADS)
Vasylivka	1.7km (Brigade 47)	0.7km	0.7km (no change)
Ladyzhin	3.7km (Brigade 14) 4.9km (Brigade 47)	1.2km	1.2km (no change)
Lukashevka	1.0km (Brigade 14) 1.0km (Brigade 13) 2.9km (Brigade 49)	0.11km	0.11km (no change)

RECEPTOR LOCATION	DISTANCE TO SITE	CURRENT DISTANCE BETWEEN THE VILLAGE BORDER AND THE ROAD NETWORK (WITHOUT PROPOSED BY-PASS ROADS)	DISTANCE BETWEEN THE VILLAGE BORDER AND THE ROAD NETWORK (WITH PROPOSED BY-PASS ROADS)
Belousovka	2.6km (Brigade 14) 2.9km (Brigade 13) 2.9km (Brigade 49)	1.7km	0.15km
Bohdanivka	2.2km (Brigade 50) 2.5km (Brigade 49) 3.5km (Brigade 13) 3.5km (Brigade 51) 4.0km (Brigade 14)	0km	0.6km (road will be further away)
Ulianivka	1.6km (Brigade 43) 2.2km (Brigade 49) 2.9km (Brigade 13)	1.8km	1.8km (no change)
Olyanytsya	4.2km (Brigade 13)	0km	1.9km (road will be further away)
Hordiivka	3.1km (Brigade 19)	0km	0.9km (road will be further away)

It is considered that operational noise from the proposed brigades will not have any impact on the sensitive noise receptors identified. The two by-pass roads will reduce potential traffic noise in Bohdanivka, Olyanzysya and Hordiivka, having a positive effect on these receptors. However, by-pass no. 2 could increase traffic related noise in Belousovka, and suggested mitigation measures for this potential impact can be found in ESAP.

The magnitude of likely noise impacts during operation and prior to mitigation, are therefore considered to be of **moderate significance** at the residential receptors located in Belousovka. The magnitude of likely noise impacts during operation and prior mitigation are considered to be of negligible significance at all other residential receptors. A summary of proposed mitigation measures related to noise are described in Chapter 7.

DECOMMISSIONING

Noise impacts generated during decommissioning of the development are anticipated to be predominantly associated with use of heavy machinery and vehicles, similar to the construction process.

6.6 POTENTIAL SOLID WASTE IMPACTS

SCOPE OF ASSESSMENT

An assessment was carried out on behalf of MHP of their current Vinnystia facilities for compliance with the International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines and also taking some guidance from the EU References for Best Available Techniques (BAT) for the Intensive Rearing of Pigs and Poultry (where relevant and where this added further value beyond the techniques described in the IFC Guidelines) with regard to waste management.

The general requirements required of MHP for waste management under Ukrainian legislation, along with the IFC General EHS guidelines on waste management, are summarised below. Further detailed assessments of the main waste impacts from poultry production and processing, (with a particular focus on manure production and management) along with construction phase waste management are provided after the baseline section.

LEGISLATION AND GUIDANCE

The applicable legislative framework for the Proposed Development is summarised as follows:

Ukrainian Legislative Framework

- **SN 2.1.7.1386-03 'Sanitary rules for determination of hazardous class of production and consumption toxic wastes'** - This classification system is based on a set of factors, which take into account both the impact of wastes on the environment, and the toxic, or related hazardous parameters, which are very significant for assessment of potential harmful impacts on human health (both acute and chronic health risks). Industrial materials and wastes are divided into four classes of hazard (toxicity).
- **On Sanitary and Epidemiological Well-being of Population, No. 65-FZ (1999)** - The law describes general requirements to ensuring hygienic and epidemiological well-being of the population, including environmental protection and requirements to waste collection, storage, transportation, disposal and utilisation.
- **On Operational and Domestic Wastes, No.15-FZ (1998)** - This law is the basic document on waste handling. The law describes general requirements on waste generation, collection, storage, transportation, disposal and minimisation. Also, this law sets the requirements on licensing of hazardous waste handling.

Guidance

The guidelines used to assess the waste management and impacts from the MHP Phase 2 project are given below. All the proposed facilities were assessed primarily with reference to the relevant IFC EHS guidelines and Performance standards that OPIC has adopted as part of its policy (paras 1.3 and 1.5 of OPIC⁴⁴ Environmental and Sustainability statement 2010) committing it to support projects that:

- Are environmentally and socially sustainable;
- Are compatible with low and no-carbon economic development;
- Respect human rights, including the rights of workers and the rights of affected communities;
- Avoid negative impacts and if such impacts are unavoidable properly mitigate or compensate for the impacts;
- Provide timely information regarding its activities to Project Affected People; and
- Are undertaken in countries that are taking steps to adopt and implement laws that extend internationally recognised workers' rights.

International Finance Corporation (IFC)

The guidance from the IFC performance standard 3 'Resource efficiency and Pollution Prevention' (Jan 2012) and the 'EHS Guidelines for Waste Management' were used for this assessment. These guidelines apply to projects that generate, store, or handle any quantity of waste across a range of industry sectors.

Facilities that generate and store wastes should practice the following:

⁴⁴ Overseas Private Investment Corporation

- Establish waste management priorities at the outset of activities based on an understanding of potential EHS risks and impacts and considering waste generation and its consequences;
- Establish a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes;
- Avoid or minimising the generation waste materials, as far as practicable;
- Where waste generation cannot be avoided but has been minimised, recovering and reusing waste; and
- Where waste cannot be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner.

Considering also that the EU Commission has published more detailed and specific BAT advice on the major waste management operation for MHP, the handling and disposal of chicken manure, the assessment for this issue was further developed with reference to those guidelines. Moreover, MHP are themselves planning to, and applying, EU norms, guidelines and best practice for their operations in Ukraine.

Applicable Poultry production and processing guidelines and BAT reference information for waste management at MHP facilities

For this assessment of the compliance and BAT for waste management of MHP's existing and planned Phase 2 facilities for poultry production and processing, the sector-specific applicable guidelines were:

IFC EHS guidelines; General EHS Guidelines - Environmental, Waste Management, section 1.4 (IFC April 30 2007).

- IFC EHS guidelines for poultry production, Waste management, section 1.1 Environment (IFC April 2007).
- IFC EHS guidelines for poultry processing, Solid organic wastes and by-products, Section 1.1 Environment (IFC April 2007).
- EU BAT reference document for the intensive rearing of pig and poultry. (European Commission Final Draft August 2015).

European Legislative Framework

- Directive 2008/98/EC on waste - Sets the basic concepts and definitions related to waste management and lays down waste management principles such as the 'polluter pays principle' and the 'waste hierarchy'.
- Directive 2006/21/EC on the management of waste from extractive industries - Applies to waste resulting from the extraction, treatment and storage of mineral resources and the working of quarries. Waste must be managed in specialised facilities in compliance with specific rules. Operators of such facilities are subject to liability in respect of environmental damage caused by their operation. Member States shall take every precaution to limit risks to public health and the environment related to the operation of extractive waste processing facilities, inter alia by applying the concept of "best available techniques".
- Directive 2000/76/EC on the incineration of waste - Incineration of both hazardous and non-hazardous wastes may cause emissions of substances which pollute the air, water and soil and have harmful effects on human health. In order to limit these risks, the European Union (EU) has imposed strict operating conditions and technical requirements on waste incineration plants. All incineration plants must have a permit to carry out their activities.
- Directive 1999/31/EC on the landfill of waste - Aims to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any

resulting risk to human health, from the landfilling of waste, during the whole life-cycle of the landfill.

BASELINE FOR THE EXISTING FACILITIES WASTE MANAGEMENT

The following facilities, construction sites and undeveloped future locations of Phase 2 facilities have been assessed regarding the baseline conditions for waste production and management.

PERMITTED TYPES AND AMOUNTS OF WASTE FROM EXISTING FACILITIES

The environmental permits / OVNS (Ukrainian Environmental Impact Assessments) for the Phase 2 facilities were available and these declared the following type and quantities of waste that were permitted to be produced and disposed of according to the type of operation. These are summarised below for each facility in tabular form along with the reported disposal or recycling methods.

A) Fodder Plant

The current fodder plant processes and facilities from which the waste management baseline has been established are summarised as follows:

- Sunflower seed and grain elevators of 200,000m³ capacity each;
- A sunflower seed oil pressing plant of 1,500 tonnes/day processing capacity;
- A 9,000m³ seed oil tank farm;
- An animal fodder plant and auxiliary facilities;
- Railway loading terminals and product warehouses; and
- Boiler plant for process steam and heating.

From the OVNS environmental impact statement no 498-g-EIA Vol 36 Zernoproduct MHP CJSC Farm complex for fodder production in Ladyzhyn, Vinnytsia region, Environmental Impact Assessment (Working project) dated 2010, the annual waste production declared for this type of facility is summarised in Table 6.8.

Table 6.8 Annual Waste Production

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	SUNFLOWER SEED ELEVATOR VEGETATION RESIDUES (TONNES PER YEAR)	MAIZE ELEVATOR PRE-TREATMENT VEGETATION RESIDUES (TONNES PER YEAR)	OIL PRESSING PLANT HUSKS (TONNES PER YEAR)	OIL PRESSING PLANT SEED SCREENINGS (TONNES PER YEAR)	FODDER COMBINATION PLANT. LIMESTONE MINERAL WASTE (TONNES PER YEAR)	BOILER HOUSE ASH (TONNES PER YEAR)	MUNICIPAL WASTE (TONNES PER YEAR)
Fodder Plant	7,425	13,261	89,100	9,900	138.6	884	24.8

These wastes are disposed of or recycled as follows:

- The vegetation residue wastes from sunflower seed and maize elevator hoppers and cyclones are collected and removed for recycling by an unspecified, specialised contractor.
- Husks from the sunflower seed oil pressing plant are recovered to dedicated silos and are either used for bedding at the poultry brigades or sent to the boiler house for combustion.

Screened sunflower seeds that are too small are sold on under contract to unspecified third parties for use by the local communities' poultry and cattle feed.

- Residual limestone mineral waste from the sieving process in the fodder combination plant is collected in a dedicated hopper and, when full, disposed of to the Ladyzhyn municipal landfill.
- Cinder ash from the boiler house is reused as a mineral fertiliser
- Municipal domestic wastes from the onsite workers' canteen are collected in dedicated vehicles for disposal by the local authority.

Assessment of aggregated waste management impacts from Phase 2 – Fodder Plant

The Phase 2 Fodder plant development will be located within the existing perimeter of the main Fodder plant. The main Phase 2 elements to supply the additional brigades are understood to be on MHP's current plans (October 2016):

- Four additional elevators for 150,000 tonnes of grain storage facilities (already constructed with two in use);
- Additional 38 000 tonnes/month of sunflower seed oil processing capacity;
- A second line to the fodder plant (building already constructed but awaiting process equipment);
- Additional warehouse storage for additives; and
- An additional railway line access between the existing on-site rail lines

Apart from an increase in the total amounts of waste produced from the site as a whole, no additional, specific impact from wastes has been identified for the Phase 2 Fodder plant development.. Consequently, the same waste streams and types identified in the baseline above The waste will be stored and disposed with the existing streams, to be managed and disposed of in the same way.

B) Hatchery

From the OVNS environmental impact statement no 497.1 for Branch of CJSC 'Zernoproduct MHP' Poultry factory 'Vinnytsa Broiler' poultry incubator station, dated July 2010, the annual waste production declared for this type of facility is summarised in Table 6.9.

Table 6.9 Annual waste production declared (Hatchery)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	NON FERTILISED EGGS (TONNES PER YEAR)	NON HATCHED EMBRYO (TONNES PER YEAR)	EGG SHELLS (TONNES PER YEAR)	FEATHER DOWN (TONNES PER YEAR)	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS) (ITEMS PER YEAR)
Hatchery	2,003	881	2,636	1,836	12.9	800

From the information received from MHP, these wastes are disposed of or recycled as follows:

- Wastes from non-fertilised eggs, embryos, egg shells and feather down are recovered from the hatchery and sent to the rendering plant for treatment and conversion to the end products produced there (see Rendering plant below).

- Municipal domestic wastes from the onsite workers' canteen are collected twice a week in dedicated vehicles for disposal to landfill by the local authority.
- Spent electrical light bulbs are recovered by a third party recycling company. Укр Еко Груп» under license AE 272203 from 19.07.2013.

Site visit observations and information. There are no external solid waste storage or handling facilities at the hatchery. Egg shell and chick carcasses were reportedly collected in dedicated bins and trucked to the MHP rendering plant for treatment and conversion to animal feed. The surface water runoff from all hard standing areas, where waste bins may be stored temporarily awaiting collection, is captured in peripheral drains and treated at the on-site wastewater treatment plant before discharge to soakaway/evaporation basins.



Figure 6.1 Exterior view of Hatchery sealed surface areas

Assessment of aggregated waste management impacts from Phase 2

The Phase 2 extension to the hatchery will be located alongside the existing facility and use the same processes. Consequently the waste streams identified above will mingle with the existing streams to be managed and disposed of in the same way. Apart from an increase in the total amounts of waste produced at the site no additional, specific impact from wastes has been identified for the Phase 2 Hatchery extension.

This increase is assumed to be proportionate to the overall increase in production of 75% resulting from the Phase 2 development i.e. from 12 brigades to 21, and has been estimated and summarised in Table 6.10.

Table 6.10 Estimated increase phase 2 extension (Hatchery)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	NON FERTILISED EGGS (TONNES PER YEAR)	NON HATCHED EMBRYO (TONNES PER YEAR)	EGG SHELLS (TONNES PER YEAR)	FEATHER DOWN (TONNES PER YEAR)	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS) (ITEMS PER YEAR)
Hatchery Baseline volumes	2,003	881	2,636	1,836	12.9	800
Aggregated Increase for Phase 2 extension	1,502	661	1,977	1,377	10	600

C) Brigade broiler rearing facility

From the OVNS environmental impact statement for Branch of CJSC 'Zernoproduct MKP' Poultry factory Brigade 13, dated February 2015, the annual waste production declared for this type of facility is summarised in Table 6.11.

Table 6.11 Annual waste production declared

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	MANURE (TONNES PER YEAR)	CARCASSES (NUMBER PER YEAR)	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS) (ITEMS PER YEAR)
BROILER BRIGADE	18,722	675,347	3.2	1,550

These wastes are disposed of or recycled as follows:

Chicken carcasses are recovered and stored in sealed metal bins before being sent by dedicated waste truck to rendering plant for treatment and conversion to the end products produced there (see Rendering plant below).

Municipal domestic wastes from the onsite workers' canteen are collected twice a week in dedicated vehicles for disposal to landfill by the local authority.

Spent electrical light bulbs are recovered by a third party recycling company. Укр Еко Груп» under license AE 272203 from 19.07.2013.

Waste Management: Site visit observations and information

The mortality rate of broilers is reportedly approximately 10% per batch resulting in some 18,000 carcasses per year, These are disposed of to wheeled metal bins with a sliding cover (see photos) located on an unsheltered hard standing area awaiting collection by dedicated waste truck.



Waste truck and carcass bins at broiler rearing brigade

In addition to the declared wastes from the OVNS environmental statement, there are also the used filters from the venting units on each shed. These are recovered and disposed of by the equipment supplier during maintenance operations.

Assessment of aggregated waste management impacts from Phase 2

The total number of additional brigades to be constructed for Phase 2 is 9; these are designated as follows:

- Brigade No.13 (new construction);
- Brigade No.14 (new construction);
- Brigade No.19 (new construction);
- Brigade No.42 (new construction);
- Brigade No.43 (new construction);
- Brigade No.47 (new construction);
- Brigade No.49 (new construction).
- Brigade No.50 (new construction – final location not finalised yet)
- Brigade No.51 (new construction – final location not finalised yet)

The increase in aggregated waste volumes is assumed to be proportionate to the overall increase in production of 75% resulting from the Phase 2 development i.e. from 12 brigades to 21, and has been estimated and summarised in Table 6.12.

Table 6.12 Estimated increase phase 2 extension (brigade)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	MANURE (TONNES PER YEAR)	CARCASSES (NUMBER PER YEAR)	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS) (ITEMS PER YEAR)
BROILER BRIGADE SINGLE UNIT BASELINE VOLUMES	18,722	675,347	3.2	1,550
AGGREGATED INCREASE FOR 9 PHASE 2 BRIGADES	168,498	6,078,123	29	13,950

D) Waste water treatment plant (WWTP)

From the OVNS environmental impact statement ref 497. 3.4 -00 EIAR the annual waste production declared for this type of facility is summarised in Table 6.13.

Table 6.13 Annual waste production declared (WWTP)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS) (ITEMS PER YEAR)	WWTP SLUDGE (TONNES PER YEAR)
WWTP	5.8	16	10,950

These wastes are disposed of or recycled as follows:

- Treatment plant sludge is held in the onsite, lined receiving lagoon before being mixed with manure for spreading
- Municipal Domestic wastes from the onsite workers canteen are collected twice a week in dedicated vehicles for disposal to landfill by the local authority.
- Spent electrical light bulbs are recovered by a third party recycling company «Укр Еко Груп» under license AE 272203 from 19.07.2013

Waste Management - Site visit observations and information

The construction of the extension to the WWTP was underway at the time of the site visit. The sludge lagoons had already been installed and these were lined with a HDPE⁴⁵ membrane with at least one groundwater monitoring well installed near the periphery of the site (see photos).

⁴⁵ High-Density Polyethylene



Figure 6.2 WWTP Lined sludge lagoons and groundwater monitoring well

Assessment of aggregated waste management impacts from Phase 2

The Phase 2 extension to the WWTP will be located between the existing facility and the lagoons on the southern perimeter of the site. Using the same process as the existing WWTP for treating the same type of waste water streams, which are piped or trucked in from MHP's surrounding facilities, there will be an increase in the overall amount of waste sludge produced and discharged to the site's tailing ponds. Apart from an increase in the volume of WWTP sludge that is available for blending with the manure for spreading, no additional specific impact from the WWTP wastes has been identified..

This increase is assumed to be proportionate to the overall increase in production of 75% resulting from the Phase 2 development i.e. from 12 brigades to 19, and has been in Table 6.14.

Table 6.14 Estimated increase phase 2 extension (WWTP)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	MUNICIPAL WASTE (TONNES PER YEAR)	WWTP SLUDGE (TONNES PER YEAR)
WWTP baseline volumes	5.8	10,950
WWTP Aggregated Phase 2 projected increase in volumes for 9 brigades	4.35	8212.5

E) Slaughter house

From the OVNS environmental impact statement for the Slaughter House and the Rendering Plant, the annual waste production declared for these facilities is summarised in Table 6.15.:

Table 6.15 Annual waste production declared (Slaughterhouse)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	ANIMAL PARTS NOT FOR HUMAN FOOD CONSUMPTION (TONNES PER DAY)	CONTAMINATED PLASTIC PACKAGING (TONNES PER DAY)	CONTAMINATED CARDBOARD PACKAGING (TONNES PER DAY)	PAPER AND LABELS (TONNES PER DAY)	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS). (ITEMS PER YEAR)
Slaughter house	511	0.052	0.36	0.01	235	2,542

These wastes are disposed of or recycled as follows:

Non-food animal parts wastes are recovered from the slaughter house and sent via overhead conduits to the rendering plant for treatment and conversion to the end products produced there (see Rendering plant below).

Packaging and labelling wastes are reportedly collected daily and sent under contract to recycling companies.

Municipal Domestic wastes from the onsite workers canteen are collected in dedicated vehicles for disposal to landfill by the local authority.

Spent electrical light bulbs are recovered by a third party recycling company.

Waste Management; Site visit observations and information

The building for Phase 2 extension to the slaughterhouse had already been constructed at the time of the preparation of this ESIA for the Lenders Requirements.



Figure 6.3 Phase 2 extension to the slaughter house.

Assessment of aggregated waste management impacts from Phase 2.

The Phase 2 extension to the main slaughter house is located alongside the existing facility and uses the same processes. Consequently, the waste streams identified above will co-mingle with the existing streams to be managed and disposed of in the same way. Given that the wastes produced at the slaughter house are then processed at the adjacent rendering plant, no additional, specific impact from wastes, apart from an increase in volumes sent to the rendering plant, has been identified for the Phase 2 slaughter house extension. Air emissions / odour control issue areas are address in the Air Quality Chapter.

Assuming that the throughput of the slaughterhouse is directly proportional to the number of brigades in production, then the increase in the volume of non-food waste output due to the phase 2 extension has been estimated and summarised in Table 6.16.

Table 6.16 Estimated increase phase 2 extension (Slaughterhouse)

TYPE AND VOLUME OF WASTE PRODUCED PER SITE	ANIMAL PARTS NOT FOR HUMAN FOOD CONSUMPTION (TONNES PER DAY)	CONTAMINATED PLASTIC PACKAGING (TONNES PER DAY)	CONTAMINATED CARDBOARD PACKAGING (TONNES PER DAY)	PAPER AND LABELS (TONNES PER DAY)	MUNICIPAL WASTE (TONNES PER YEAR)	ELECTRICAL WASTE (LIGHT BULBS). (ITEMS PER YEAR)
SLAUGHTER HOUSE BASELINE VOLUMES	511	0.052	0.36	0.01	235	2,542
AGGREGATED PHASE 2 PROJECTED INCREASE IN VOLUMES FOR 9 BRIGADES	383.25	0.039	0.27	0.0075	176.25	1906.5

F) Rendering plant

The non-food wastes from the slaughter house, along with chicken and chick carcasses from the brigades and hatcheries, are received at the Rendering Plant. The total daily aggregated volumes of non-food waste is summarised in Table 6.17.

Table 6.17 Annual waste production declared (rendering plant)

TYPE AND VOLUME OF WASTE	NON-FOOD WASTE FROM SLAUGHTER HOUSE	NON FERTILISED EGGS	NON HATCHED EMBRYO	EGG SHELLS	FEATHER DOWN	CARCASSES FROM BRIGADES	TOTAL INPUT VOLUME OF NON-FOOD ANIMAL WASTE
	(TONNES PER DAY)	(TONNES PER DAY)	(TONNES PER DAY)	(TONNES PER DAY)	(TONNES PER DAY)	(TONNES PER DAY)	(TONNES PER DAY)
Baseline input to rendering plant	511	5.5	2.4	7.2	5	44.4*	575.5
Aggregated input increase for Phase 2	383.3	4.1	1.8	5.4	3.8	33.3*	431.6

* Based on 1,850 carcasses per day each weighing 2 kg; Meyn Poultry Processing solutions 2004, Yield Process figures from Table 2 IFC EHS Guidelines Poultry Processing April 2007.

These are entirely disposed of by treatment and conversion to final products as animal feed, bonemeal, blood meal and frozen blocks of deboned meat residues. As all these products are sold on or used for other purposes, there are no residual non-food wastes produced from the rendering plant.

Waste management: Site visit observations and information



Figure 6.4 Rendering Plant on left and Slaughter house on right.⁴⁶

⁴⁶ Note the waste truck discharging chicken carcasses from brigades for rendering

Assessment of aggregated waste management impacts from Phase 2

Assuming there are negligible mass losses during the rendering processes and that the input is directly proportional to the number of brigades and hatcheries in operation, then the estimated aggregated increase in output of rendering products for Phase 2 is 333 tonnes/day giving the total aggregate output of rendering products resulting from the Phase 2 development (Table 6.18).

Table 6.18 Estimated increase phase 2 extension (rendering plant)

AGGREGATED INPUTS AND OUTPUTS FOR RENDERING PLANT	TOTAL INPUT VOLUME OF NON-FOOD ANIMAL WASTE. (TONNES PER DAY)
Baseline input to rendering plant	575.5
Aggregated input increase for Phase 2	431.6
Total aggregated rendering plant output with Phase 2	1007.1

MANURE MANAGEMENT IN THE VINNYTSIA REGION

Manure management and disposal was identified as the major operation and impact from waste for the existing and future phase 2 facilities and is assessed in further detail below. A significant volume of manure is generated across MHP Group from the breeding and rearing enterprises. MHP Group operates manure storage facilities to stockpile manure prior to spreading on arable farming sites. The manure is used either directly on MHP's own crop production fields or sold as a product to local farmers and also given to employees as a benefit. Storage areas have been located to reduce transport time to and from the farms, as much as reasonably practicable.

Manure Production

The current production of manure from the existing 12 brigades and the projected aggregate volume increase from the nine future Phase 2 brigades are summarised in Table 6.19.

Table 6.19 Estimated increase manure production

EXISTING AND FUTURE PHASE 2 NUMBERS OF BRIGADES	MANURE PRODUCTION TONNES/YEAR
Current manure production from a single brigade (OVNS declaration)	18,722
Current manure production from 12 brigades	224,664
Additional aggregated Phase 2 manure production from 9 brigades	168,498
Total forecasted manure production with Phase 2	393,162

Assessment of impacts from Manure spreading

The use of animal manure on site is an important activity for MHP Zernoproduct, The manure holds nitrogen compounds, nutrients and water and therefore is essential to maintain soil fertility. The manure which is generated is relatively homogenous due to the number of birds per facility, the technology employed and the quantity of husk which is mixed with the manure.

Current manure output from 12 brigades is not adequate to meet the demand for fertiliser on the MHP maize and sunflower fields supplying the fodder plant. The additional volumes from Phase 2 will meet this requirement while ensuring that they are spread efficiently, without overdosing and with minimum environmental impact using MHPs manure management method summarised below:

MHP manure spreading management.

Periodically, samples of the manure mixture are analysed at the laboratory. The analysis process generates 'technological cards', which describe the specification of the manure. This information is then used to fully inform a specific manure spreading strategy which is produced for each spreading location. A chief agronomist is responsible for the crop strategies and manure management planning.

Each field has an individual field passport. The field passport is a comprehensive document which is approved by the Ministry of Agrarian Policy and Food of Ukraine State Enterprise. The document provides an overview of the farming activities employed on each field as well as the soil composition. The results from the analysis of the manure, as well as the growth period and the soil determine the specific spreading strategy. A strategy is also employed to use manure as close as possible to where it was produced (factoring in the nutrient requirements of the land), thereby reducing transportation costs and the potential for nuisance-related impacts during transport. Prior to spreading on a field, the weather conditions are assessed. A meteorological station is in place to monitor weather conditions such as temperature, rainfall and humidity. The spreading does not occur during times of rainfall or when rainfall is expected and also when the ground is frozen.

Rotary equipment is used for the spreading activities. Prior to commencing the spreading activities, MHP procedures require that the incorporating rotavators are also present. The incorporation vehicles closely follow the spreading equipment to immediately incorporate the manure into the soil, thereby minimising the potential for odour and loss of nutrients. There is a maximum of four hours between spreading and incorporating, however, this time is usually reduced to less than one hour. Moreover a buffer zone of at least 25m is kept from any surface water bodies to prevent contamination from the manure spreading. MHPs compliance with IFC EHS Guidelines and EU BREF for Poultry production and processing

MHP has adopted as a minimum requirement for its operations in Ukraine, the IFC EHS guidelines for Poultry production and processing (30 April 2007) and these have been used to assess the current and future waste management methods for the current and planned MHP Phase 2 facilities at Vinnystia. With much of the production destined for the European market, MHP has also adopted (EU best practice references BREF for the Intensive rearing of Pigs and Poultry (August 2015).

There are some differences in emphasis and detail between these two sets of guidelines, with the EU 2015 final draft BREF representing at present the most advanced information on BAT requirements. Therefore in this assessment it has also been indicated where MHP has gone beyond the IFC guidelines in adopting the more recent EU BREF recommendations. The following table gives first the IFC guidelines and then the EU BREF where MHP has gone further and adopted these in addition to the IFC requirements. Further details of BAT adopted by MHP are given in **Appendix C**.

Table 6.20 Compliance with IFC and EU BREF requirements (manure spreading)

IFC POULTRY PRODUCTION REQUIREMENT	FURTHER EU BREF REQUIREMENT	PHASE 2 DESIGN AND CURRENT PRACTICES	BEST PRACTICE AREAS MET?
<p>Implement a Comprehensive Nutrition Management Plan including a nutrient mass balance for the entire farm. Ensure that manure application does not exceed the nutrient uptake by vegetation and should include record keeping of nutrient management practices</p>	<p>Adapt the manure application rate taking into account the nitrogen and phosphorous content of the manure and the characteristics of the soil.</p> <p>Synchronise the spreading of manure with the nutrient demand of crops</p>	<p>The characteristics of the soil of are assessed and documented within a field passport.</p> <p>Manure is also analysed for the nutrient and moisture content. The manure application rate is based upon these two assessments.</p> <p>Manure spreading is planned according to a crop strategy, which assesses the specific nutrient demand of the crops, and documented in the field passports</p>	<p>Yes</p>
<p>Animal feed and nutrients</p> <p>Match feed content to the specific nutritional requirements of the birds in their different production growth stages.</p> <p>Use low protein and low phosphorous diets</p> <p>Use quality uncontaminated feed materials that contain no more copper, zinc and other additives than is necessary for animal health..</p>	<p>Apply 'nutritional management' to match feeds more closely with animal requirements to reduce the amount of nitrogen in manure arising from undigested or catabolised nitrogen.</p>	<p>MHP manure quality is relatively homogenous due to control over the number of birds per facility, the technology employed and the quantity of husk which is mixed with the manure.</p> <p>Samples of the manure mixture are analysed at the laboratory. The results are recorded on a 'technological cards', which describe the specification of the manure.</p> <p>This information informs a specific manure spreading strategy for each spreading location, overseen by a chief agronomist is responsible for the crop strategies and manure management planning.</p>	<p>yes</p>

IFC POULTRY PRODUCTION REQUIREMENT	FURTHER EU BREF REQUIREMENT	PHASE 2 DESIGN AND CURRENT PRACTICES	BEST PRACTICE AREAS MET?
<p>Conduct manure spread only as part of a comprehensive nutrient and waste management plan that takes into account the potentially harmful constituents of the waste. If possible land spread manure directly after batch cleaning and only during periods that are appropriate for use as a plant nutrient.</p> <p>Implement buffer zones to surface water bodies, as appropriate to local conditions and requirements and avoid land spreading of manure within these areas.</p>	<p>Assess the manure receiving land to identify risks of run-off, taking into account:</p> <ul style="list-style-type: none"> ■ Soil types, conditions and slope of field; ■ Climatic conditions; ■ Field drainage and irrigations; ■ Crop rotations; ■ Water resources and water protected zones <p>Keep sufficient distances between manure spreading fields (leaving an untreated strip of land) and;</p> <ul style="list-style-type: none"> ■ Areas where there is a risk of run-off to watercourses; ■ Neighbouring properties. <p>Avoid manure spreading when the risk of run-off can be significant.</p>	<p>The manure, the soil and climatic conditions are analysed prior to spreading. This informs the spreading strategy according to nutrient requirements.</p> <p>Water protected / vulnerable zones are not assessed in Ukraine, however MHP undertakes regular monitoring of water wells to assess for any impact from their farming activities.</p> <p>Buffer strips of a minimum 25m are maintained on the spreading fields. Buffer strips are between 25-100m dependent on the nearby sensitive receptors. (Nb No IFC EHS requirements for buffer zone widths).</p> <p>It is a priority to maintain the nutrients within the manure and therefore spreading is not undertaken at times with the risk of run-off is high</p>	<p>Yes</p>
<p>Air emissions. ammonia, odours and dust.</p> <p>Control temperature, humidity and other environmental factors of manure storage to reduce emissions</p> <p>:Reduce emissions and odours during land application activities by applying a few centimetres below the soil surface and by selecting favourable weather conditions (e.g. wind blowing away from inhabited areas.)</p>	<p>Take into account soil conditions type, climatic conditions, .</p> <p>Spreading manure during the day when people are less likely to be at home and avoiding public holidays and weekends,</p> <p>Paying attention to wind direction in relation to neighbouring properties.</p> <p>Incorporate manure into ground within 12 to 24 hours after spreading.</p>	<p>(Rotavators) closely follow the spreading equipment to immediately incorporate the manure into the soil, thereby minimising the potential for odour and loss of nutrients. There is a maximum of four hours between spreading and incorporating</p> <p>Spreading does not occur during periods of rainfall or on frozen ground.</p> <p>Manure spreading takes</p>	<p>Yes</p>

IFC POULTRY PRODUCTION REQUIREMENT	FURTHER EU BREF REQUIREMENT	PHASE 2 DESIGN AND CURRENT PRACTICES	BEST PRACTICE AREAS MET?
Ensure the prevention of bio aerosols emissions, which may contain disease-causing agents.		<p>place midweek, during working hours and not during the weekends. Local communities around Ladyzhyn notify MHP Zernoproduct of dates of significant events i.e. weddings) so that manure spreading does not take place on that day.</p> <p>Manure spreading machinery is equipped with rotary spreaders eliminating the production of airborne dusts and aerosols from sprayed manure.</p> <p>Care is taken to keep moisture content of manure to a minimum.</p>	
Manage sludge and sediments from WWTP systems as part of the solid waste stream		WWTP sludges are blended with the manure wastes prior to spreading.	yes
Transport effluent in sealed tankers		Liquid effluent from the rearing sheds is transported in a dedicated fleet of sealed tankers	yes

Manure Storage – Vinnystia Region

The manure storage facility has a capacity of 450,000 tonnes (reportedly 6 six months' supply), which is stored on concrete hard standing in channels which are divided by concrete walls. There is also a lagoon present on site, for the collection of leachate; however, there is currently no connecting drainage network to collect and divert the leachate, although it was reported that due to the low moisture content of the manure, this is not a significant issue. During the site walkover, small pools were observed, but these were all contained within the concreted area, due to the sloped profile of the storage channels. Currently, the manure storage facility is not within a specifically secure site, although it is a remote area.



Figure 6.5 Manure storage facility

When designing and locating the manure store, it was reported that the prevailing wind direction was considered in order to minimise the potential impact caused by odour. The distance to the nearest residential area is approximately 3km.

Intermediary storage of manure, prior to spreading, takes place at the spreading field. It is stored in heaps, uncovered on a layer of straw. Manure is stored on the spreading field for up to two months prior to spreading. Current IFC and EU BAT standards allow for temporary uncovered storage of manure in field heaps, providing that the locations of the heaps are rotated regularly, this was described to be practiced within MHP.

A high level assessment against the IFC EHS Guideline Requirements and also, for completeness, the BAT considerations as described in the BAT Reference Document for the Intensive Rearing of Poultry or Pigs (final draft August 2015) was undertaken as part of the ESIA, and this comparison is shown below:

Figure 6.6 Compliance with IFC and EU BREF requirements (manure storage)

IFC POULTRY PRODUCTION REQUIREMENT	EU BREF REQUIREMENT	PHASE 2 ESIGN AND CURRENT PRACTICES	BEST PRACTICE TECHNIQUES IN PLACE?
Locate manure piles away from water bodies, floodplains, wellheads and other sensitive habitats.	Store solid manure in field heaps placed away from surface and/or underground watercourses which liquid run-off might enter	Solid manure is temporarily stored in field heaps prior to spreading. Manure is stored on a layer of straw. The location of this heap taking into consideration proximity to water courses.	Yes
Ensure production and manure storage facilities are constructed to prevent manure contamination of surface and ground water (e.g. use of concrete floors, use of roof gutters on buildings to collect and divert clean storm water, and covering manure storage areas with fixed roof or plastic sheeting).	Store solid manure on solid impermeable floor equipped with a drainage system and a collection tank for run-off	Manure is stored on concrete hard standing. There is a leachate pond adjacent to the storage location.	Partially – connection to the collection sump is required. Action to be included in ESAP
Manure storage facilities should have sufficient capacity for nine to 12 months of manure production so that manure can be applied to agricultural land at appropriate times.	Sufficient capacity to hold the manure during periods in which the application to land is not possible	The storage capacity of manure is 450,000 – six months' supply. An additional manure storage site will be developed as part of the phase II expansion	Yes for EU BREF 6 months capacity. Extra capacity being built for phase 2. MHP is also considering as part of Phase 2 development a biogas digester to recover energy from the manure.
Minimise the surface area of the manure in storage.	Reduce the ratio between the emitting surface area and volume of the manure heap – compacted on a three-sided wall store	Currently manure is not specifically compacted; however this is not a requirement according to the current BREF note which is in place at the moment. It was reported that when the manure is placed, the excavator equipment does provide a level of compaction.	New BAT area – this can be achieved through pushing the manure down to the level of channel walls when placing.
Design, construct, operate and maintain waste management and storage facilities to contain all manure, litter and process wastewater including run off and direct precipitation.	Ensure adequate access to the manure store and that loading of manure can be done effectively without spillage	Access to the Vinnystia store is considered to be well designed with adequate space for vehicle movement.	Yes
Place dry manure or litter in a covered or roofed area.	Cover solid manure heaps	Currently the manure storage is not covered;	New BAT area – which can be

IFC POULTRY PRODUCTION REQUIREMENT	EU BREF REQUIREMENT	PHASE 2 ESIGN AND CURRENT PRACTICES	BEST PRACTICE TECHNIQUES IN PLACE?
Cover manure storage areas with fixed roof or plastic sheeting		however this is not a requirement according to the BREF note which is in place at the moment. The BREF note states that plastic sheeting / geo-textiles are adequate for this requirement.	achieved through the use of plastic sheeting. Review required following the approval of the updated final BREF note, along with a the recommended timescale for implementation.
Keep waste as dry as possible by scraping wastes and/or minimize amounts of water used for cleaning. Use hot water or steam cleaning methods instead of cold.. Further reduce the moisture content by ventilation or dry air blowers.		MHP removes manure in solid state from rearing sheds before cleaning with wet methods thereby avoiding any wetting of the manure. The automated ventilation systems installed in the rearing sheds dries out the manure in situ.	Yes
Check for leakage regularly Use double valves on outlets from liquid tanks to minimize unintentional release.		Not applicable to MHPs operations as no liquid manure is produced or handled. Manure is in solid form with moisture content deliberately kept low. below 28%	n/a
Remove liquids and sludge from lagoons as necessary to prevent overtopping. Build a reserve slurry lagoon.		Minimum amounts of liquid leachate are produced from the solid manure storage areas. These are collected and piped to a reserve sump	Yes with implementation of ESAP action on connection of leachate pipe.

Transportation of manure

There is a dedicated team and fleet for the transport of manure. A schedule of movements is also developed, which is based on the requirements of the rearing facility. Approximately 800 - 1,000 tonnes of manure is transported on a daily basis. A strategy is employed to use manure as close as possible to where it was produced. The phase 2 transport routes are planned to minimise the potential odour and noise nuisance impacts on local villages.

CONSTRUCTION PHASE WASTE IMPACTS AND MANAGEMENT

Introduction

This section assesses the aggregated impacts of the proposed Phase 2 development on waste management at the MHP Vinnystia operation. In particular, it considers the aggregated potential impacts of wastes generated during the site clearance, excavation, and construction activities associated with the new-build facilities included in this development. These facilities are listed in

the 'Extent of the Study Section' below. The incremental impact of wastes generated during the production activities is assessed in the previous section.

For the purpose of this assessment, 'waste' is defined as any substance or object which the owner discards or intends, or is required, to discard in the context of the construction phase of the new-build facilities for Phase 2. Therefore, the waste materials are defined as 'construction wastes' arising from site clearance, excavation and construction activities at these sites.

Extent of the Study Area

The study area considered is comprised of all the individual facilities and access roads within the MHP Vinnystia operation that are to be constructed, or are currently being constructed in October 2016, for the Phase 2 development as given in the project description (Section 2).

Assessment Criteria: Site Preparation, Earthworks and Construction Phase

This qualitative assessment of waste produced during the site preparation, earthworks and construction works is based on available data provided by MHP, observations during the site visits of 4-5 October 2016 and WSP | PB's professional judgement for construction waste management of similar types of sites, and considers the following:

- Generation of material during site clearance activities which require disposal;
- Generation of material during excavation activities which require disposal or stockpiling; and
- Creation of waste materials during construction activities which may require off-site disposal.

The waste streams likely to be generated during the construction phase include wood, glass, metals, waste packaging (including cardboard, pallets and drums), fuels, oils/greases and general site waste.

The approach undertaken to inform the assessment of the site preparation, earthworks and construction phase effects has involved the identification and use of relevant international guidelines and suitable benchmark data for the prediction of waste production during such activities.

As for the existing MHP facilities' baseline waste management assessment, the guidance from the IFC performance standard 3 'Resource efficiency and Pollution Prevention' (Jan 2012.) and the 'EHS Guidelines for Waste Management' were used, where relevant, to assess the construction phase activities from site preparation, through earthworks to facility construction.

Opportunities for minimisation, reuse and recycling have been identified based on European best practice construction site management.

There is currently no poultry industry standard methodology for estimating construction waste arising from new developments. Therefore, to estimate the amount of waste from the construction and fitting out of the Phase 2 brigades, hatchery, WWTP, slaughter house and rendering plant; one has been developed for use in this assessment using various published data, including an adaption of the UK Building Research Establishment (BRE) Waste benchmark data for an industrial building of 12 tonnes/ 100m² of floor area.

Using this adaptation and WSP PBs professional experience, estimates have been made of likely construction waste volumes and proportions of constituent materials. Consideration should be

given to the fact that different construction contractors use varying construction methods and materials, which will generate differing amounts of waste.

Table 6.21 Estimated construction waste volume per new building

NEW BUILD FACILITIES PHASE 2	Estimated construction waste volumes per new build site (tonnes per site or tonnes/100m ² building area)
Hatchery, Waste Water Treatment Fodder Plant, Slaughter house and Rendering plant extensions	12 tonnes/100m ²
Brigades	12 tonnes of waste/ broiler shed

Significance Criteria

The assessments of potential effects as a result of the Phase 2 development have taken into account the site preparation, earthworks and construction phases. The significance level attributed to each effect has been assessed based on the magnitude of change due to the development proposals, and the sensitivity of the affected receptor/receiving environment to change., Magnitude of change and the sensitivity of the affected receptor/receiving environment are both assessed on a scale of high, medium, low and negligible.

The following terms have been used to define the significance of the effects identified:

Major effect: where the Proposed Development could be expected to have a very significant effect (either positive or negative) on the quantity of waste generated compared to existing levels;

Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either positive or negative) on the quantity of waste generated compared to existing levels;

Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either positive or negative) on the quantity of waste generated compared to existing levels; and

Negligible: where no discernible effect is expected as a result of the Proposed Development on the quantity of waste generated compared to existing levels.

With regard to the duration of the effects, in the context of this assessment 'short term' is defined as less than six months; 'medium term' as more than six months but less than 10 years and 'long term' is more than 10 years.

BASELINE CONDITIONS

The current waste production baseline for the operation of MHP's existing facilities at Vinnystia is given in the chapter above. The sites to be constructed for Phase 2 are either extensions to those existing facilities located within their site boundaries, or 'greenfield' developments on arable agricultural land and/or woodland (see Table 6.21 above).

The baseline waste impacts for these two types of site are summarised as follows:

1) Wastes from construction sites that are extensions to existing facilities (Hatchery, Fodder Plant, WWTP, Slaughter House and Rendering Plant)

The baseline waste production at these sites is negligible as they are currently levelled, grassed areas alongside the existing facilities on ground that had previously been cleared within the site boundary. There are no facilities operating and producing waste on the areas to be developed, neither are there structures or sealed areas that require demolition.



Figure 6.7 Baseline site conditions, Hatchery extension (left) and construction site WWTP extension (right)

2) 'Green field' sites on arable fields and woodland (nine Brigades and associated access roads)

The baseline waste production from these sites is also negligible as they are currently arable fields, woodland or grassland with vegetation waste being the only likely potential source.



Figure 6.8 Typical baseline condition for phase 2 brigades and access roads

ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS WASTES FROM PHASE 2 CONSTRUCTION WORKS

For the assessment of the waste impacts of the proposed Phase 2 construction works, the activities have been divided into three consecutive stages;

- 1) Site preparation;

- 2) Earthworks; and
- 3) Road and Brigade buildings` construction.

Generation of Waste from site preparation

Site preparation involves the cutting and clearing of trees, crops or scrub and grassland on the `greenfield sites` i.e brigades and access roads. There are no significant site preparation works required for the extensions to the existing facilities, (Hatchery, Slaughterhouse, WWTP and rendering plant. Wastes produced from the `greenfield` construction sites at this stage would consist of quantities of organic biomass (leaves, cuttings, brushwood or logs). There is also some localised, isolated fly tipping on the side of existing roads outside of the towns and villages. The organic wastes are stockpiled at the sites perimeter and, for the logs, used for firewood or recovered by the municipality who own and manage many of the woodland strips and areas. Brushwood and leaves are collected and burnt in situ.



Figure 6.9 Clearing of vegetation and tress for the access road construction

Effects - Given the predominance of arable farming and rural woodland in the area, the effect of the waste production during site preparation for Phase 2 is likely to be minor.

Mitigation - The overall amounts of vegetation cleared can be mitigated by routing access roads along existing tracks and adjusting the brigade sites` footprint to avoid wooded areas as far as possible. Fly tipping deposits can be excavated and sent to the local Ladyzhyn municipal landfill.

Residual Effects - There are negligible residual effects from the wastes produced during site preparation.

Generation of Waste from Excavation

The brigade sites and access roads have been levelled by bulldozer and grader. Given the overall flat topography of the site, cut and fill volumes are at a minimum and additional imported material is not usually needed. Top soil is recovered and stockpiled in berms along the site perimeter in accordance with Ukrainian legislative requirements, to preserve topsoil for site restoration. The average surface area of a brigade site is 30 hectares, with the topsoil levels up to 1m deep. This can result in significant stockpile volumes of up to 300,000m³ along the brigade site`s perimeters.



Figure 6.10 Excavation of 30 ha brigade site and topsoil stockpile berm

Other wastes are produced from the onsite temporary vehicle maintenance and refuelling areas for the site vehicles. These consist of limited quantities of waste engine and gearbox oils, used drums, oily rags and oil or air filters.



Figure 6.11 Typical vehicles on site

Effects - The topsoil excavation and stockpiling have a moderate effect in terms of visual impact, modification of the existing topography, surface water drainage flows and access. The temporary vehicle maintenance areas have a minor effect from limited volumes of spills of oils and fuels to soil.

Mitigation - Topsoil berms are profiled and compacted to minimise loss from soil erosion and stockpile heights kept to a minimum by using elongated profiles in parallel with the site perimeter. It can be expected that a significant volume of excavated material would be generated during site works and that a large proportion of this would be reused on-site for infill and/or landscaping, with any remainder being disposed of appropriately in accordance with regulatory requirements.

Temporary workshop and refuelling areas will use appropriate retention and collect wastes and used containers for disposal to the local municipal landfill. Waste engine and gearbox oils will be recovered by the supplier for recycling.

Residual Effects - The topsoil berms will have a direct, localised, long term, moderate effect with the introduction of a visual barrier and will impede unrestricted access across previously unencumbered areas. With appropriate handling and storage of vehicle refuelling and maintenance wastes during excavation, subsequent residual effects will be minor to negligible.

Generation of Waste from access road and brigade building construction.

The access roads and brigade building are both constructed, including the roof, from prefabricated, reinforced concrete slabs manufactured in MHP's own dedicated concrete batch plant located outside the Vinnytsia Region. Along with the concrete conduit pipes, they are transported to site and installed using cranes and bulldozers. The access road deck is brought up to grade with imported hardcore before bitumen seals are applied by paintbrush in the gaps between the slabs.



Figure 6.12 Concrete slab road deck after installation (left) and Brigade rearing sheds constructed from same pre-fabricated concrete slabs (right)

Effects - Given that the majority of the construction materials, the concrete slabs, are manufactured offsite and are simply assembled or laid down according a common building design for all the brigades and access roads, the limited wastes produced during the construction stage have a minor effect The temporary vehicle maintenance areas have a minor effect from limited volumes of spills of oils and fuels to soil.

Based on an estimated average of 5 tonnes of construction waste per broiler shed the average tonnage of waste per brigade construction site (38 sheds) is estimated to be **190 tonnes per site** for construction of the access roads, prefabricated concrete sheds, and fitting out with rearing equipment and ventilation.

Mitigation - The ordering of concrete slabs is optimised to ensure there are no significant amounts of spare slabs left after construction. Wastes such as packaging, metal and wood offcuts and metal scrap can be sent for disposal or recycling at the Ladyzhyn municipal landfill. Rubble and concrete wastes are reused as fill on site. Temporary workshop and refuelling areas will use appropriate retention and collect wastes and used containers for disposal to the local municipal landfill. Waste engine and gearbox oils will be recovered by the supplier for recycling.

Adherence to a waste hierarchy by reusing and/or recycling waste materials will further reduce the magnitude of waste sent for disposal.

Residual Effects - It is considered that the Phase 2 access roads and building construction could be expected to have a noticeable effect on the quantity of construction waste generated. Given the potential quantity of construction waste production, the sensitivity of the local waste management infrastructure i.e. the local municipal landfill at Ladyzhyn, is anticipated to be minor to medium and the magnitude of change, prior to mitigation is medium. Therefore, there is likely to be a direct, permanent, medium-term effect on local waste management infrastructure of moderate negative significance prior to the implementation of mitigation measures.

Generation of construction waste from extension to Hatchery, WWTP slaughterhouse and rendering plant.

For the extensions to the Hatchery, WWTP, Fodder plant, Slaughter house and rendering plant an estimate of the construction waste volumes has been made taking into account the estimates

from the UK BRE benchmark and adjusted for the type of building and process equipment to be installed.

Effects – Given that the majority of the construction materials and process equipment are prefabricated and then brought to the site for assembly and installation. The limited wastes produced during the construction stage have a minor effect.

Based on an estimated average of **10 tonnes of construction waste per 1000m²** of facility the estimated construction waste volumes from the construction and fitting out of the Phase 2 facility extensions are described in Table 6.22.

Table 6.22 Estimated construction waste volumes per site

NEW BUILD FACILITIES PHASE 2 (ESTIMATED FLOOR AREA)	Estimated construction waste volumes per site (tonnes)
Hatchery extension, (2500 m ²)	25 tonnes
Waste water treatment plant (1500m ²)	15 tonnes
Fodder Plant additional (2000m ²)	20 tonnes
Slaughter house and rendering plant (1500m ²)	15 tonnes

Mitigation -. Wastes such as packaging, metal and wood offcuts and metal scrap can be sent for disposal or recycling at the Ladyzhyn municipal landfill. Rubble and concrete wastes are reused as fill on site. Temporary workshop and refuelling areas will use appropriate retention and collect wastes and used containers for disposal to the local municipal landfill. Waste engine and gearbox oils will be recovered by the supplier for recycling.

Adherence to a waste hierarchy by reusing and/or recycling waste materials will further reduce the magnitude of waste sent for disposal.

Residual Effects - It is considered that the Phase 2 facilities construction could be expected to have a noticeable effect on the quantity of construction waste generated. Given the potential quantity of construction waste production, the sensitivity of the local waste management infrastructure i.e. the local municipal landfill at Ladyzhyn, is anticipated to be minor to medium and the magnitude of change, prior to mitigation is medium. Therefore, there is likely to be a direct, permanent, medium-term effect on local waste management infrastructure of moderate negative significance prior to the implementation of mitigation measures.

General mitigation measures all construction sites

It is considered that, if the majority of the construction waste is appropriately reused on-site or recycled off-site, the Phase 2 will still have a noticeable effect on the volume of construction waste generated. The sensitivity of waste management infrastructure is considered medium for the local Ladyzhyn municipal landfill and the magnitude of change, following mitigation is low.

Therefore, there is likely to be direct, permanent and long-term effect on off-site municipal waste disposal facilities and of minor negative significance following the implementation of appropriate waste management and mitigation measures as given in the IFC guidelines.

Those practices and mitigation measures that will be adopted would include:

- Temporary offices retaining all details relating to health and safety and waste management monitoring and reporting details;
- Storage areas for raw materials and assembly areas for construction components would be located away from sensitive receptors;
- Colour-coded skips/containers would be provided for segregated waste streams for reuse and recycling;
- Dedicated skips would be provided for any waste that requires off-site disposal;
- Hazardous waste materials would be stored in secure bunded compounds in appropriate containers which are clearly labelled to identify their hazardous properties and are accompanied by the appropriate assessment documentation; and
- Any fuels, oils and chemicals would be stored in appropriate containers within secure bunded compounds in accordance with good site practice and regulatory guidelines and located away from sensitive receptors.
- The provision of effective and secure storage areas for raw materials is important to ensure that potential loss of material from damage, vandalism or theft is avoided. These measures would be supported by:
 - Ensuring deliveries to the site are, as far as reasonably practicable, on a 'just in time' basis;
 - Providing on-site security; and
 - Installing temporary security fencing.
- Where possible, haul roads and construction access roads would be in the same locations as final roads and their construction (or at least their construction materials) would be incorporated into the final road construction. This would avoid the need to dispose of construction materials used for these temporary routes and then replaced by new material, which would reduce the need for landfill and for heavy goods vehicle trips on the surrounding road network.

To ensure that the system of waste minimisation, reuse and recycling is effective, consideration will be given to the setting of on-site waste targets by site and a suitable programme of monitoring at regular intervals to focus upon:

- Quantifying raw material wastage;
- Quantifying the generation of each waste stream;
- Any improvements in current working practices;
- Methods by which the waste streams are being handled and stored; and

- The available waste disposal routes used, e.g. landfill, waste transfer stations.

As part of the encouragement of on-site best practice, there will also be a need to ensure that suppliers of raw materials are committed to reducing surplus packaging associated with the supply of any raw materials. This includes the reduction of plastics (i.e. shrink wrap and bubble wrap), cardboard and wooden pallets. This may involve improved procurement and consultation with selected suppliers regarding commitments to waste minimisation, recycling and the emphasis on continual improvement in environmental performance.

The most important mitigation measures to minimise the potential waste of on-site materials during the construction of the Phase 2 facilities, brigades and access roads are provided in **Section 7**.

6.7 POTENTIAL LANDSCAPE AND VISUAL IMPACTS

The assessment of landscape and visual impacts is broadly based on the UK Guidelines for Landscape and Visual Impact Assessment (GLVIA)⁴⁷ and professional judgement.

CONSTRUCTION

Visual impacts during the construction period will result from on-site machinery, hoardings, scaffolding, ground formation works, construction works for foundations and buildings, traffic and lighting on site.

Given the flat character of the terrain and the long range views, the Proposed Development could have short term direct effects on the local landscape and views from Lukashivka, Kleban and Mykhailivka. However, given the relatively long distances between the proposed development and the villages, it is expected that the sparse woodland areas will screen most of the views from the potential receptors identified. As such, the potential visual effects of the construction of the Project are considered to be **Negligible**.

OPERATION

Visual impacts during the operation phase will mainly result from on-site buildings and farm facilities, traffic and lighting on site. The proposed farm will comprise seven new structures and four extensions of existing structures.

Given the flat character of the terrain and the long range views, the Proposed Development could have long term direct effects on the local landscape and views from Lukashivka, Kleban and Mykhailivka. However, given the relatively long distances between the proposed development and the villages, it is expected that the sparse woodland areas will screen most of the views from the potential receptors identified. As such, the potential visual effects of the construction of the Project are considered to be **Minor Negative**.

DECOMMISSIONING

The environmental impacts associated with the closure of the Proposed Site will be similar to the impacts that occur during the construction of the Project. Accordingly, works during the

⁴⁷ Landscape Institute and Institute of Environmental Management & Assessment, (2013). UK Guidelines for Landscape and Visual Impact Assessment. 3rd Edition, London: Routledge.

decommissioning phase would result in **negligible** impact on local landscape and visual amenity. A summary of proposed mitigation measures related to closure of the Proposed Site are described in Chapter 10.

MITIGATION

All practicable measures should be implemented to avoid or effectively control potentially adverse construction and operation effects on existing landscape character and visual receptors.

Visual impacts of the poultry farm facilities during operation phase can be reduced by painting the buildings in a colour that is sympathetic with the surrounding environment.

Mitigation planting of local tree species on site is planned to reduce the landscape and visual impacts of the farm.

6.8 GEOLOGY AND SOIL

CONSTRUCTION

Land spreading would only take place after the poultry farm is operational.

OPERATION AND MAINTENANCE

The spreading period that MHP usually adheres to lasts approximately 60 days a year, from the moment of the harvest season (August-September) to when the snow falls (November). In order to undertake spreading operations MHP will have two spreaders with a capacity of 20 tons per hour, based on one tractor and forklift carrying the load of compost in the spreader to the edge of the field.

No procedures with regards to land spreading have been developed. It is important for this to be the case as the problems that could occur from over spreading are:

- Over nutrition of the land with the excess nitrogen and phosphate entering groundwater or surface water;
- Spreading too close to the edge of rivers near to the wetted area or after periods of heavy rainfall which means that the manure could be easily washed off;
- Not incorporating into the ground quick enough allowing odour to be a nuisance to local residents; and
- Spreading at the wrong time for crop growth which would not utilise the nutrients spread.

This being the case, the operation of the poultry farm is anticipated to have a **Negative Moderate** impact from land spreading if mitigation measures are not developed.

The ESAP has included an action to develop procedures to ensure that the appropriate measures below are considered before land spreading.

The principle of BAT is based on doing all the following four actions:

1) Applying nutritional measures

BAT is to minimise the emissions from manure to soil and groundwater by balancing the amount of manure with the foreseeable requirements of the crop.

BAT is to take into account the characteristics of the land concerned when applying manure, in particular soil conditions, soil type and slope, climatic conditions, rainfall and irrigation, land use and agricultural practices, including crop rotation systems.

Not applying manure to land when the field is: water-saturated, flooded, frozen, snow-covered

Not applying manure to steeply sloping fields

Not applying manure adjacent to any water course

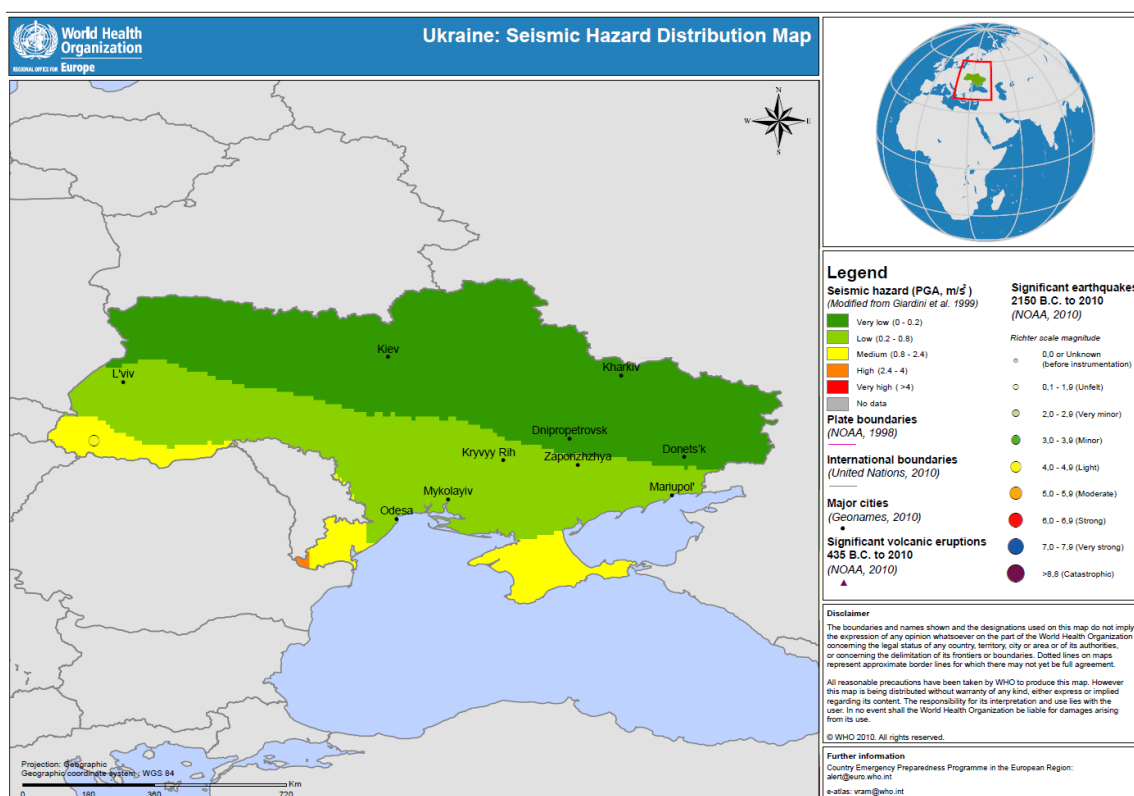
Spreading manure as close as possible before maximum crop growth and nutrient uptake occur.

- 2) Balancing the manure that is going to be spread with the available land and crop requirements and, if applied, with other fertilisers.
- 3) Managing land spreading of manure to minimise odour problems.
 - Spreading during the day when people are less likely to be at home and avoiding weekends and public holidays
 - Paying particular attention to wind direction in relation to neighbouring houses
 - Manure can be treated to minimise odour emissions which can then allow more flexibility for identifying suitable sites and weather conditions for land applications.
- 4) Only using the techniques that are BAT for the spreading of manure on land.

If procedures are implemented to manage the issues above then this activity will have a **Negligible** impact.

- Not incorporating into the ground quick enough allowing odour to be a nuisance to local residents; and
- Managing land spreading of manure to minimise odour problems.
 - Spreading during the day when people are less likely to be at home and avoiding weekends and public holidays
 - Paying particular attention to wind direction in relation to neighbouring houses
 - Manure can be treated to minimise odour emissions which can then allow more flexibility for identifying suitable sites and weather conditions for land applications.

Figure 6.13 WHO Seismic Hazard Distribution Map for Ukraine



The impact on topsoil resulting from clearance during construction and reinstatement during operation and decommissioning has the potential to cause soil erosion and soil degradation. These potential impacts are considered **Negative** and considered to be of **Minor** significance during construction, operation and decommissioning prior to mitigation. A summary of proposed mitigation measures related to geology and soil are described in Chapter 7.

6.9 HYDROGEOLOGY, HYDROLOGY AND WATER QUALITY

This section discusses the significance of potential hydrogeological, hydrological and water quality impacts associated with the Project. There are four potentially significant impact areas associated with the construction and operation of the new poultry farm:

- Contamination of ground and surface water resources by wastewater from the process and leachate from the composting area. Waste water from the processing plants has high BOD and COD values due to the high organic content, in addition to potentially elevated concentrations of nitrogen, phosphorous and pathogens from the poultry, and chlorine and disinfectant from the cleaning process. If not treated properly these wastewater constituents have the potential to cause reductions in dissolved oxygen concentrations in surface waters, leading to impacts on fish activity, and eutrophication from increase nitrogen and phosphorous concentrations leading to excessive algal growth.;
- In addition pesticides used to control pests and predators around the plant facilities have the potential to enter groundwater and surface water if not properly managed.
- Landspreading of the manure on agricultural land; Poultry related manure has the potential to introduce nutrients, pathogens and metals into the water environment. Elements present in the manure may include nitrogen, phosphorous, heavy metals (typically As, Cu, Zn and other trace elements depending on the feedstuff used), antimicrobials included as feed additives and pathogens (e.g. *Cryptosporidium*). High levels of nitrogen relating to

manure spreading can leach to the groundwater table and then enter surface waters as baseflow, leading to eutrophication. Phosphorous buildup in soils can enter the surface water system via soil erosion and runoff, resulting in plant overgrowth, shifts in pH and discolouration. Decomposition of increased plant material leads to oxygen depletion with resulting impacts on water use and fish populations.

- Changes to surface water regime; and
- Changes to groundwater regime; - Improper disposal of poultry carcasses can lead to water quality problems if not properly managed.

Wastewater generation and disposal.

- Slaughter houses use large volumes of water for cleaning and cooling, with estimated water use per tonne ranging from 6-30 m³. The EIA for the Slaughter House states that the facility will abstract 11,400 m³ / day from a water intake, located on the right bank of the Ladyzhin reservoir between the villages of Mankovka and Zaozerne, in the Tulchyn rayon/area of the Vynnytsia Province. The EIA for the Fodder Plant states that it will require 1253 m³/d of water and that this water will be derived from the South Bug River.
- The Vinnitsiya Farm project has a permitted abstraction volume of 5,997,859 m³/yr, with water being drawn from the Ladyzhin Reservoir, The projected water requirement associated with the expansion is shown in Table X. MHP confirmed that they are in the process of applying for a new water abstraction permit to address the additional 26,000m³ of water required for fully operational facilities (Phase 1 and 2).

Table 6.23 Water requirement associated with Phases 1 and 2 of the development

PROJECT PHASE	PROJECT COMPONENTS	WATER CONSUMPTION, M3/YEAR
Phase 1	Slaughter house	1,806,890 based on total use of 11400 m ³ /d given in extension OVNS, less number below provided separately for Phase 2 407,195 given in 2010 OVNS
	Fodder Plant	121,881 given in 2011 OVNS
	WWTP	157,766 in 2010 OVNS
	Hatchery	915,060 based on recent value, 1586404 based on values in original OVNS's for brigades 1-5 and 13
	12 "old" brigades	
Subtotal		3,408,792
Phase 2	Slaughter house, extension	1,852,510 Same as above provided for combined Phase 1 and 2
	Fodder Plant, extension	Same as above provided for combined Phase 1 and 2
	WWTP, extension	Same as above provided for combined Phase 1 and 2
	Hatchery, extension	Same as above provided for combined Phase 1 and 2
	10 "new" brigades	762,550
Subtotal		2,615,060
TOTAL AGGREGATED CONSUMPTION		6,023,852

- Water use on the project facilities is monitored via the site SCADA system. In 2015 the annual water usage for the whole Vinnitsiya Farm complex was reported as 3,785,600 m³ (10370 m³/d) divided into 1,965,500 m³ for the process and 1,820,100m³ for drinking and washing. Monthly water use varied between 12170 m³/d and 8940 m³/d in September and November respectively. The 2015 abstraction volume was therefore equivalent to 60% of the permitted volume. The water requirement for the project when the expansion is complete with all 10 brigades operational will be equivalent to 0.5% of the average flow through the Ladyzhin reservoir (38.5 m³/s), suggesting that there is unlikely to be an issue relating to sustainable water yield. The potential impact related to seasonal changes in flow, and other abstractions from the reservoir, could not be assessed based on the data currently available to the study.

CONTAMINATION OF GROUND AND SURFACE WATER RESOURCES FROM LEACHATE EMISSIONS

CONSTRUCTION

Pollution of surface water and groundwater resources during construction is usually related to improper storage of construction materials, construction waste and excavated materials, spillage of fuel, oil and other hazardous substances during construction activities. In addition an increased sediment load could enter the surface water drainage network in runoff from construction areas. The need for sediment control settling ponds will be assessed and implemented as required as part of water management during the construction phase. The potential impact would range from a visual derogation of the water through to sterilisation of available potable water resource depending on the nature of the contaminant, however the appropriate spillage controls and procedures will mitigate the potential for impact.

OPERATION

During poultry farm operations pollution of groundwater resources may be caused by uncontrolled discharge of run-off or leachate and leakage from blocked drainage systems at the composting process area or wastewater treatment plant.

Wastes from the production when growing broiler (used litter, manure, sewage sludge) and waste from the hatchery are routed to the composting pad with a view to producing organic fertilizers for use in agriculture. The choice of technology for the composting process is by a simple aerobic process without adding enzymes.

Potentially polluting substances impacting land and surface water during construction, operation and decommissioning is considered to be of **negligible** significance after mitigation. A summary of proposed mitigation measures related to water are described in Chapter 7.

DECOMMISSIONING

The potential impacts and mitigation would be the same as for construction. Decommissioning will mean that land spreading operations cease and there will be no further impact from this activity.

ALTERATION OF SURFACE WATER REGIME

No major changes in drainage pattern will be caused during construction or operation of the poultry farm. Some of the land taken will be from irrigation fields which would have been used to irrigate the land that will now form part of the poultry farm and no longer used for agricultural use.

However the volume of surface runoff will increase due to the larger area of hard standing that will result from construction of the brigades.

CONSTRUCTION

According to Project proposals, alterations in the local drainage systems during establishment of the landfill will be related to construction of surface water run-off management system and leachate management system. The run-off collection system from the poultry farm is designed to keep clean surface water run-off separate from the contaminated run-off, leachate and wastewater.

During construction, the water will mostly be used for dust suppression during soil moving works and top soil storage; when clearing vegetation and grading; for unpaved road traffic; for making concrete for foundations; and, for consumption by construction workers.

Construction activities for the proposed new poultry farm development may have a **negligible** impact on hydrology and water quality of the local area as the construction waste will not be leached into groundwater, and runoff from construction areas will be captured and channelled through ponds /settling areas to ensure that suspended sediment is removed prior to the runoff reaching the surface water drainage network.

The area is designated as acceptable for location of the poultry farm components across the project region, as it is relatively flat, however minor changes in grade could alter the direction of surface water run-off. Grading associated with earthworks could cause run-off to be directed away from the site, while rain falling directly on the poultry farm area will flow under gravity to site drainage gullies and may discharge into a surface water feature potentially affect the water quality. Overall, the impacts on surface water resources are related to the project footprint (e.g. land disturbance, erosion, changes in run-off patterns and hydrological changes, etc.).

Site specific drainage control is required to ensure that surface water run-off is properly managed and the potential for flooding is alleviated. Implementation of these mitigation measures will ensure that an impact of **negligible** is achieved.

OPERATION AND MAINTENANCE

The majority of water used during operation and maintenance of the new poultry farm will comprise poultry farm cleaning, use in the slaughterhouse of hot water and steam in the rendering facility as well as minor usage such as washing vehicles wheels, sprinkling the earth access roads and in the administration building. Wastewater will be treated in the wastewater treatment plant as described below before discharge. Surface water run-off within the site will be managed and allowed to naturally discharge via soakaway. This being the case, the operation of the poultry farm is anticipated to have a **negligible** impact on hydrology flooding.

DECOMMISSIONING

The impact of the closure of the poultry farm and associated infrastructure on hydrology, water quality and flooding potential in the area is anticipated to be **negligible**.

WASTEWATER GENERATION AND DISPOSAL

CONSTRUCTION

During construction, water will be used at the construction site for drinking, cooking and washing in addition to construction activities such as dust suppression, wheel wash facility, etc. The facilities for the workers will be provided with a water supply and a sewerage collection system.

The tank will be emptied appropriately and transported to a centralised wastewater collection facility in accordance with prior agreement with the local authorities.

Improper operation of the sewerage system and wastewater collection tank may have **minor** impacts prior to mitigation on the site in the event of pollution. Mitigation measures will be adopted to minimise the negative impacts as described in Chapter 0 from wastewater generation and discharges from the site.

OPERATION

Water will be used during operation of the new poultry farm for operations such as drinking for the poultry, cleaning of the buildings and equipment, for canteens and toilets, vehicle washing and steam generation for use in the rendering process. Grease traps will be installed at the discharge points where grease can form including car washes.

Wastewater generation from the process is subject to mechanical cleaning and then biological treatment using dissolved air flotation equipment.

Mechanical cleaning is separated into three wastewater flows:

- Domestic waste water, pass through the screens and the filtrate are routed to biological treatment facilities. Selected screened material such as solid household waste and disposed of in landfills.
- Wastewater from the arrival area is weighed, passed through the screen and the filtrate enters the first pit. Screened materials at this stage are solid wastes which are exported by truck to the composting process.
- Runoff from screening effluent from the first pit is added to the rotating drum sieve from the inside. Filtered waste is sent for recycling.

Physico-chemical cleaning methods at the flotation stage are by coagulation. As a result of physico-chemical treatment there are three waste streams:

- treated for construction of sewage water is sent into the buffer capacity before biological treatment facilities in number m³/day.
- organic material is sent for recycling in the shop on manufacture of meat and bone meal.
- sludge removed by mechanical strainer transported by truck to the composting process.

Table 6.24 Effluent Parameters

PARAMETER	INCOMING EFFLUENT	TREATED EFFLUENT	BEST AVAILABE TECHNIQUES ¹	BEST AVAILABE TECHNIQUES ²
COD	8000 mg/l	up to 80 mg/l	25-125 mg/l	<30-100 mg/l
BOD	4000-5000 mg/l	to 10 mg/l	10-40 mg/l	-
Total nitrogen	250 mg/l	Ammonia nitrogen-to 0.6 mg/l	15-40 mg/l	5-25 mg/l
Suspended solids	2000-3000 mg/l	to 10 mg/l	5-60 mg/l	5-35 mg/l
Total phosphates	45-50 mg/l	to 4 mg/l	2-5 mg/l	0.5-3.0 mg/l
Chlorides	< 300 mg/l	to 200 mg/l	-	-
Fats and oils	800-1000 mg/l	-	2.6-15 mg/l	-

PARAMETER	INCOMING EFFLUENT	TREATED EFFLUENT	BEST AVAILABE TECHNIQUES ¹	BEST AVAILABE TECHNIQUES ²
pH	6-8	-	-	-
Temperature	15 – 25°C	-	-	-
Nitrates	-	to 15 mg/l	-	See total nitrogen
Nitrites	-	to 0.2 mg/l	-	See total nitrogen
Sulphates	-	to 80 mg/l	-	-

Note 1: Integrated Pollution Prevention and Control Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products Industries, May 2005

Note 2: Best Available Techniques (BAT) Reference Document for Common Waste water and Waste Gas Treatment/Management Systems in the Chemical Sector Final draft July 2014

Table 6.24 shows that the effluent will be treated in line with best available techniques standards for slaughterhouses for COD, BOD, total nitrogen, suspended solids and total phosphorous. There is no estimation with which to compare fats oils and grease and the nitrite, nitrate and ammoniacal nitrogen values of the treated effluent is not directly comparable to the best available technique associated emission levels (BAT-AELs) detailed in Table 6.24 and **Appendix C**

BAT Reference Document for Common Waste water and Waste Gas Treatment/Management Systems in the Chemical Sector states that the (BAT-AELs) are for direct discharges to a receiving water body whilst Integrated Pollution Prevention and Control Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products Industries adds that the emission levels given are generally considered to be appropriate for protecting the water environment.

Wastewater generated and treated via the WWTP should be within the BAT emission levels for slaughterhouses. The main exception to this are fats oils and grease where there is no defined treatment efficiency although the mechanical treatment at the front end of the treatment process should be effective in reducing the incoming levels significantly and nitrogen where the results are not directly comparable to the total nitrogen limit.

It is therefore considered that discharge of the wastewater water treatment can have a **negligible** impact prior to mitigation. Mitigation measures described in Chapter 0 have been recommended to minimise the negative impacts from the poultry farm and after mitigation are likely to be **negligible**.

The following waste water treatment facilities will be operating at the site:

- Biological Treatment Plant: This is a biological treatment plant which will treat production and domestic related waste water from the site prior to discharge to the Pivdennyi Bug River. The treatment capacity is stated as:
 - 10200 m³/d from the Slaughter House
 - 450 m³/d from the Food Production Complex
 - 350 m³/d from the Incubation Station

The treatment plant comprises mechanical and biological treatment prior to treatment with a self-flushing sand filter. Water passes through a UV system prior to discharge at the No.1 outlet into the Pivdennyi Bug River. A dilution loading calculation has been completed as part of the national EIA to confirm that discharge concentrations are acceptable in terms of the chemical loading to the receiving river. The discharge concentrations are specified as:

PARAMETER	DISCHARGE CONCENTRATION (MG/L)
Total suspended solids	12.2
Ammoniacal Nitrogen (species not)	0.34

PARAMETER	DISCHARGE CONCENTRATION (MG/L)
stated)	
Nitrate	2.01
Nitrate	0.07
Phosphate	0.25
pH	7
Temperature (°C)	15-25

Four groundwater monitoring wells will be installed around the water treatment plant to ensure that groundwater contamination related to leakage from the plant does not occur.

- Fodder Plant WWTP:** This is a flotation treatment system to treat waste water from the oil press shop generated by cleaning of tanks and tankers. Emulsified fats are initially removed by a skimmer. The water is then sent to a flotation system where air bubbles are used to coalesce with pollutants creating floating material that is removed. In addition heavier suspended substances settle out in the flotation unit. The design specification states that 98% of suspended material and 40-50% of BOD will be removed. The treatment capacity is stated as 340 m³/d. The resulting treated water is sent to the water treatment plant at the Biological Treatment Plant for further treatment prior to discharge.#
- Surface water runoff treatment:** Surface water runoff resulting from rainfall or snow melt may become contaminated through the entrainment and/or dissolution of pollutants which have accumulated on hardstanding associated with the facilities. The EIA for the Fodder Plant has determined an associated runoff area of 37ha which will generate an annual runoff volume of 92798m³. A storm water drainage network has been installed, with runoff from buildings and hardstanding being channelled to concrete lined storage ponds. The ponds are emptied by truck with the water being taken for treatment prior to discharge. Sludge will be removed mechanically from these settlement ponds and disposed of at an industrial waste landfill. An oil-water separator will also be installed to capture hydrocarbons washed from the hard standing. The design residual concentration for the system is 0.3 mg/l of Total Petroleum Hydrocarbon. The oil-water separator will be vacuum cleaned biannually. Treated surface water runoff will be used in part for irrigation at the plant, while the remained water will be discharged into the surface water drainage network. The location of the discharge is specified as at 590m on the land of the Olyanitsk council.

The discharge criteria for water leaving the water treatment system are specified as:

PARAMETER	CONCENTRATION IN INFLUENT FLOW (MG/L)	DISCHARGE CONCENTRATION (MG/L)
Total Suspended Solids	500	80
Total Petroleum Hydrocarbons	30	0.3
COD	100	-
BOD	20	-
Total Dissolved Solids	200	10

DECOMMISSIONING

The impact of the closure and decommissioning of the poultry farm and infrastructure on waste water generation and disposal is anticipated to be similar to those related to the construction phase described above. Scheduling of demolition should ensure that hardstanding and bunding remains in place while decommissioning/demolition is being carried out of facilities that could result in the release of potential pollutants. The surface water management system and treatment

should remain in place to ensure that increased sediment load and/or potential pollutants released during demolition of plant facilities are captured and treated prior to their ingress into the groundwater or surface water systems.

6.10 CULTURAL HERITAGE

As mentioned in the baseline, there are no internationally, nationally or locally designated historical and cultural monuments in the project area. The cultural monument identified to be the closest to the project area was the Lukhashivka Jewish Cemetery in Lukashivka, approximately 1.5km to the west of proposed brigade 14. Consequently, the project is not expected to have an impact on the cultural resources identified, since these are located considerable distance away from the project area. Similarly, potential impacts on the setting of these cultural resources are also unlikely as none of them is expected to be visible from the site. However, direct impacts to unknown cultural resources could occur from construction activities and indirect impacts could be caused by increased accessibility to the area. Mitigation measures are therefore recommended to avoid any potential impact.

MITIGATION

While no cultural resources are expected to be impacted by the project, the development of a 'chance to find' procedure to manage cultural heritage finds during the construction period is advised as part of the ESAP.

6.11 COMMUNITY HEALTH AND SAFETY

The proposed Phase 2 expansion of the MHP Poultry production and processing operation at Ladyzhyn in the Vinnystia region have been assessed for compliance with IFC Performance standard PS4 on Community Health, Safety and Security. The results of the assessment are given in the following table along with a summary of the overall progress and planning by MHP to integrate this Performance Standard and best practice into the Phase 2 development.

MHP have been approved for exports to the EU and have been independently assessed as aligned with EU Animal Welfare and Biosecurity Standards.

Further details on MHPs biosecurity and animal welfare measures are given in **Appendix D**.

Table 6.25 Assessment of compliance with IFC PS4 Community Health, Safety and Security.

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
IFC PS4 Requirements summary		
Community Health and Safety	<u>Community Health and Safety Risk areas relevant to the Vinnytsia Facility have been identified within this ESIA, and also within previous Lenders Environment and Social Evaluations. Further main features of the MHP Operations which are</u>	Yes
The client will evaluate the risks and impacts to the health and safety of the		

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>Affected Communities during the project life-cycle and will establish preventive and control measures consistent with good international industry practice (GIIP),¹ such as in the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines) or other internationally recognized sources.</p>	<p><u>relevant to aspects of Community and Health and Safety considerations are also discussed below:</u></p> <p><u>Management Systems</u></p> <p>MHP are certified to the following standards:</p> <p>ISO9001 Quality Management Systems</p> <p>ISO22000 Food Safety Management</p> <p>The company is also working towards global gap which is a Global Food Safety Initiative. The Poultry Standard covers: Stock Sourcing, Breeding (Parent) Flock, Hatchery, Feed and Water, Housed Poultry, Outdoor Poultry, Mechanical Equipment, Poultry Health, Hygiene and Pest Control, Handling, Residue Monitoring, Emergency Procedures, Inspection, Workers, Humane Slaughter of Casualty Poultry, Dispatch and Transportation.</p> <p>Work is being undertaken on environmental risk and impacts in order to meet the requirements of the British Retail Consortium / Global Gap and this work should be complete by the end of 2016. This includes coverage of good manufacturing and management practices, but also arrangements for good biosecurity and animal welfare.</p> <p>MHP is also developing and implementing an EMS aligned to ISO 14001 and OHSAS 18001 (soon to be ISO45001 when agreed).</p> <p>These systems will include provision for an audit program for legal compliance, identification of risks and impacts, corrective actions and continual improvement to be undertaken by an external consulting company to identify gaps and opportunities for Improvement.</p>	

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>Biosecurity,</p> <p>Establish sound biosecurity protocols for the entire poultry operation that control animals, feed, equipment, and personnel, entering the facility.</p>	<p>MHP has implemented management measures to minimise potential for the spread of poultry pathogens. In particular, MHP are certified to ISO9001 quality management systems and ISO22000 food safety management and are working towards GLOBALG.A.P.⁴⁸</p> <p>The application of these systems throughout manufacturing processes, storage, handling and transportation are anticipated to effectively prevent the transmission of diseases related to poultry handling to the community, as well as ensuring product safety</p> <p>See Appendix D</p>	<p>Yes</p>
<p>Infrastructure and Equipment Design and Safety.</p> <p>The client will design, construct, operate, and decommission the structural elements or components of the project in accordance with GIIP, taking into consideration safety risks to third parties or Affected Communities.</p> <p>The project's direct impacts on priority ecosystem services may result in adverse health and safety risks and impacts to Affected Communities. For example, land use changes or the loss of natural buffer areas such as wetlands, mangroves, and upland forests that mitigate the effects of natural hazards such as flooding, landslides, and fire, may result in increased vulnerability and community safety-related risks and impacts.</p>	<p>Buffer zones and sanitary protection zones.</p> <p>In accordance with Ukrainian legislation and best practice a sanitary protection zone (SPZ) is present around all sites (1.2km for rearing brigades). The rearing brigades and slaughterhouse complex including the Phase 2 facilities are all located on green field sites away from residential areas.</p> <p>Potential impacts on other affected community aspects, such as ecosystem services, safe water access and biodiversity protection, are discussed in detail in other chapters of this ESIA.</p> <p>Emergency management related to ammonia leakage risks from the Chiller Units is covered in the air quality section, Section 5.4.-</p>	<p>Yes</p>

⁴⁸ GLOBALG.A.P. (Good Agricultural Practice) is a global organisation aiming to promote a safe and sustainable agriculture worldwide. They set voluntary standards for the certification of agricultural products around the globe.

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>Infrastructure and Equipment Design and Safety.</p> <p>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.</p>	<p>Odour from manure spreading</p> <p>Prior to spreading on a field, the weather conditions are assessed. A meteorological station is in place to monitor weather conditions such as temperature and rainfall and humidity. It was reported that spreading does not occur during times of rainfall or when rainfall is expected and also when the ground is frozen. .</p> <p>It was reported that manure spreading takes place midweek, during working hours and not during the weekends. The local communities have the opportunity to notify MHP Zernoproduct (arable agricultural operations of MHP in the Vinnytsia Region) about significant events such as weddings to request that manure spreading does not take place on that day.</p> <p>When designing and locating the manure store, the prevailing wind direction was considered in order to minimise the potential impact caused by odour. The distance to the nearest residential area is approximately 3km.</p> <p>When designing and locating the manure store, it was reported that the prevailing wind direction was considered in order to minimise the potential impact caused by odour.</p> <p>.</p> <p>Management of the manure spreading techniques, including a requirement for rapid incorporation into the soils (within 4 hours) are the main techniques for reducing odour issues and to prevent any health related impacts.</p> <p>Stockpiles of manure are currently not covered nor are they compacted.</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>Infrastructure and Equipment Design and Safety</p> <p>For projects that operate moving equipment on public roads and other forms of infrastructure, the client will seek to avoid the occurrence of incidents and injuries to members of the public associated with the operation of such equipment.</p>	<p>Nuisance from transport of manure.</p> <p>A strategy is also employed to use manure as close as possible to where it was produced (factoring in the nutrient requirements of the land), thereby reducing transportation cost and the potential for nuisance related impacts during transport.</p> <p>Transport routes have been designed to minimise transport through residential areas.</p> <p>MHP is committed to developing, where possible, bypass roads to ensure minimal impact on local communities from vehicle associated with their operations. 3 such bypasses are planned for Phase 2</p>	<p>Yes</p>
<p>Hazardous Materials Management and Safety</p> <p>The client will avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project. Where there is a potential for the public (including workers and their families) to be exposed to hazards, particularly those that may be life-threatening, the client will exercise special care to avoid or minimize their exposure by modifying, substituting, or eliminating the condition or material causing the potential hazards. Where hazardous materials are part of existing project infrastructure or components, the client will exercise special care when conducting decommissioning activities in order to avoid exposure to the community. The client will exercise commercially reasonable efforts to control the safety of deliveries of hazardous materials, and of transportation and disposal of hazardous wastes.</p>	<p>Ammonia and bio-aerosols are considered to be the highest potential risk pollutants with regards to community impacts.</p> <p>In relation to Ammonia emissions, ammonia levels may be elevated on a very short term basis and immediately in the vicinity of the application area on the field only. Good incorporation techniques have been shown within the EU BREF to prevent any likelihood of exposure at any level of risk. Ammonia levels will also decrease rapidly during the day of application. The lifetime of ammonia in the atmosphere is relatively short because it readily reacts with acidic gases or is deposited back to ecosystems. Good incorporation techniques were defined during the audit and it is considered that Ammonia exposure with a health related risk is highly unlikely.</p> <p>The UK Health Protection Agency report that ammonia is not considered to have any risk of causing 'damage to an unborn child', nor is ammonia considered to be carcinogenic to humans.</p> <p>Dust emissions and in particular bio-aerosols are also a potential impact relating to the application of manure. Both dust and bio-aerosols are prevented from excessive release through good field application and incorporation techniques. The best practice</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>methods, defined with the BAT guidelines (which have been adopted by MHP), have been designed with the aim to avoid / minimise any potential for negative health impacts associated with the storage, application and use of manure.</p> <p>The assessment found that MHP utilise these good practice arrangements; and if these are maintained then it is highly unlikely that any level of significant risk relating to manure dust or bio-aerosols would be present. Overall, as these best practice methods have been found have been employed, then it is therefore unlikely that there will be a direct relationship between the handling and management of the manure, and significant health related impacts on the local communities</p>	
<p>Community Exposure to Disease.</p> <p>The client will avoid or minimize 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. Where specific diseases are endemic in communities in the project area of influence, the client is encouraged to explore opportunities during the project life-cycle to improve environmental conditions that could help minimize their incidence.</p>	<p>Procedures for Prevention of Animal Related Pathogens</p> <p>MHP are certified to ISO9001 Quality Management Systems and ISO22000 Food Safety Management and are working towards global gap which is a Global Food Safety Initiative. Observations made during the site inspections indicate that hygiene procedures implemented by these systems are well implemented by all personnel.</p> <p>The application of these systems throughout manufacturing processes, storage, handling and transportation would be anticipated to effectively prevent the transmission of diseases related to poultry handling to the community and also ensure product safety.</p> <p>Specific controls are described below;</p> <p>Disinfectant baths are present at the entrance ways to the hatchery and rearing house complex to clean the wheels and undersides of vehicles entering and leaving the complexes. However, the need for vehicle entry is minimised, and dedicated vehicles remain on site at the rearing houses for internal transfers of feed and other materials</p> <p>Deliveries of feed are made via hose across</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>the site boundary, eliminating the need for truck entry to the site.</p> <p>Visitors, including veterinary staff park outside the site entrance and are required to follow the shower in/out procedures.</p> <p>MHP maintains a team of qualified veterinary personnel, with 1 vet responsible for 2 rearing brigades, plus additional senior veterinary staff with broader responsibilities. Veterinary staff regularly inspect the hatchery and rearing houses to check bird health and identify signs of illness, and also inspect the entrails of recently slaughtered birds to check for signs of disease.</p> <p>Formal procedures analogous to a veterinary health plan are in place.</p>	
<p>Community Exposure to Disease.</p> <p>The client will avoid or minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent project labour.</p>	<p>Employee medical examinations and health checks.</p> <p>All new employees undergo medical examinations, undertaken by approved doctors. Site management reported that this includes physical tests (hearing, mobility, etc.), epidemiological tests for specified illnesses and allergies and eyesight testing. The results of the tests are assessed by MHP on-site medical personnel to determine role suitability.</p> <p>Periodic health checks are undertaken (reported 6 monthly for operational staff).</p> <p>They include</p> <p>blood & urine testing for relevant biological and chemical agents,</p> <p>lung function tests,</p> <p>assessment of potential sensitisation to allergens such as wheat or feather</p>	<p>yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>hearing tests</p> <p>and general health checks.</p> <p>Vaccinations are also provided for relevant employees. The list of illnesses covered is based on Ukrainian legislative requirements.</p> <p>Labour Influx</p> <p>Most of the labour used by MHP for the Vinnytsia Farm operations are from within the region. No construction or operational phase workcamps are in place or planned to be developed as part of the project. Therefore, the risk of additional communicable disease through external area worker influx, is considered to be low overall.</p>	
<p>Community Exposure to Disease.</p> <p>Infrastructure and Equipment Design and Safety</p>	<p>Fodder plant and Feed protection from wild animals.</p> <p>The feed manufacturing buildings at the fodder plant are enclosed and no holes that could provide access were observed. No evidence of animal entry was observed during the site inspection.</p> <p>All feed is transported from the fodder plant to the rearing sheds in enclosed tankers and transferred to silos on the site boundary, and then to small silos at each rearing house by small trucks. Feed transfer at all stages is via enclosed hose or pipeline under suction.</p> <p>The enclosure of the storage and transfer process, and sealed nature of the rearing houses means that there is minimal potential for interaction of wild birds with feeds.</p> <p>By-pass Roads</p> <p>By-pass roads are designed in alignment with Ukrainian code for road design and</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	traffic safety standards.	
<p>Security Personnel Requirements</p> <p>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</p>	Security guards are employed as MHP employees, and they are required to comply with MHP's policies and procedures. No armed guards are used by MHP, and training of guards is undertaken.	Yes
<p>External Communications and Grievance Mechanisms</p>	There is a formal grievance mechanism for both internal and external parties	

Overall the present and future Phase 2 practises, design and EHS systems were found to satisfy the PS4 performance standards. Given that the proposed Phase 2 facilities are extensions of existing facilities (Hatchery, WWTP, Fodder Plant, Slaughter house and Rendering plant) and identical additional broiler rearing brigades, the implementation of PS4 and EU BREF done by MHP for the Phase 1 disease control, manure management and transport has been integrated into the planned Phase 2 expansion.

6.12 SOCIAL AND SOCIO-ECONOMIC IMPACTS

IMPACT ON POPULATION AND COMMUNITY FACILITIES

CONSTRUCTION

Potential disturbance to local population could occur during the construction phase of the project due to traffic and on-site works and machinery. The potential effects of noise have been assessed in chapter 6 and the potential effects on traffic have been assessed in section 6.5. Given the limited job creation expected has part of the construction phase of the project (refer to *Impact on employment and local economic activities*), no workforce in-migration is expected to occur and no further impacts on population would be expected as part of the construction phase of the development.

Consequently, it is considered that the potential disturbance resulting from the construction phase of the development will result in a **minor** effect on the local population, prior to mitigation.

Mitigation measures described in Chapter 7 have been recommended to minimise the potential negative impacts of the proposed development, which, after mitigation, are likely to remain **Negligible**.

OPERATION AND MAINTENANCE

The project aims to employ about 170 people in the seven proposed brigades as well as 130 people as part of the extensions of the hatchery, fodder plant, slaughterhouse and waste water treatment plant. It is predicted that the project will result in minor project-induced in-migration where potential new migrant stakeholders include returning family, extended family members and former residents – who left due to a lack of opportunities in the local area and / or are seeking improved living conditions and employment

During the consultation undertaken in Vasylivka, it was mentioned that younger people were returning to the village and buying houses due to the project's prospect. According to the head of the village, 40 houses were empty last year due to out-migration but only four of them were still on sale at the time of the consultation. This was seen as a very positive outcome of the project that would result in a re-dynamisation of the village.

Further analysis should be conducted in the affected villages to identify whether community facilities, such as health and education, have sufficient capacity to welcome potentially young in-migrants. It should be noted that the taxes paid by the employees return to the local budget and can be used for improving the village's infrastructures. MHP has also already undertaken some CSR initiatives such as supplying the local library with a new access, computers and wifi as well as installing a water pipeline aiming to supply 162 households. Similarly, MHP is undertaking improvements to the road network due to access needs, which can be used by other traffic.

Consequently, it is considered that the potential in-migration resulting from the project is likely to result in a **Minor Positive** effect on population, prior to mitigation. Mitigation measures described in Chapter 7 have been recommended to minimise the potential negative impact from the proposed development, which, after mitigation, are likely to remain **Minor Positive**.

DECOMMISSIONING

There are no details on the hand-over process that would be followed at the start of the decommissioning phase of the project. In the case where all the jobs are lost and no alternative opportunity arises in the area, this could result in a **Moderate Negative** effect on the local population and the local economy. A summary of propose mitigation measures related to the closure of the proposed development are described in chapter 7. In particular, MHP should consult the population on the options available and the terms agreed should be documented.

IMPACT ON LAND USE AND LAND LEASE

CONSTRUCTION, OPERATION AND MAINTENANCE

No physical displacement is expected as a result of the proposed development. The sites selected have been used as agricultural fields for a number of decades in the past thus physical displacement is not applicable. The project might however result in minor economic displacement. Using a collaborative approach, MHP has approached communities in a preliminary phase to assess whether they would be interested. If no interest was shown, then MHP would discount the site as a potential alternative.

Based on observations in the project area and interviewes with MHP and community meeting in Mikhaylivka, MHP has created a number of new jobs (drivers, guards, cleaners, office clerks) and

encourages local employment, which creates an additional source of income for those who signed a land lease contract with MHP, as well as for ex-seasonal agricultural workers, thus offsetting the negative land acquisition impacts. More details on impacts on various land owners' categories will be provided in the Land Acquisition and Compensation Framework (see also Chapter 8).

As part of the leasing negotiations and consultations with land owners, MHP offers various options such as the opportunity to swap land if beneficial to the land owner (more convenient location etc.). In terms of acquisition timing, it was mentioned that in the cases where the land was previously leased, then the acquisition would happen at the end of the contract; if the land was being used for short harvesting crops, then MHP would wait for the harvest to be undertaken before acquisition. Another option relates to the payment: land owners would be able to choose between a yearly payment and a one off payment (49 years).

Although MHP has a corporate Land Acquisition Action Plan ("the 27 Steps Procedure"), this procedure mainly focuses on the engagement with the relevant statutory authorities and does not spell out the principles of engagement and negotiations with land owners or compensation principles and hence does not reach full compliance with the IFC PS5 requirements.

It is considered that the potential land impacts resulting from the project are likely to result in a **Moderate Negative** effect on population, prior to mitigation. Mitigation measures described in Chapter 7 have been recommended to minimise the potential negative impact from the proposed development which, after mitigation, are likely to be **Minor Negative**. In particular, the proposed development will need a formal, documented Land Acquisition and Compensation Framework complying with the IFC PS 5 requirements. .

DECOMMISSIONING

There are no details on the hand-over process that would be followed at the start of the decommissioning phase of the project. In the case where the hand-over is done without consultation, it could result in a **Moderate Negative** effect on land owners, prior to mitigation. A summary of proposed mitigation measures related to closure of the Proposed Site are described in Chapter 7. In particular, the terms of decommissioning and releasing the land back to its owners should be agreed between MHP and the land owners and documented in the Land Acquisition and Compensation Framework.

IMPACT ON EMPLOYMENT AND LOCAL ECONOMIC ACTIVITIES

CONSTRUCTION

Employment generated in the construction phase will be mainly temporary and of a short term nature. Based on observation on the field, it is estimated that a total of 20 people are required for the construction of one brigade, over a period of 3 months. This includes the manufacturing of the main poultry house elements (8 people) and the assembling phase on site (12 people). As total, it is estimated that 140 people will be required for the construction phase of the seven proposed brigades.

OPERATION AND MAINTENANCE

Employment generated in the operational phase will be mainly permanent, of a longer term nature and at a smaller scale than in the construction phase. Generally, staff of low to medium skill level will be required. Once operational, the project is expected to generate approximately 300 jobs (estimated). The jobs will include positions as operators, security guards, poultry inspectors, butchers, drivers and facility managers.

According to MHP policy, 85% of the jobs can be undertaken by local people. According to the Audit undertaken in July 2016, there are no barriers for women to work at MHP sites as evidenced by the gender balance at all sites. The average wage level is 5,000 hr a month. This is expected to positively impact on the local economy through spending and to increase in opportunities for indirect income generation.

Given the high unemployment rates in the local area and the ability of the newly created positions to be at least partly filled by local workforce, it is estimated that the potential employment impacts resulting from the project are likely to result in a **moderate positive** effect on the local population and the local economy, prior to mitigation. A summary of proposed mitigation measures to ensure the local community will benefit as much as possible from the project are described in Chapter 7.

DECOMMISSIONING

There are no details on the hand-over process that would be followed at the start of the decommissioning phase of the project. In the case where all the jobs are lost, this could result in a **Moderate Negative** effect on the local population and the local economy, prior to mitigation. A summary of proposed mitigation measures relating to the closure of the proposed development are described in chapter 7. In particular, MHP should consult his workforce on the options available and the terms agreed should be documented.

LABOUR STANDARDS ASSESSMENT AGAINST IFC STANDARDS

The proposed Phase 2 expansion of the MHP Poultry production and processing operation at Ladyzhyn in the Vinnystia region have been assessed for compliance with IFC Performance standard PS2 on labour and working conditions. (See **Appendix E**)

The results of the assessment are provided in Table 6.26, followed by a summary of the issue of prisoner employment.

Table 6.26 Assessment of compliance with IFC PS2 Labour and Working Conditions

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
IFC PS2 Requirements summary		
<p>Human Resource Policies, Working Relationships and Procedures.</p> <p>The client will adopt and implement human resources policies and procedures appropriate it's the size and workforce that set out its approach to managing workers consistent with this performance standard and national law.</p>	<p>There are several policies in place at the corporate level:</p> <ul style="list-style-type: none"> • A general, detailed MHP HR Policy – includes coverage of anti-discrimination, anti-child labour, forced labour etc • Complaints policy • Staff selection and hiring policy • Payroll and benefits policy • Career development policy <p>Within the holding company, there is a document which defines 'Company Values' – this includes commitments to areas such as anti-bribery and corruption.</p> <p>The method for recruitment involves:</p> <ul style="list-style-type: none"> • Development of a job specification. • Advertisement of the role, using multi- 	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>media approaches.</p> <ul style="list-style-type: none"> • Direct promotion of the job opportunities, such as through targeted visits, within local village meetings, schools and colleagues etc. list of current vacancies. • Preliminary selection, managed through the HR department, which may include interviews. • Further interviewing of a shortlisted number of candidates, dependent on the role. <p>Collection of documentation, medical examination etc</p> <p>In relation to 'Whistle Blowing', concerns by employees can be made to line managers or direct to the HR dept. There is also a web based portal for postings of anonymous feedback , as well as 'comments boxes' which are located throughout the facilities as well as a weblink.</p> <p>MHP's procurement documentation requires compliance with national law on labour and working conditions and stipulate health and safety performance requirements at contract stage prior to awarding the works for contractors</p> <p>Dismissal processes are aligned with the Ukrainian law. There is a system of verbal and written warnings, and there are also specific conditions for considering dismissal, such as where three reported breaches occur in a month,</p> <p>Procedures are stated in the job description and employment information, there is a document which defines financial penalties, but this is restricted to loss of bonus payment only. This could for repeat offences such as terminal time keeping issues, or damage to company properties. There is a panel approach to evaluation of the offence which could lead to the loss of the bonus, with a minimum of 3 persons to evaluate this, and the person must admit the offence in writing. At that time, appeals are available and managed through the panel process.</p> <p>Instant dismissal can occur for gross misconduct occurrences, such as inebriation or theft.</p> <p>.</p>	
<p>Terms of Employment, Wages, Benefits, Working Conditions and Accommodation</p>	<p>MHP provides terms of employment, wages, benefits and working conditions align with national legal requirements, and are</p>	

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>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, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur.</p>	<p>regulated by an employment contract, signed by the employee and the employer in accordance with Ukrainian Labour Law. Each role has a job description, this includes a summary of rights, duties and a personal 'code of conduct', which is featured within the section on 'personal responsibilities'</p> <p>Standard additional benefits relevant to all staff within MHP include:</p> <ul style="list-style-type: none"> • For key personnel and managerial staff, there can be a bonus payments, based on KPIs set and a review against KPI achievement, for instance such as yield achievement and cost control for the crop farming part of the Vinnytsia Farm. Additional performance beyond budgets also leads to budgeted bonus provision across teams, also dependent on KPI achievement. HSE targets are not specifically set in KPIs, although a major incident could be reflected in the review of personal KPIs. • Each employee receives 6kg of product for free. • Subsidised lunch provision. • Free transport to and from main residential areas and the place of work. • Provision of affordable housing for certain workers, such as those who are not residents in that area. <p>Holiday allowances are set for different roles, but are aligned with Ukrainian legislation. Paid holidays are provided, and a specific formula is used to calculate holiday allowance, with public holidays granted further to this allowance. It was reported that the usual holiday allowance would be 24 days, based on 2 days per month accumulated per month. Annual vacation plans are maintained to ensure that holidays can be planned in without the specific need for additional overtime payments.</p> <p>If working is required on a weekend or public holiday, then there is additional compensation in the form of double payment.</p> <p>Maternity allowance is provided based on a calculation set in the Ukrainian legislation. There is a minimum allowance of 3 years (with a guarantee of maintaining the job), although return to work can be sooner according to the individual. Funding is through social security, according to a national calculator system. Any coverage of the role while an employee is on maternity cover, is based on that role being temporary as 'maternity cover'.</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>MHP align with national minimum wage levels, currently 1,415 Ukrainian hr a month. MHP report that they do have many staff on the minimum wage level. The average wage level is 5,000 Ukrainian hr a month. Overtime payment is based on the Policy and alignment with the Ukrainian legal requirements. Additional payments are made, aligned with the law, so that (for instance) double payment is made for unscheduled weekend working). If the company requires additional work to be completed, then overtime payment is made. There is not a formal maximum hours level set, before additional hours are deemed to be overtime, though work scheduling is used to ensure that every employee keeps to reasonable working time and has adequate rest etc.</p> <p>The working times is designed to be in line with the Ukrainian Regulatory Requirements, this is documented within the document 'Internal Work Routine', which specifies working time, holidays, etc. The requirements are different dependent on whether the role is classed as an 'operative' or a 'management' role. For a Management role, the working week is 5 days a week, and 40 hours, whereas for 'operative roles', there are specific shift system, although the overall working week is also aligned at 40 hours.</p>	
<p>Workers Organizations.</p> <p>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.</p> <p>The client will not discourage workers from electing workers representatives, forming or joining workers organisations of their choosing, or from bargaining collectively and will not discriminate or retaliate against workers who participate, or seek to participate, in such organisations and collective bargaining.</p>	<p>MHP allows membership of trade unions and cooperatives with the Unions, however, due to the historical situation in Ukraine, there is more of a tendency for internal collective representation groups to be utilised. There is a formal 'worker representation council' which is present within each of the main Farm Clusters, including at the Vinnytsia Facility.</p> <p>Membership of the worker organisation is formally nominated, though through an internal framework, rather than legally nominated.</p> <p>MHP is developing and adopting policies and management procedures covering collective representation processes, and the process of nominating and voting for worker organisation representatives along with the duration of their term.</p>	<p>Yes</p>
<p>Non-Discrimination and Equal Opportunity</p> <p>The client will not make employment decisions on the basis of personal characteristics unrelated to inherent job</p>	<p>There is a general policy of favouring local recruitment from within the regions that the company operates.</p> <p>There are no barriers for women to work at</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>requirements. The client will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship. The client will take measures to prevent and address harassment intimidation, and/or exploitation, especially in regard to women.</p>	<p>MHP sites as evidenced by the gender balance at all sites.</p> <p>There is not currently a specific policy on equal opportunities and anti-discrimination. However, there is a section of the main HR Policy which requires anti-discriminatory practices and MHP are developing an Equal Opportunities action plan to promote good international HR policies and practices with respect to gender and equal opportunities through improvements to HR Policies and Procedures and their application in areas of non-discrimination with regards to age, sexual orientation, religious belief and ethnicity</p> <p>Trends are also monitored through the 'HR Matrix' which is updated on a monthly basis. This includes aspects such as number of recruits, dismissals and gender aspects etc. The gender balance of the company workforce and recruitment selection profiles are actively monitored for positive trends.</p>	
<p>Retrenchment</p> <p>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. The plan will be based on the principles of non-discrimination.</p>	<p>No retrenchment or collective dismissals have occurred and none is foreseen by MHP.</p>	<p>Yes</p>
<p>Grievance mechanism</p> <p>The client will provide a grievance mechanism for workers (and their organisations where they exist)</p>	<p>MHP operates a formal grievance mechanism which is used to respond to both internal and external parties</p>	<p>Yes</p>
<p>Child and Forced Labour</p> <p>The client will not employ children in any manner that is economically exploitative, or is likely to be hazardous or interfere with the child's education, or to be harmful to the child's health or development. The client will identify the presence of all persons under the age of 18.</p> <p>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, bonded labour, or</p>	<p>MHP do not use child or forced labour. An "Ethics Code" is published at the holding company level that sets out a clear specific commitment on employee behaviour. The minimum working age is 18 years old and proof of age is checked as part of the employment contracting process. Furthermore, there is a statement in the contracts with sub-contractors that they must comply with national law with a general working age of 18.</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
<p>similar labour contracting arrangements. The client will not employ trafficked persons.</p>	<p>MHP operate a programme of employing prison labour. The social programme implemented by MHP group is dedicated to the development of the prisoners and aimed at building future employability of the prisoners. The employment terms are aligned with the rest of the work force, with the prisoners receiving 100% of their salary paid via the prison.</p> <p>Individuals apply for the work and a character reference must be provided and approved prior to commencing employment. This scheme enables offenders with records of good behaviour to apply for work at the plant.. MHP also provide housing, meals and transport and endeavour to provide on-going employment and other assistance (e.g. training) after the end of the offenders' sentence.</p> <p>A current employee on the scheme was interviewed and no issues or grievances were reported.</p>	
<p>Non-Employee Workers / Workers Engaged by Third Parties</p> <p>The client will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises who have an appropriate ESMS that will allow them to operate in a manner consistent with this performance standard.</p> <p>The client will establish policies and procedures for managing and monitoring the performance of such third party employers in relation to this performance standard. In addition the client will use commercially reasonable efforts to incorporate these requirements in contractual agreements with such third party employers.</p>	<p>MHP requires all contractors and sub-contractors to comply with the requirements in the procurement documents in line with national legal requirements.</p> <p>Although H&S performance is considered, to some extent during contractor selection, and that contractors are required to commit to legal compliance, no project specific health and safety planning is required. Limited checks on contractor performance are conducted by MHP.</p> <p>They are also developing and enforcing management system procedures covering all contractors and sub-contractors to ensure their health and safety. This will be separate and distinct from the tender process and is for monitoring of performance whilst undertaking their duties in line with the contract.</p> <p>Health safety and environmental requirements will be enforced during sub-contractor activities. This will include a clear definition of EHS requirements during contracting, regular documented checks by MHP during work activities to ensure safe practices and mechanisms for sanctions if procedures are not followed.</p>	<p>Yes</p>
<p>Supply Chain</p> <p>Where there is a high risk of significant safety issues related to supply chain</p>	<p>MHP are a vertically integrated company with control over growing of grain, rearing of</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
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”.	poultry, slaughtering, rendering and logistics. Whilst enforcement of construction contractors is via reliance on tender conditions to comply with Ukrainian law the MHP staff at site take a more proactive approach in enforcing infringements of good health and safety practice	

Source : IFC Performance Standard 2

MHP PRISON LABOUR SOCIAL PROGRAMME

MHP employs 40 prisoners (out of 4,000 employees) at the Vinnystia Slaughterhouse. This has been implemented as a social programme in order to enhance the employability of prisoners following their release from prison. It is understood that there is an accepted issue area in Ukraine, with regards to the high unemployment of ex-prisoners and that the introduction of the prison workforce was for this purpose rather than to fill positions that could not be filled by the local hires.

MHP employ low risk prisoners. An application must be submitted for the job as well as the provision of a behavioural check and character reference by the prison administrator. The prison workers are employed within the same department, and conduct their work in a separate area from the rest of the employees. A (unarmed) prison guard supervises the workers.

The prisoner employees receive the same salary as the other workers. Wages are paid directly to the prison; 100% of the wages are then disseminated to the prison workers, in line with a specific regulatory system which is in place in Ukraine.

MHP gives employee references following the completion of the programme. They also aim to permanently employ the worker following their release from prison. In one case MHP has paid education fees for one ex prisoner who completed the programme.

Summary of compliance with PS2

Overall the present and future Phase 2 labour and working conditions overall satisfy, and in some cases exceed, the PS2 performance standard. MHP has addressed, or is actively working to rectify, those issues identified through audits have been previously commissioned of the existing Phase 1 facilities. Given that the proposed Phase 2 facilities are extensions of existing facilities (Hatchery, WWTP, Fodder Plant, Slaughter house and Rendering plant) and identical additional broiler rearing brigades, the progress in implementation made by MHP for the Phase 1 labour practises and conditions is directly integrated into the planned Phase 2 expansion.

Labour standards and prison labour - Starynska

The information contained in this Supplementary Environmental and Social Assessment and contained in Sections 6.12 and **Appendix E** is based upon MHP Group's Corporate level arrangements. Although some further information is presented specific to the Vinnytsia Facility (such as worker numbers, information on prison labour etc), the corporate labour management standards required are set at the corporate level and are implemented within each of the MHP Facilities. Therefore, all areas of labour management process and procedure are also equally applicable to the Starynska Facility.

There is no prison labour employed at the Starynska Facility.

7 PROPOSED MITIGATION MEASURES

A summary of the likely impacts and proposed mitigation measures is presented in Table 7.1

Table 7.1 Summary of proposed mitigation measures

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
ECOLOGY						
Disturbance to habitats and species	Construction	CEMP	Slight Negative	Minor Negative	<ul style="list-style-type: none"> Work compounds and access tracks etc., will not be located in, or adjacent to, areas that maintain habitat value or are within areas supporting protected species; Site fencing will be established to prevent access to areas outside working areas, particularly in areas adjacent to features of interest / value; Procedures will be implemented to address site safety issues, including storage of potentially dangerous materials; Briefings and instruction will be given to contractors regarding the biodiversity issues associated with the site; Confirmation will be provided that best practice construction methodologies will be followed throughout; Pollution prevention measures will be followed to prevent pollution of water courses by silt or chemicals. Control the spread of alien species. 	Negligible
Habitat Loss of forests and shrublands	Construction	CEMP & Habitat Creation	Slight Negative	Minor Negative	<ul style="list-style-type: none"> Habitat creation in the form of shrub and woodland planting in a 5m road side buffer either side of the bypass areas. 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Habitat Loss of Inland Wetland Habitat	Construction	CEMP & Pre-construction Aquatic Survey and Aquatic Method Statement			<ul style="list-style-type: none"> An aquatic survey to identify design, species or habitat-specific impacts and mitigation requirements. Implementation of an aquatic method statement for works. Avoidance of culverting. 	Negligible
Habitat Loss / Disturbance of Birds	Construction	CEMP & Habitat Creation	Slight Adverse	Minor Negative	<ul style="list-style-type: none"> All vegetation clearance restrictions. Provision of roadside habitat creation. 	Negligible
Direct mortality or injury / Habitat Loss / Disturbance of Mammals	Construction	CEMP & Habitat Creation	Slight Adverse	Minor Negative	<ul style="list-style-type: none"> Habitat creation. Fencing off storage areas; Safe storage of any materials and chemicals; Covering of trenches and holes or provision of exit and escape routes such as ramps or mammal ladders; and Covering any open entrances to pipes / pipeline to prevent mammal access 	Negligible
Direct mortality or injury / Habitat Loss / Disturbance of Bats	Construction	CEMP & Habitat Creation	Slight Adverse	Minor Negative	<ul style="list-style-type: none"> Habitat creation. Retention of riparian habitats. Restricted lighting. 	Negligible
Direct mortality or injury / Habitat Loss / Disturbance of Reptiles and Amphibians	Construction	CEMP & Habitat Creation	Slight Adverse	Minor Negative	<ul style="list-style-type: none"> Habitat creation. Dispersal techniques. 	Negligible
Direct mortality or injury / Habitat Loss / Disturbance of Fish	Construction	CEMP & Pre-construction Aquatic Survey and Aquatic Method Statement	Slight Adverse	Minor Negative	<ul style="list-style-type: none"> Pre-construction aquatic survey and implementation of an aquatic method statement. Avoidance of potential spawning habitats. Use of silt traps. Any animals should be removed by hand from any cofferdams. Appropriate screens should be installed on any pumps to prevent entrainment and entrapment. 	Negligible
AIR QUALITY						

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Emissions of dust, particulate matter and other pollutants from construction activities	Construction	Yes	Negative	Minor	→ Consideration of weather conditions prior to daily commencement of works;	Minor
					→ Plan site layout to maximise distance from plant / stockpiles etc. to sensitive receptors (ecological);	
					→ Dusty materials should be removed from site as soon as possible.	
					→ Exposed soils should be revegetated as soon as practicable.	
					→ Minimise dust generating activities, particularly near residential receptors / sensitive ecosystems during prolonged dry, dusty weather unless damping / other suppressants are used;	
					→ Ensure an adequate water supply to site and use water as dust suppressant where applicable;	
					→ Ensure any site machinery is well maintained and in full working order;	
					→ Ensure equipment available for cleaning spills etc. available at all times; and	
					→ Sand and aggregates should be stored away from sensitive receptors.	
					→ Ensure all vehicle operators switch off engines when stationary - no idling vehicles;	
→ Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable; and						
→ Develop a Construction Management Plan to manage the sustainable delivery of goods and materials.						
Potential odour from WWTP, Manure Storage,	Construction	Yes	Negative	Negligible		Negligible
	Operation	Yes	Negative	Minor	→ Optimise broiler shed management to reduce	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Slaughterhouse, Rendering Plant, Briagdes, Waste movement.					<ul style="list-style-type: none"> ammonia emissions from litter; → Maintain aerobic conditions within windrows to minimise odour production during composting; → Ensure broiler sheds are thoroughly cleaned between cycles; → Maintain a clean and tidy site, cleaning up spillages rapidly; → Maintain and clean vehicles to reduce road vehicle odour; and → Location of odorous processes well away from the site boundary. 	
	Decommissioning	Yes	Negative	Negligible	→	Negligible
Dust and smoke generation	Construction	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Sprinkling of water on unpaved, non-vegetated surface to minimise airborne fugitive dust and during earth moving activities, prior to clearing and before excavating, backfilling, compacting or grading; → Post and enforce speed limits for vehicles to reduce airborne fugitive dust from vehicular traffic; → Allow site access only to authorised vehicles; → Keep soil moist while loading into dump trucks; → Keep soil loads below the freeboard of the truck; → Tighten gate seals on dump trucks; → Trucks loaded with loose construction materials (such as gravel, sand, soil, etc.) shall be covered to minimise dust emissions during transportation; → When feasible, shut down idling vehicles and equipment; → Train workers to handle construction materials and debris during construction to reduce fugitive emissions; → Where possible stockpiling of friable material should be avoided and in time delivery should be 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<p>practiced;</p> <ul style="list-style-type: none"> → Implement dust suppression measures to prevent air pollution through water application on roads, construction site, construction camps; → Develop a traffic management plan to ensure smooth traffic flow and safety for workers and passing traffic; → All vehicles must be regularly checked to ensure they are operating within legal requirements; → Ensure no burning of waste on site; → Ensure wheels and chassis of all vehicles are cleaned prior to site departure. → Consideration of weather conditions prior to daily commencement of works; → Plan site layout to maximise distance from plant / stockpiles etc. to sensitive receptors (ecological); → Dusty materials should be removed from site as soon as possible. 	
	Operation	Yes	Negative	Moderate	<ul style="list-style-type: none"> → Appropriate bag filters on feed mill exhausts (BAT); → Consideration of alternative bedding (e.g. coarser material such as wood shavings); → Use oil as binding agent within feed; → Manual spreading of litter; → Cover waste when transporting to composting pad; → Water unpaved roads to prevent spreading of dust, particularly during dry weather conditions; and → Pave internal roads. → Daily, formal inspections of dust deposition outside the site should be undertaken alongside 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<p>the following sites:</p> <ul style="list-style-type: none"> ■ Bypass 1 – along section of existing road through Bilousivka and along sections of new road through temperate forest ■ Bypass 2 - along sections of new road through temperate forest and on the existing highway at the northern end of the bypass, just south of Lukashivka. ■ Bypass 3 - along sections of new road through temperate forest ■ Brigade 42 – along boundary with temperate forest ■ Brigade 47 – along boundary with temperate forest <p>→ Where visual dust deposition is evident, the mitigation measures should be reviewed and additional or more frequent application of dust suppression (damping down) should be applied. If the additional mitigation does not significantly reduce dust generation and offsite deposition, a temporary cessation of works may be required.</p> <p>→</p>	
	Decommissioning	No	Negative	Negligible	N/A	Negligible
Other emissions	Construction	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Consideration of weather conditions prior to daily commencement of works; → Plan site layout to maximise distance from plant / stockpiles etc. to sensitive receptors (ecological); → Dusty materials should be removed from site as soon as possible. → Exposed soils should be revegetated as soon as 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<p>practicable.</p> <ul style="list-style-type: none"> → Minimise dust generating activities, particularly near residential receptors / sensitive ecosystems during prolonged dry, dusty weather unless damping / other suppressants are used; → Ensure an adequate water supply to site and use water as dust suppressant where applicable; → Ensure any site machinery is well maintained and in full working order; → Ensure equipment available for cleaning spills etc. available at all times; and → Sand and aggregates should be stored away from sensitive receptors. → Ensure all vehicle operators switch off engines when stationary - no idling vehicles; → Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable; and → Develop a Construction Management Plan to manage the sustainable delivery of goods and materials. 	
	Operation	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Ambient air quality monitoring (nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter) undertaken for the main feed plant should be continued. Consideration should be given to the upgrading of the data collection to a continuous monitor → Periodic ambient air quality samples (quarterly, nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter) should be undertaken in the vicinity of any combustion plant with a combined output in excess of 1MW (where 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<p>combination applies to a single project element e.g. 1 brigade, WWTP, Rendering Plant etc).</p> <ul style="list-style-type: none"> → Control of the climate and litter quality within the poultry housing unit inc temperature, dust concentrations, stocking density, feed; → Management of ventilation system including filtration; → Periodic (annual) monitoring of efficiency of filtration; → Housing unit cleaning at the end of each cycle with manure stored in housing units until movement to final storage/processing system; → Sites should be subject to regular cleaning (outside of units) with paved areas cleaned by sweeping and/or spaying with water; and → Regular (weekly) visual inspections of dust deposition outside the site boundaries, with particular attention paid to soiling of sensitive forest habitats. → 	
	Decommissioning	No	Negative	Negligible	→ N/A	Negligible
Emissions from traffic	Construction	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Loads entering and leaving the site with dust generating potential should be covered and wheel cleaning facilities made available; → No idling of vehicles; → Vehicles to comply with site speed limits (20kph on hard surfaces, 10kph on unconsolidated surfaces); → Water assisted sweeping of local roads to be undertaken if material tracked out of site; and 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					→ Install hard surfacing as soon as practicable on site and ensure that they are maintained in good condition.	
	Operation	Yes	Negative	Negligible	→ New vehicles associated with the project should conform to best available emissions standards; and → All vehicles should be regularly serviced and maintained.	Negligible
	Decommissioning	No	Negative	Negligible	→ N/A	Negligible
Emissions from combustion plant	Construction	No	Negative	Negligible	→	Negligible
	Operation	Yes	Negative	Negligible	→ Plant should be well maintained and operated in accordance with manufacturer's recommendations.	Negligible
	Decommissioning	No	Negative	Negligible	→ X	Negligible
CLIMATE CHANGE AND ADAPTATION						
Emissions of greenhouse gases	Construction	Yes	Negative	Negligible	→ Develop a traffic management plan to ensure smooth traffic flow; → Regularly check technical condition of vehicles and machinery; → Use vehicles equipped with effective exhaust mufflers; → Turn-off the construction machinery and equipment when not in use; and → Use efficient machinery and work schedule.	Negligible
	Operation	Yes	Negative	Minor	→ Energy audits and identification of possibilities for heat and hot water reuse; → Minimisation of vehicle movements; → Management controls for composting and land spreading to be implemented; → Procedures for the efficient operation of the	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
	Decommissioning	Yes	Negative	Negligible	→ WWTP avoiding anaerobic conditions; and → Shut-off equipment and associated lighting when not in use.	Negligible
					→ Develop a traffic management plan to ensure smooth traffic flow; → Regularly check technical condition of vehicles and machinery; → Use vehicles equipped with effective exhaust mufflers; → Turn-off the construction machinery and equipment when not in use; and → Use efficient machinery and work schedule.	
Climate change and adaptation	Construction	No	NA	Negligible	None	None
	Operation	No	NA	Negligible	None	None
	Decommissioning	No	NA	Negligible	None	None
LANDSCAPE AND VISUAL						
Landscape and visual impact of construction	Construction	Yes	Negative	Negligible	→ All practicable measures should be implemented to avoid or effectively control potentially adverse construction effects on existing landscape character and visual receptors; → Lighting for facilities should not exceed the minimum required for safety and security.	Negligible
Landscape and visual Impact of poultry farm operation	Operation	Yes	Negative	Minor	→ All practicable measures should be implemented to avoid or effectively control potentially adverse operation effects on existing landscape character and visual receptors; → Mitigation planting of local tree species on and surrounding the site could be used to reduce the landscape and visual impacts of the farm. → Lighting for facilities should not exceed the	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					minimum required for safety and security.	
	Decommissioning	Yes	Positive	Negligible	<ul style="list-style-type: none"> → Remove all necessary aboveground structures and facilities from the site; → Re-establish the terrain and drainage pattern similar to natural conditions of the adjacent areas; → Restore the vegetation cover, composition and diversity commensurate with the ecological setting; → Use plant species characteristic of the landscape in the course of restoration of the vegetation cover on the reclaimed areas; 	Negligible
NOISE						
Noise from machinery and vehicles	Construction	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Limit noisy activities to the least noise- sensitive times of the day (week days between 7am and 10pm); → All machinery and equipment should have sound-control devices no less effective than those provided on the original machinery/ equipment. Motorised equipment should be adequately muffled and maintained; → To the extent possible, route heavy-truck traffic away from residences and other sensitive receptors; → Workers in the vicinity of sources of high noise shall wear necessary personnel protective equipment (PPE); 	Negligible
	Operation	Yes	Negative	Minor to negligible	<ul style="list-style-type: none"> → Develop and implement a Traffic Management Plan to mitigate noise at Belousovka → Provide barriers or acoustic screen to reduce any potential noise at Belousovka. 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<ul style="list-style-type: none"> → Limit noisy activities to the least noise- sensitive times of the day (week days between 7am and 10pm); → All mechanical service equipment shall include suitable noise control measures such as silencers, anti-vibration mounts and flexible connections; → Machinery in intermittent use should be shut down or throttled down to a minimum when not in use; and → PPE should be provided to employees for hearing protection, the sign boards and training procedure should be in place. 	
	Decommissioning	Yes	Negative	Negligible	→ As per Construction Phase, above	Negligible
GEOLOGY AND SOIL						
Land spreading of the manure on agricultural land	Construction	No	N/A	N/A	None	N/A
	Operation	Yes	Negative	Moderate	<ul style="list-style-type: none"> → Develop land spreading procedures that cover: <ul style="list-style-type: none"> ○ Nutritional need of land and crops; ○ Prevention of spreading too close to rivers, when land too wet, whilst snow is present on the ground, on sloping fields and take into account land practices; ○ Manage land spreading during sensitive periods such as public holidays and weekends, take into account wind direction and how to incorporate into the ground rapidly to reduce odour potential. → Develop a spill prevention and response plan for addressing land spreading operations including spill prevention measures, training requirements, spill response actions, spill response kits and notification to authorities; → Train employees to promptly contain, report 	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					and/or clean up any spill; → Provide portable spill containment and clean-up equipment in all vehicles; → Document accidental releases as to cause, corrective actions taken, and resulting in environmental or health and safety impacts.	
	Decommissioning	No	N/A	N/A	None	N/A
Impacts from seismic activity, potential for slope instability and increased erosion and water quality problems	Construction	Yes	Negative	Negligible	→ Establishment of buffer zone around poultry farm; → Ensure preservation of safety rules by workers whilst dealing with hazardous and toxic materials; → Compliance with site rules on storage and handling of construction materials, fuel, oil products, chemical substances, etc.; → Regular inspection of poultry farm and associated infrastructure to ensure proper operation; → Train workers on how to act in an emergency situation; and → Establish reliable communication between site and respective regional authorities, first aid service, rescue service, police office, fire office, operators of electricity, gas and water supply to ensure adequate response in case of an emergency..	Negligible
	Operation	Yes	Negative	Negligible	→ Prepare Emergency Preparedness and Response Plan, inform the workers on its provisions; → Ensure compliance with rules on storage and handling of construction materials, fuel, oil products, chemical substances, etc.; → Regularly inspect facilities and infrastructure to ensure their proper operation and updating of as-built documentation; → Provide periodic training to workers on how to act in emergency situations; and	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					→ Maintain reliable communication between site and respective regional authorities, first-aid service, rescue service, police office, fire office, operators of electricity, gas and water supply utilities to ensure adequate response in case of emergency.	
	Decommissioning	No	N/A	N/A	None	N/A
Loss/contamination of soil during removal for construction/ operation/ decommissioning of buildings	Construction	Yes	Negative	Minor	<ul style="list-style-type: none"> → Topsoil depth confirmation and identification of dispersion characteristics for erosion potential → Careful removal of topsoil → Appropriate and secure storage e.g. away from drainage lines and strategically located to assist sequence of future rehabilitation → Management of topsoil to maintain stability e.g. minimise length of time subsoil is exposed, use erosion control measures such as bonded fibre matrix, composite/ erosion control blankets, gravelling, revegetation etc. → Upon completion of construction, reinstatement of topsoil landscaping the works as soon as practicable including use of suitable topsoil, use of contour ripping to control erosion, seeding with appropriate seed mix, application of appropriate fertiliser or gypsum if required → Development of detailed topsoil management plan, including a site layout drawing, locating where soil will be removed and stored. 	Negligible
	Operation	No	-	Negligible	None	-
	Decommissioning	Yes	Negative	Minor	→ Carry out same activities required during construction of buildings	Negligible
HYDROGEOLOGY, HYDROLOGY AND WATER QUALITY						
Contamination of ground and surface water resources from leachate	Construction	Yes	Negative	Negligible	→ To reduce the likelihood of contamination due to spillage of oil from construction equipment and wastewater from construction camps, the sites for	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
emissions					<p>these areas should be carefully designated and proper technical condition of machinery and equipment shall be ensured. In addition, sand or fine gravel should be spread on the ground at these locations designated for parking and servicing construction machinery. In the event of a spillage, the polluted layer should be removed and replaced with a new layer of sand or gravel;</p> <ul style="list-style-type: none"> → Sections located very close to drainage ditches/ culverts shall not be used for construction material storage and temporary accumulation of waste; → Provide for covered zones of preliminary accumulation of construction materials and wastes in order to minimise formation of leachate as a result of rainfall; → Septic tank installed and to be emptied on a regular basis to control domestic effluents; → All vehicles must be regularly checked and their normal operation technical conditions shall be ensured. In case any leakage of oil or other liquid occurs, the vehicle must be moved to a paved impermeable area to be immediately repaired; and → Water samples shall be taken and analysed for oil products in the event that leakage is observed. 	
	Operation	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Regularly inspect and clean drainage ditches/ gullies; → Regularly inspect leachate collection and treatment facilities, wheel wash system, water supply and sewerage network at administrative buildings to ensure proper operational technical conditions; → To reduce the likelihood of oil spillage from machinery and equipment, and contamination 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<p>with wastewater from administrative facilities, proper technical condition of machinery and equipment shall be ensured.</p> <ul style="list-style-type: none"> → All vehicles must be regularly checked and their normal operational technical conditions shall be ensured. In case any leakage of oil or other liquid is observed, the vehicle must be moved to a paved impermeable area and be immediately fixed; → Groundwater and surface water quality shall be monitored at regular intervals during operation. 	
	Decommissioning	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Regularly inspect and clean drainage ditches/ gullies; → Regularly inspect leachate collection and treatment facilities to ensure proper operational technical conditions; → All vehicles must be regularly checked and their normal operational technical conditions shall be ensured. In case any leakage of oil or other liquid is observed, the vehicle must be moved to a paved impermeable area and be immediately fixed; → Surface water quality will be managed for directing clean run-off away from sources of possible contamination; and → Groundwater and surface water quality shall be monitored at regular intervals during decommissioning. 	Negligible
Alternation of surface water regime	Construction	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Obtain the new water abstraction permit for additional 26,000 m3 required for full operational capacity of Phases 1 and 2 together. → Groundwater pumping test data to assess the potential yields available and the response/impact to superficial aquifer groundwater levels or river stage levels. 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<ul style="list-style-type: none"> → Develop sub-regional water balance to assess whether potential abstractions could be sustained by the local aquifer/river system (basic inflows/outflows considerations). → Consideration of the need for groundwater treatment during abstraction. → Minimise the planned amount of land to be disturbed as much as possible (use existing access roads and quarries if possible); → Locate access roads to minimise stream crossings; → Construct drainage ditches where necessary, use appropriate structures at culvert outlets to prevent erosion; → Clean and maintain drainage ditches and culverts regularly; → Use special construction techniques in areas of steep slopes, erodible soils and stream crossings; → Dispose of excess excavation materials in approved areas to control erosion and minimise run-off. 	
	Operation	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Clean and maintain drainage ditches and culverts regularly to ensure proper removal of run-off; → Do not alter or restrict existing drainage systems, especially in sensitive areas such as erodible soils or steep slopes; and → Regularly monitor groundwater table through monitoring wells established at the site. 	Negligible
	Decommissioning	No	Negative	Negligible	N/A	Negligible
Wastewater generation and disposal	Construction	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Avoid potential spills; → Washing of vehicles and equipment on the site will be restricted; 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<ul style="list-style-type: none"> → Chemicals and other liquid and solid dangerous materials must be managed properly; and → Septic tank installed and to be emptied on a regular basis to ensure that wastewater from the welfare facilities will be collected and adequately removed from the site. 	
	Operation	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Regularly inspect and ensure proper maintenance of wastewater collection tank, vehicle washing systems, leachate collection and treatment facilities; → Regularly inspect and maintain the surface water collection systems; → Ensure regular cleaning of drainage ditches/ culverts; → Avoid potential spills through application of appropriate staff training and occupational rules; → Washing of vehicles and equipment on the site to be restricted to garage areas; → Chemicals and other liquids and solid dangerous materials must be stored and properly managed; and → Wastewater from the administrative facilities and poultry farm shall be collected and treated at the WWTP. 	Negligible
	Decommissioning	Yes	Negative	Negligible	<ul style="list-style-type: none"> → Refer to mitigation measures related to construction phase above. 	Negligible
CULTURAL HERITAGE						
Impacts of construction and operation	Construction	No	Negative	Negligible	<ul style="list-style-type: none"> → Develop a chance find procedure to be used during construction to aid in managing archaeological finds. 	Negligible
	Operation	No	Negative	Negligible	<ul style="list-style-type: none"> → The procedure should include a method for considering whether there are areas with a higher potential for undiscovered archaeology to be 	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					present, where an archaeological watching brief should be used.	
	Decommissioning	No	Negative	Negligible	None	-
SOCIAL						
Impact on population and community facilities	Construction		Negative	Negligible	<ul style="list-style-type: none"> Local employment will be maximised and hiring guidelines put in place to prioritise residents living in the project area. Disturbances such as road closure, noise and lighting should be minimised and any complaints from locals should be reported and contented. Local residents must be consulted in advance of any planned works. 	Negligible
	Operation		Negative	Minor	<ul style="list-style-type: none"> An informed plan should be developed and implemented for the local budget coming from taxes. The plan should be jointly planned by locals and publicly available to ensure transparency. 	Minor positive
	Decommissioning		Negative	Negligible	<ul style="list-style-type: none"> Consultation should be made with the locals to reflect on the opportunities of the area once the farm is inoperable and support should be given to economic initiatives creating jobs in the area. 	Negligible
Impact on land use and land lease	Construction and Operation		Negative	Moderate	<ul style="list-style-type: none"> A Land Acquisition and Compensation Framework should be developed and implemented, identifying main land acquisition principles and steps, the negotiation process and compensation principles, as well as grievance mechanism details relevant to land lease only. The Land Acquisition and Compensation Framework must be published on the MHP website for transparency. . 	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Impact on employment and local economic activities	Decommissioning		Negative	Moderate	<ul style="list-style-type: none"> A Livelihood restoration plan should be developed and implemented to ensure a timely return to agricultural practices, avoiding any disturbance in income for land owners (to be included in the Land Acquisition and Compensation Framework). 	Minor
	Construction		Positive	Minor	<ul style="list-style-type: none"> Local employment should be maximised and hiring guidelines put in place to prioritise residents living in the project area. Good practice welfare facilities should be placed on site for contractors. 	Minor positive
	Operation		Positive	Moderate	<ul style="list-style-type: none"> HR policies should be written and compliant with IFC PS2 and Ukrainian Labour Law, the policies should include an Equal Opportunities Action Plan ensuring no discrimination with regards to age, gender, sexual orientation, religious beliefs and ethnicity. Employment of prisoners should be formalised (main principles) and disclosed for transparency. Local employment should be maximised and hiring guidelines put in place to prioritise residents living in the project area. Employment opportunities and associated skills requirements should be well advertised locally and a recruitment centre should be easily accessible by the local population. Employees should be offered training relevant to their job description whenever appropriate. The profile of employees as well as the training provided should be recorded and kept up to date. A certificate of employment should be offered to each employee at the conclusion of successful employment on the project. 	Moderate positive

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
	Decommissioning		Negative	Moderate	<ul style="list-style-type: none"> • Consultation should be made with employees prior decommissioning to assess employees options and support should be given to the employees to find alternative employment. • A certificate of employment should be offered to each employee at the conclusion of successful employment on the project. 	Minor
WASTE						
Construction waste impacts on ground and water quality	Construction	Yes	Negative	Minor	<ul style="list-style-type: none"> → Best practice measures and recommendation for the minimisation and management of waste should be incorporated into a Construction Environmental Management Plan (CEMP) 	Negligible
	Operation	Yes	Negative	Minor	<ul style="list-style-type: none"> → The waste hierarchy will be adopted as far as reasonable practicable. Dedicated waste storage areas for waste segregation for recyclable and non-recyclable refuse will be implemented on site. Waste storage will be clearly labelled to ensure that cross contamination is minimised. 	Negligible
Construction waste impacts on waste management infrastructure	Construction	Yes	Negative	Moderate	<ul style="list-style-type: none"> → A waste management strategy is recommended to be developed and implemented to ensure that that waste materials are stored and disposed of appropriately. → The waste hierarchy will be adopted as far as reasonable practicable. Material deemed suitable for reuse on the project site will be retained and stockpiled where possible to incorporate such materials into the subsequent construction process. If materials cannot be reused on-site, then the feasibility of reusing them off-site will be explored. → Identifying waste streams which could successfully be used by other businesses or operations. This results in the diversion of waste from landfill and 	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					thus presents the potential for cost savings.	
	Operation	Yes	Negative	Moderate	→ A waste management strategy is recommended to be developed and implemented to ensure that that waste materials are stored and disposed of appropriately.	Minor
Odour and nuisance related impacts associated with the transport of litter and hatchery waste to the composting site	Operation	Yes	Negative	Moderate	<p>→ It is recommended that a schedule of movements is developed, which is based on the requirements of the broilers and the hatchery. This should take into consideration vehicle movements through villages and planning, where possible, to minimise travel through residential areas in order to minimise the risk of odour and noise nuisance impacts.</p> <p>→ It is recommended that the construction of bypass roads are considered, where there is a significant impact associated with the transportation of waste materials.</p> <p>→ Covered vehicles will be used for the transportation of litter and hatchery waste.</p>	Negligible
Odour and nuisance related impacts associated with the composting	Operation	Yes	Negative	Minor	<p>→ It is required that a formalised calculation is undertaken to ensure that adequate storage is available during the composting phase.</p> <p>→ Heights of the windrows should be kept below 3m;</p> <p>→ The use of tarpaulins for covering windrows will limit odour emissions and flies and allows better integration of windrows into the landscape.</p> <p>→ The use of tarpaulins to provide health protection towards birds and rodents and for managing moisture content in places where heavy rainfall is experienced.</p> <p>→ The siting of the windrows should also be</p>	Negligible

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE	IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
					<p>considered, and should not be sited within 10m of surface water or on a groundwater vulnerable zone in order to minimise the pollution risk to surface and groundwater.</p> <p>→ The following BAT points should be considered:</p> <ul style="list-style-type: none"> • Store litter on solid impermeable floor, equipped with a drainage system and a collection tank for run-off; • Ensure there is sufficient capacity to hold organic manures during periods in which the application to land is not possible; • Store organic manure in field heaps places away from surface and/or underground watercourse which liquid run-off might enter; • Reduce the ratio between the emitting surface area and volume of the organic manure; • Cover solid heaps. 	
Odour related impacts from spreading activities	Operation	Yes	Negative	Moderate	<p>→ Develop a management plan prior to spreading.</p> <p>→ Time applications of manure to optimise crop benefit and minimise environmental loss.</p> <p>→ Adapt the manure application rate.</p> <p>→ Identify areas unsuitable for spreading.</p> <p>→ Avoid organic manure within 10m of a surface water course.</p>	Negligible
Impacts from spreading activities on waste management infrastructure	Operation	Yes	Negative	Moderate	<p>→ Assess the manure receiving land to identify risks of run-off, taking into account:</p> <ul style="list-style-type: none"> • Soil types, conditions and slope of field; • Climatic conditions; • Field drainage and irrigations; 	Minor

POTENTIAL IMPACT	PHASE	MITIGATION/ MANAGEMENT PROPOSED	POSITIVE OR NEGATIVE IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
				<ul style="list-style-type: none"> • Crop rotations; • Water resources and water protected zones <ul style="list-style-type: none"> → Incorporate organic manure within 24 hours of spreading. → Consideration of techniques to minimise odour impacts: <ul style="list-style-type: none"> • Ploughing immediately behind the spreader; • Delaying spreading until local weather conditions (i.e. wind direction) are more favourable; • Injecting into the land ; → Spreading should also take place during the day; → Prior to spreading the machinery should be checked; → Development and communication of guidance on manure land spreading and odour nuisance to all relevant personnel. → Regular inspections of storage facilities; → Development of emergency preparedness and response plan; 	

8

ENVIRONMENTAL SOCIAL MANAGEMENT AND MONITORING PLAN

The Environmental and Social Management Plan (ESMP) has been prepared as a separate standalone document for the construction, operation and decommissioning of the Vinnytsia Poultry Farm project. The ESMP was prepared based on the environmental and social issues identified during the environmental and social evaluation.

The ESMP contains plans, programmes, specifications and guidelines designed to control and manage the potential environmental and social impacts that were identified in the ESIA. The geographical, social, cultural and environmental dynamics have been taken into consideration. The ESMP is an integral part of the ESIA as it is a policy setting document for MPF and its contractors. This document represents a commitment by MHP and the local municipalities to environmental and social sustainability, and applies to the Project's entire life cycle.

The ESMP establishes MHP's policies, commitments, and resources that are needed to allow effective implementation and continuation of the programmes and procedures to manage and mitigate the predicted impacts of the Project. Implementation of the ESMP will fulfil the requirements established by the environmental laws and regulations of Ukraine, as well as other technical and legal instruments that apply. The Project will also comply with the IFC Performance Standards.

The implementation of the ESMP's commitments will be subject to supervision and internal and external auditing. Supervision of the implementation of, and compliance with, commitments set in the ESMP will be overseen permanently by Ukraine Environmental Inspection and an Independent Engineer appointed by Lenders during the life of the loan.

This version of the ESIA is the basis against which the ESMP monitors and continuously improves. The ESMP is the living document that changes as things change from what was predicted in the ESIA.

The principal objective of the ESMP is to "operationalise" the commitments to environmental and social management and mitigation as identified by the ESIA. This should ensure that the Project (including construction, operation, closure and post-closure phases) is undertaken in a manner which maximises the benefits to, and minimises the negative impacts on, the physical, biological, social and archaeological environments in the Project-affected area.

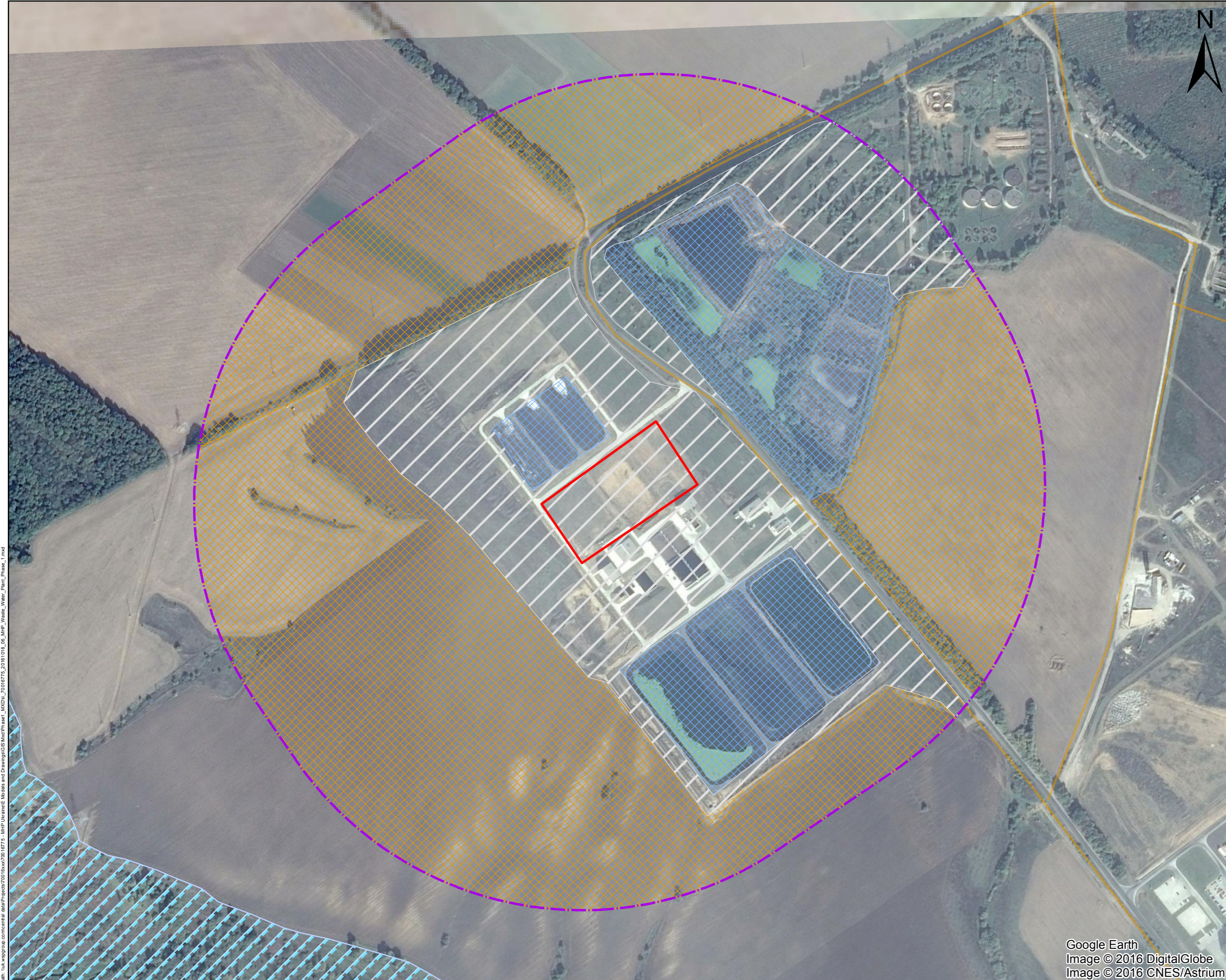
Specific objectives include:

- Zero lost time injuries (LTI's) during construction and operation;
- Establishing upfront during construction a culture for safety, productivity, efficiency and flexibility to be subsequently maintained by poultry farm operations;
- Implementing appropriate prevention and mitigation measures to reduce the incidence of negative environmental impacts and promote favourable conditions during the construction, operation and decommissioning phases;
- Creating an effective environmental monitoring and supervision plan that allows for the monitoring of the proposed activities and environmental variables during the Project;
- Establishing participation mechanisms for the Project stakeholders to keep them informed about Project activities and how they may affect their daily activities;

- Elaborating procedures that will allow effective and timely response to emergencies, and enable the reporting of events that may arise;
- Safeguarding biodiversity and ecosystems and making special provision for habitats and species of conservation importance at the national and international levels;
- Performing adequate management of solid residues as required by applicable laws and IFC requirements;
- Prepare a Land Acquisition and Compensation Framework for the MHP operations which would cover all current and future land contracts. After the Framework is approved by the Lenders, monitor any future land acquisition and economic displacement activities according the key performance indicators developed in the Land Acquisition and Compensation framework;
- Restoring livelihoods impacted by economic displacement caused by the Project;
- Preserving the archaeological heritage identified in the Project's area of influence as defined by applicable laws; and
- Establishing and maintaining communication channels among MHP, the appropriate authorities and stakeholders associated with the Project.



Appendix A

HABITAT DELINEATION MAPS




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Notes




-  Site Boundary
-  Study Area

Classification

-  Arable Land (14.1)
-  Inland Wetland Habitat (5.1)
-  Urban Areas (14.5)
-  Wastewater Treatment Areas (15.6)

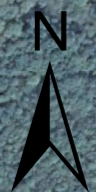
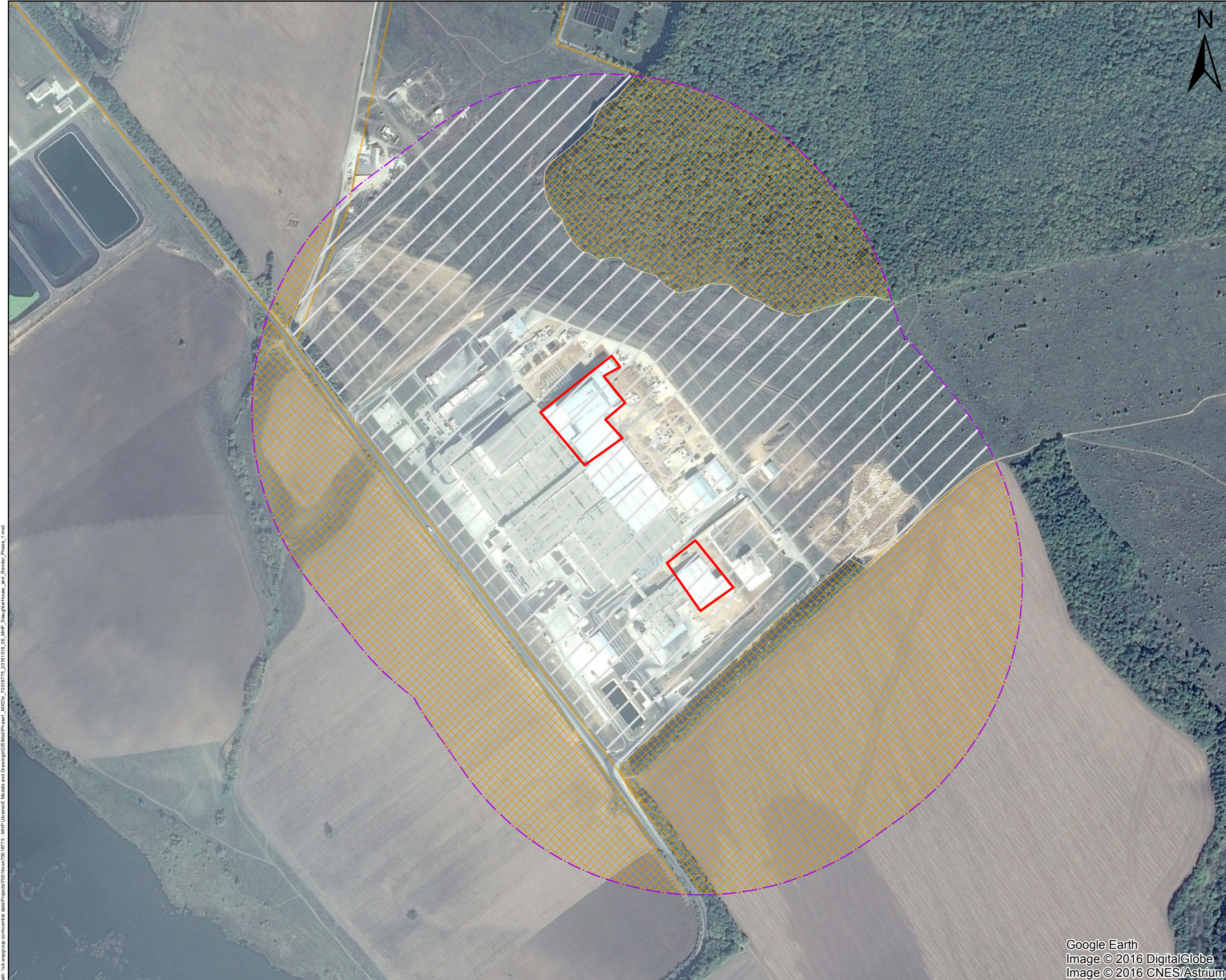
Roads

-  Major Route
-  Minor Route
-  Local Route









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Drawing Title						
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Drawn						
JA						
Stage 1 check	Stage 2 check	Originated	Date			
CB	HL	HL	24/10/2016			
						
 						
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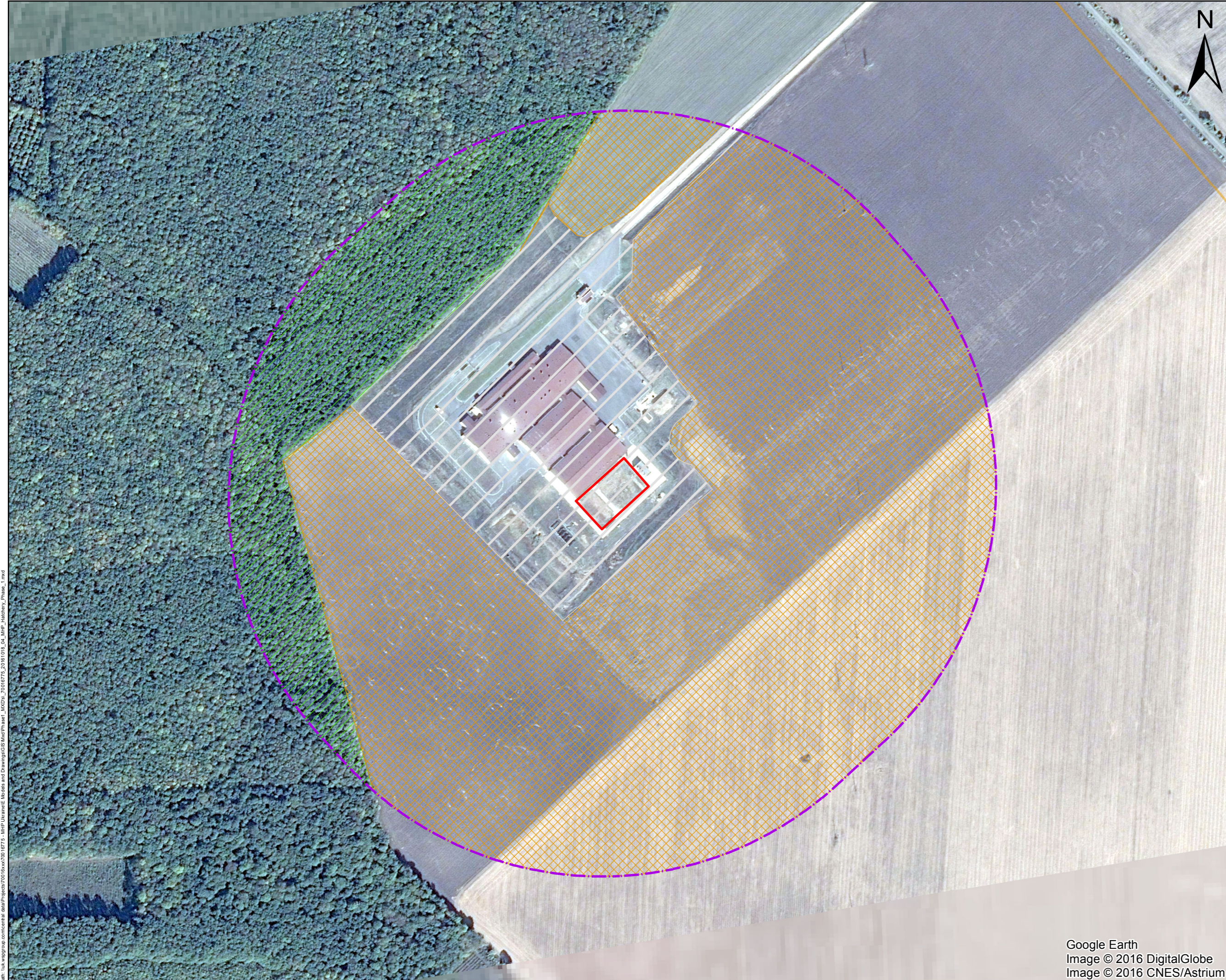
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- Notes
-  Site Boundary
 -  Study Area
- Classification**
-  Arable Land (14.1)
 -  Temperate Forest (1.4)
 -  Urban Areas (14.5)
- Roads**
-  Major Route
 -  Minor Route
 -  Local Route

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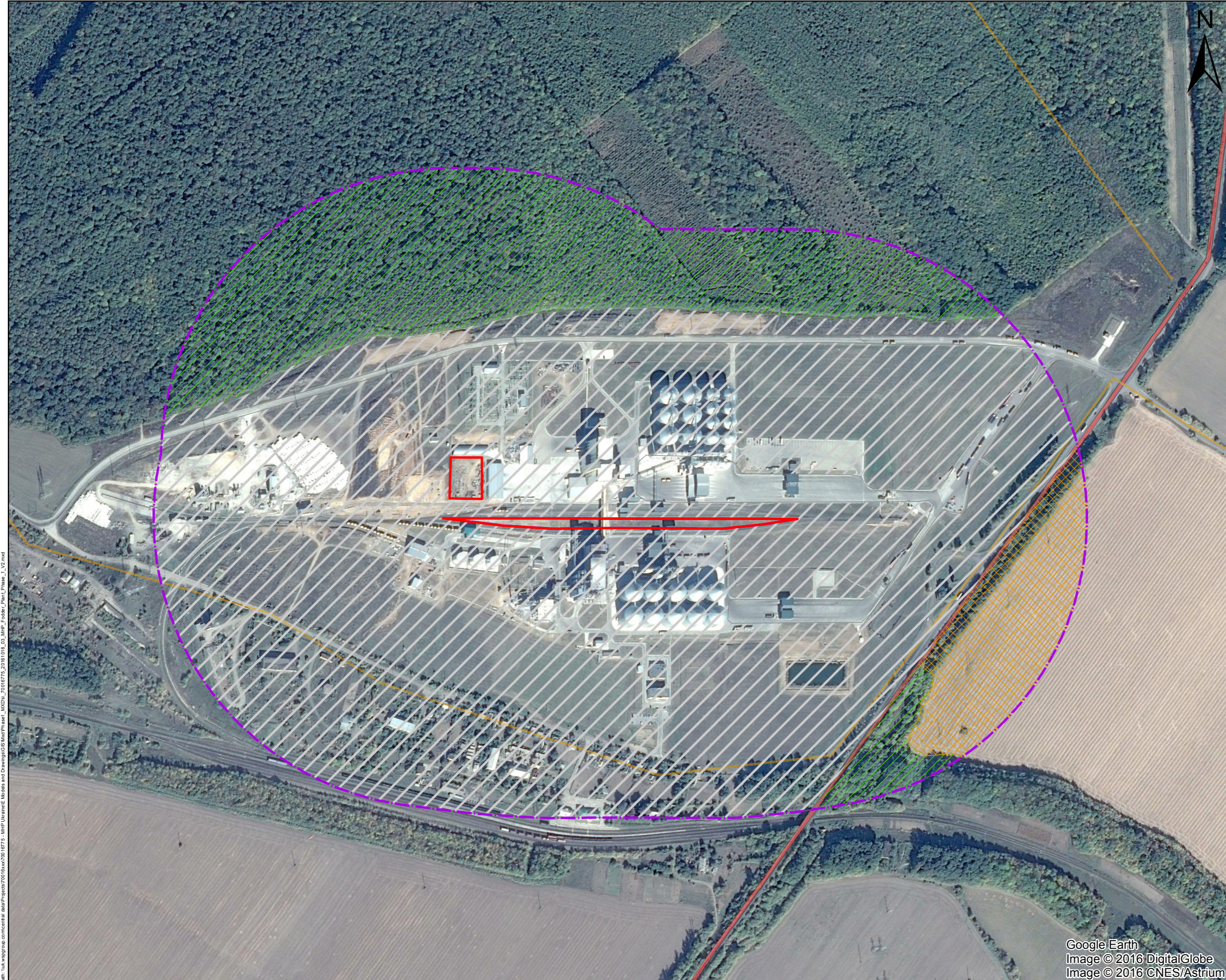
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- Notes
- Site Boundary
 - Study Area
- Classification**
- Arable Land (14.1)
 - Temperate Forest (1.4)
 - Urban Areas (14.5)
- Roads**
- Major Route
 - Minor Route
 - Local Route

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- Notes
- Site Boundary
 - Study Area
- Classification**
- Arable Land (14.1)
 - Temperate Forest (1.4)
 - Urban Areas (14.5)
- Roads**
- Major Route
 - Minor Route
 - Local Route

Revision Details	By	Date	Suffix

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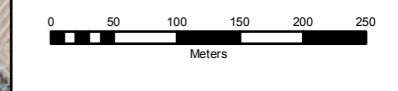
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Stage 1 check CB	Stage 2 check HL	Originated HL	Date 24/10/2016
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- Notes
- Approximate Brigade Location
 - Study Area
 - Access Routes
- Classification**
- Arable Land (14.1)
 - Inland Wetland Habitat (5.1)
 - Temperate Forest (1.4)
- Roads**
- Major Route
 - Minor Route
 - Local Route

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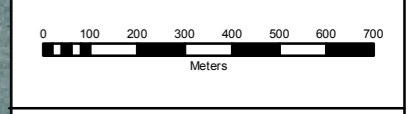
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- Notes
- Approximate Brigade Location
 - Study Area
 - Access Routes
- Classification**
- Arable Land (14.1)
 - Inland Wetland Habitat (5.1)
 - Temperate Forest (1.4)
- Roads**
- Major Route
 - Minor Route
 - Local Route

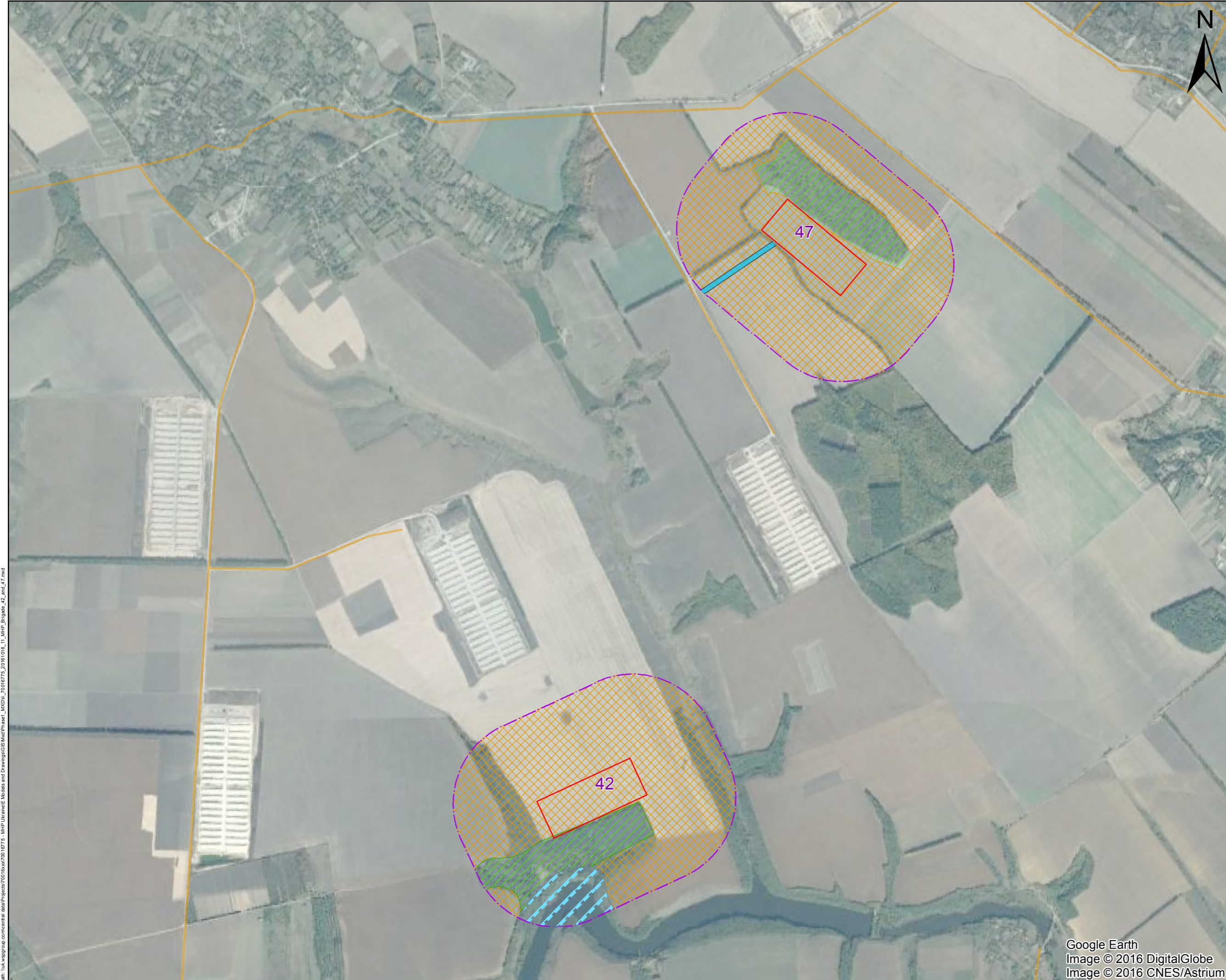


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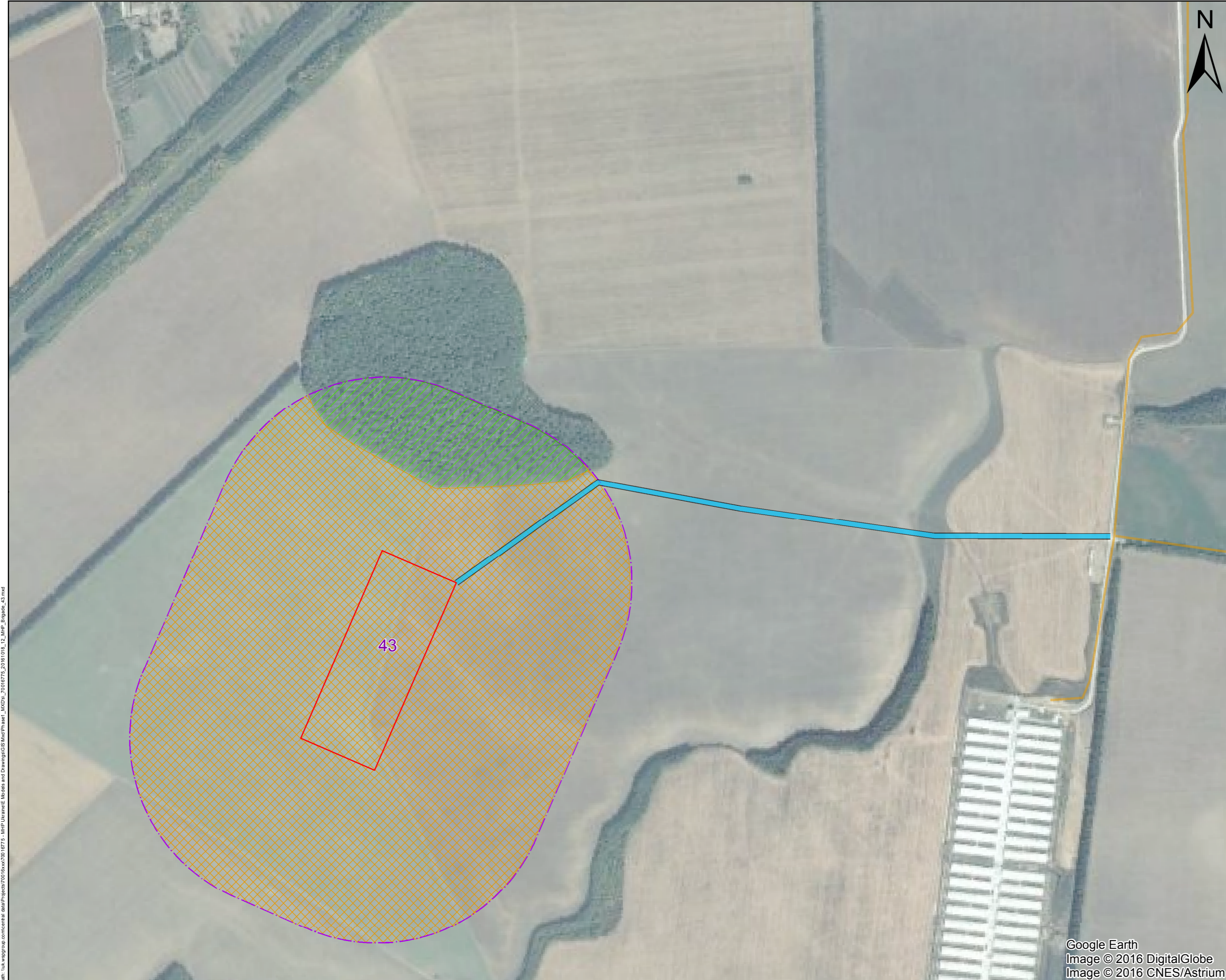
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- Notes
- Approximate Brigade Location
 - Study Area
 - Access Routes
- Classification**
- Arable Land (14.1)
 - Inland Wetland Habitat (5.1)
 - Temperate Forest (1.4)
- Roads**
- Major Route
 - Minor Route
 - Local Route

Revision Details	By	Date	Suffix
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Job Title	MHP Ukraine		
Drawing Title	Brigade 42 and 47 Phase 1		
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CB	HL	HL	24/10/2016
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- Notes
- Approximate Brigade Location
 - Study Area
 - Access Routes
- Classification**
- Arable Land (14.1)
 - Inland Wetland Habitat (5.1)
 - Temperate Forest (1.4)
- Roads**
- Major Route
 - Minor Route
 - Local Route

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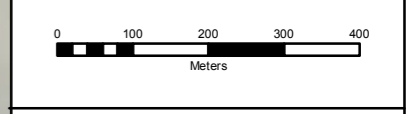
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- Notes
- Bypass Route
 - Study Areas
- Classification**
- Arable Land (14.1)
 - Inland Wetland Habitat (5.1)
 - Temperate Forest (1.4)
- Roads**
- Major Route
 - Minor Route
 - Local Route

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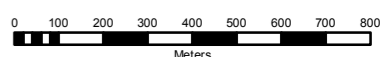

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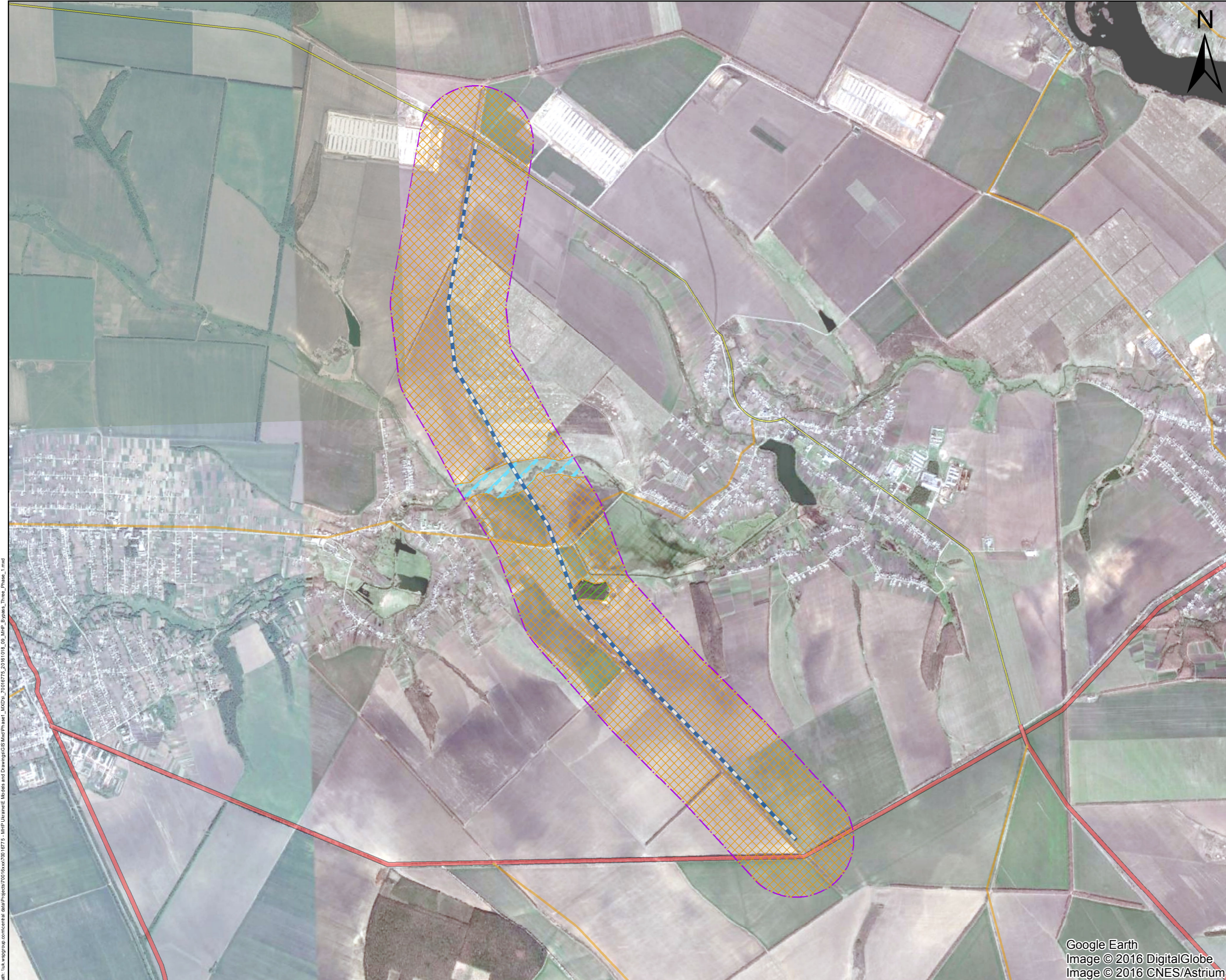
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-  Bypass Route
-  Study Area
- Classification**
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-  Inland Wetland Habitat (5.1)
-  Temperate Forest (1.4)
-  Temperate Shrubland (3.4)
-  Urban Areas (14.5)
- Roads**
-  Major Route
-  Minor Route
-  Local Route

Revision Details	By Check	Date	Suffix
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Notes

- Bypass Route
- Study Area
- Classification**
- Arable Land (14.1)
- Inland Wetland Habitat (5.1)
- Temperate Forest (1.4)
- Roads**
- Major Route
- Minor Route
- Local Route

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	Check		

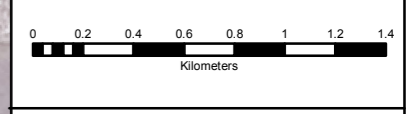
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Job Title
MHP Ukraine

Drawing Title
Bypass Three Phase 1

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Drawn	JA	Originated	Date
Stage 1 check	Stage 2 check	HL	24/10/2016
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Appendix B

MHP LAND ACQUISITION 27 STEPS PROCEDURE (UKRAINIAN AND ENGLISH VERSIONS)



ВІДОКРЕМЛЕНИЙ ПІДРОЗДІЛ
«ПТАХОФАБРИКА
«ВІННИЦЬКИЙ БРОЙЛЕР»
ПУБЛІЧНОГО АКЦІОНЕРНОГО ТОВАРИСТВА
«МИРОНІВСЬКИЙ ХЛІБОПРОДУКТ»

вул. Хлібозаводська, 2Б, м. Ладижин, 24321,
тел/факс: (04343) 6-76-08, код ЄДРПОУ 36287158

18.11.2015 № 495/1

«ЗАТВЕРДЖЕНО»

Директор ВП «Птахофабрика
Вінницький бройлер» МХП

Лещенко І.В.

**Порядок заходів по підготовці та отриманню дозволів
в державних органах для початку будівництва бригад по вирощуванню курчат бройлерів.**

1. Проведення зборів громади населеного пункту для роз'яснення намірів ВП «Птахофабрика «Вінницький бройлер» з будівництва, оголошення пропозицій по соціальному розвитку населеного пункту, обговорення питань, що цікавлять громаду.
2. Заключення договорів оренди на право користування земельною ділянкою або викуп земельних ділянок
3. Отримання розпорядження Районної Державної Адміністрації про розробку детального плану території
4. Оприлюднення у двотижневий строк прийнятого РДА розпорядження на розробку Детального плану території (опубліковується в засобах масової інформації та на офіційному веб- сайті РДА).
5. Розробляється детальний план території ліцензійною проектною організацією
6. Надання оголошення в засобах масової інформації та на офіційному веб- сайті РДА про початок процедури проведення громадських слухань щодо врахування громадських інтересів під час розроблення Детального плану території. Організація доступу громадськості до розробленого ДПТ (ДПТ знаходиться в приміщенні відповідної сільської ради)
7. Проведення обговорення та громадські слухання ДПТ не менше як через 30 календарних днів після публікації оголошення в засобах масової інформації
8. Оприлюднення результатів розгляду пропозицій громадськості до ДПТ в двотижневий строк з дня проведення обговорення(зборів) в засобах масової інформації та на офіційному веб- сайті РДА.
9. Подання ДПТ на рецензію ліцензійній організації
10. Після проведення громадських слухань та обговорення, отримання рецензії ДПТ подається на розгляд архітектурно-містобудівної ради при обласному управлінні архітектури, яка на протязі 20 робочих днів розглядає та надає свої висновки по проекту.
11. Після врахування зауважень архітектурно-містобудівної ради, рецензії та громадськості ДПТ розглядається та затверджується відповідної районною державною адміністрацією протягом 30 днів з дня його подання.

12. Отримання містобудівних умов та обмежень забудови земельної ділянки від відділу архітектури РДА на протязі 7 робочих днів
13. Отримання дозволу на проведення інженерних вишукувань в місцевих органах влади на протязі 7 робочих днів
14. Проведення геодезичних та геологічних інженерних вишукувань .
15. Розроблення проекту будівництва бригади з вирощування курчат бройлерів стадії «Проект»
16. Опублікування заяви про наміри та екологічні наслідки будівництва бригади з вирощування курчат бройлерів
17. Погодження заяви про наміри бригади з вирощування курчат бройлерів в РДА.
18. Оголошення про проведення та про обговорення заяви про наміри та екологічні наслідки в засобах масової інформації та на офіційному веб- сайті РДА
19. Проведення обговорення та громадські слухання заяви про наміри та екологічні наслідки, на протязі місяця, з моменту надання оголошення в засобах масової інформації та на офіційному веб- сайті РДА
20. Оголошення про результати проведених громадських слухань опубліковуються в засобах масової інформації та на офіційному веб- сайті РДА на протязі 10 робочих днів
21. Проводиться експертиза проекту будівництва бригади з вирощування курчат бройлерів на протязі 90 днів
22. Отримання розпорядження РДА про розробку проекту землеустрою, що до зняття, перенесення та збереження родючого шару ґрунту на протязі 10 робочих днів
23. Розроблення робочого проекту землеустрою що до зняття родючого шару ґрунту на протязі 30 днів.
24. Отримання в Державній інспекції сільського господарства у Вінницькій області дозволу на зняття, перенесення та збереження родючого шару ґрунту з земельних ділянок на яких буде розташована бригада по вирощуванню курчат бройлерів
25. Розроблення проекту проведення робіт підготовчого періоду по бригаді з вирощування курчат бройлерів
26. Отримання в архітектурно-будівельній інспекції у Вінницькій області декларації на право проведення робіт підготовчого періоду (реєстрація проводиться на протязі 5 робочих днів)
27. Отримання в Держархбудінспекції України дозволу на право виконання будівельних робіт на протязі 10 робочих днів.

P.S. Погодження надається РДА якщо об'єкт знаходиться за межами населеного пункту.
В іншому випадку – місцевими органами міської чи селищних рад.
Старатись громадські слухання по ДПТ та заяви про наміри провести разом

Провідний фахівець з дозвільної та технічної документації



Турчинський С.В.

« ___ » _____ 2015 р.

DETACHED SUBDIVISION POULTRY FARM
“VINNYTSKYI BROILER”
PUBLIC JOINT STOCK COMPANY
MIRONIVSKY HLIBOPRODUCT

2B Khlibozavodska Street, Ladyzhyn, 24321,
Tel/fax: (04343) 6-76-08, USREOU code 36287158

18/11/2015 No.795/1

“APPROVED”

**Director of DS Poultry Plant “Vinnytskyi
Broiler”, MHP**

/signature/ *Leshchenko I.V.*

**Procedure of activities on preparation and obtaining permissions from public authorities to start
construction of work teams for growing broiler chickens.**

1. Conduct of settlement community meeting to explain intentions of DS Poultry Farm “Vinnytskyi Broiler” as for construction, to announce proposals for social development of the settlement, to discuss issues of interest to the community.
2. Conclusion of lease agreements for the right to use land plots or land buyout.
3. Receiving orders from the District State Administration on development of a detailed plan of territory.
4. Disclosure of the District State Administration order on development of a detailed plan of territory within two weeks (shall be published in mass media and on the official web site of the District State Administration).
5. Detailed plan of the territory is developed by the licensed project organization.
6. Providing notification in mass media and on the official web site of the District State Administration on start of public hearings procedure on consideration of public interest during detailed plan of the territory development. Organization of public access to developed detailed plan of the territory (detailed plan of the territory shall be located at premises of the corresponding village council)
7. Discussions and public hearings on detailed plan of the territory shall be held at least 30 calendar days after publication of notification in mass media
8. Disclosure of consideration results of public proposals on detailed plan of the territory in mass media and on the official web site of the District State Administration in two weeks from the date of discussion (meeting) conduct.
9. Submission of the detailed plan of the territory for review to licensing organization
10. After public hearings and discussions conduct, receipt of the review, the detailed plan of the territory shall be submitted to architectural and urban council at the Regional Department of Architecture for consideration, which shall examine it for 20 business days and provide its opinion on the project.
11. After consideration of comments from architectural and urban council, of review and public opinion, the detailed plan of the territory shall be considered and approved by the respective district state administration within 30 days from its submission.
12. Receipt of town-planning conditions and restrictions as of land plot development from the Department of Architecture of District State Administration within 7 business days.
13. Obtaining permission to conduct engineering surveys from local governmental bodies within 7 business days.
14. Conduct of geodesic and geological and engineering surveys.

Appendix C

**BEST AVAILABLE TECHNIQUES - AIR AND WATER EMISSIONS,
PROCESS WASTE AND OPERATIONAL TECHNIQUES**

BEST AVAILABLE TECHNIQUES

EMISSIONS TO AIR

EMISSIONS TO WATER

PROCESS WASTE AND OPERATIONAL
TECHNIQUES

NOVEMBER 2016

1 INTRODUCTION

This assessment of Best Available Techniques (BAT) and compliance with emission standards has been undertaken in accordance with the relevant technical guidance issued by the International Finance Corporation (IFC). The guidelines which have been used to perform this assessment are detailed below and are relevant to the activities performed within the Vinnitsiya Poultry complex:

- Environmental, Health, and Safety Guidelines for Poultry Processing APRIL 30, 2007;
- Environmental, Health, and Safety Guidelines for Poultry Production APRIL 30, 2007;
- Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines April 30 2007; and
- IFC Good Practice Note Improving Animal Welfare in Livestock Operations December 2014

2

EMISSIONS TO AIR

This section details the Good International Industrial Practice (GIIP) as defined by the International Finance Corporation (IFC) Guidelines detailed above with regards to emissions to air through combustion emissions from the Poultry complex's boiler plant, odour and dust generation from farm and poultry processing activities.

2.1 ODOUR PREVENTION AND CONTROL

Odour can potentially be generated from the following activities undertaken by the following Vinnitsiya Poultry Complex operations:

- Poultry growing units;
- Manure handling, storage and composting;
- Landspreading activities;
- Wastewater storage and treatment;
- Slaughtering of the poultry;
- Rendering of poultry waste; and
- Handling and storage of poultry waste.

The following Tables 2.2 to 2.3 shows the compliance of the Vinnitsiya Poultry Complex with regards to odour prevention and control.

Table 2.1 Recommended measures to prevent the generation of odour emissions

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Maintenance of clean live bird handling areas by removing fecal matter and dead birds on a daily basis;	Dead birds removed on a daily basis from the poultry farms. Fecal matter removed from all areas where birds are handled outside the farm buildings on a daily basis.	Yes
Emptying and cleaning fat traps frequently;	The fat traps at the slaughterhouse and rendering plant are subject to regular inspection and cleaning. Removed solids from the slaughterhouse are included within the rendering facility.	Yes
Reducing the inventory of raw carcasses, waste, and by-products and minimizing any storage to short periods of time in a cold, closed, well-ventilated area. Dead birds, waste, and byproducts should not be stored in open spaces, where possible;	At the poultry farms dead birds are collected from each building on a daily basis. These are collected in enclosed metal containers which are taken to the edge of the clean zone well away from the farm buildings and these are collected daily by vehicle in the enclosed containers for transport for processing at the rendering facility.	Yes
Sealing off animal by-products during transport and transporting blood in insulated	All by-product materials are transported directly from the slaughterhouse to the adjacent	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
containers to reduce temperature increase;	rendering facility. There are heat treatment vessels for the processing of non-hazardous material, hazardous material, blood and feathers. All except hazardous material would be incorporated into a produced feed material after treatment.	
Where feasible, installation of rendering equipment in enclosed buildings operated under negative air pressure.	The rendering operation is undertaken in an enclosed building.	Yes

Source : IFC Environmental, Health, and Safety Guidelines Poultry Processing

Table 2.2 Recommended measures to prevent the generation of odour emissions

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Use of exhaust stack heights from rendering and smoking processes that are consistent with Good Engineering Practice (GEP) as described in the General EHS Guidelines;	A stack height assessment was not undertaken for the stack. The height of the discharge point is 1 above the roof line which is at least 15m above ground level. This should ensure adequate dispersion.	Partial- the stack is of sufficient height to provide adequate dispersion but quantifiably justified. The sanitary protection zone ensures sufficient separation of the rendering plant from the nearby town.
If the facility is in close proximity to residential areas, the use of wet scrubbers to remove odour emissions should be considered. Wet scrubbers are used to remove odours with a high affinity to water, such as ammonia emitted during the rendering process.	The sanitary protection zone ensures sufficient separation of the rendering plant from the nearby town.	Yes

Source : IFC Environmental, Health, and Safety Guidelines Poultry Processing

Table 2.3 Recommended measures to reduce impacts of ammonia and odours

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Consider the siting of new facilities taking into account distances to neighbours and the propagation of odours;	The sanitary protection zone ensures sufficient separation of the rendering plant from the nearby town.	Yes
Control the temperature, humidity, and other environmental factors of manure storage to reduce emissions;	<p>The manure storage facility has a capacity of 450,000 tonnes (reportedly 6 months' supply), which is stored on concrete hard standing in channels which are divided by concrete walls. There is also a lagoon present on site, for the collection of leachate.</p> <p>An additional manure storage site will be developed as part of the phase II expansion.</p> <p>When designing and locating the manure store, it was reported that the prevailing wind direction was considered in order to minimise the potential impact caused by odour. The distance to the nearest</p>	Partial- whilst the manure is not specifically managed in terms of temperature and humidity the moisture content is relatively low which should minimise microbial action. The site is well away from residential areas which would reduce the potential for complaints.

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	residential area is approximately 3km.	
Consider composting of manure to reduce odour emissions;	Manure is subject to a composting process.	Yes
Reduce emissions and odours during land application activities by applying a few centimeters below the soil surface and by selecting favourable weather conditions (e.g. wind blowing away from inhabited areas);	Rotary equipment is used for the spreading activities. Prior to commencing the spreading activities it is a strict requirement, that the incorporating machinery is present. The incorporation vehicle (Rotavators) closely follow the spreading equipment to immediately incorporate the manure into the soil, thereby minimising the potential for odour and also loss of nutrients. There is a maximum of 4 hours between spreading and incorporating, however it is likely to be less than 1 hour.	Yes
If necessary, apply chemicals (e.g. urinase inhibitors) weekly to reduce conversion of nitrogen to ammonia;	Manure spreading is planned according to a crop strategy, which assesses the specific nutrient demand of the crops, and documented in the field passports. Therefore, spreading is undertaken as close to the crop growing cycle to ensure the maximum uptake of nitrogen and reduce the potential for any ammonia generation.	Yes

Source : IFC Environmental, Health, and Safety Guidelines Poultry Production

2.2 DUST MINIMISATION

This section details the GIIP with regards to the prevention of generation of dust. The main sources of dust generation at the Vinnitsiya farm complex are:

- Grain handling, storage in silos and transfer;
- Fodder production, storage and handling;
- Biomass combustion; and
- Vehicle movements.

The main control in place at the fodder complex are cyclone systems on the feed mill, bag filters on the biomass combustion system, and filters on storage silo vents

The following Table 2.4 shows the compliance of the Vinnitsiya Poultry Complex with regards to dust minimisation.

Table 2.4 Measures recommended to minimize dust generation

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Install dust collection systems (including use of misters) in areas with dusty operations (e.g. feed grinding);	The feed grinding and preparation systems are undertaken in the fodder complex within the feed mill. This is within a fully enclosed building. Air is extracted via	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	cyclones.	
Implement fugitive dust-control measures (e.g. wetting vehicle parking lots and frequently travelled dirt roads, as necessary);	All vehicle movement areas are kept clean and free from accumulated materials such as feed or mud. The roads are periodically cleaned by road cleaner.	Yes
Ensure the prevention of bioaerosols emissions, which may contain disease-causing agents, through the application of the above-reference dust and emissions control measures in manure production and storage facilities.	The above measures would be implemented at the composting facility if required.	Yes

Source : IFC Environmental, Health, and Safety Guidelines Poultry Production

2.3

STACK EMISSIONS

Table 2.5 below shows the Vinnitsiya farm complex compliance with Ukrainian requirements and WHO Guidelines for emissions to air from small combustion plant.

Table 2.5 Stack Emission Limits Fodder Complex

BEST AVAILABLE TECHNIQUE	UKRAINIAN LIMITS	WHO EMISSION GUIDELINES MG/M3	ANNUAL MONITORING 2015 MG/M3	COMPLIANT
Fuel-Biomass@6% O₂				
SO ₂	-	2000	11.39	Yes
Nitrogen dioxide (NO ₂)	-	650	112.34	Yes
Particulate Matter PM ₁₀	-	50 or up to 150 if justified by environmental assessment	32.12	Yes
Feed Mill				
Particulate Matter PM ₁₀	-	50	7.7	Yes
Grain Elevators (Drying and unloading)				
Particulate Matter PM ₁₀	-	-	10.57	-
NO ₂	-	-	68.14	-
Sunflower crushing				
Particulate Matter PM ₁₀	-	-	2.09	-
Combined Fodder plant				
Particulate Matter PM ₁₀	-	-	2.48	-

Small Combustion Facilities Emissions Guidelines (3MWth – 50MWth) – (in mg/Nm³ or as indicated)

Table 2.5 above shows that the Vinnitsiya fodder complex is compliant with Ukrainian requirements and WHO Guidelines for emissions to air from small combustion plant.

The boiler testing for the slaughterhouse is purely for trimming the operational efficiency of the boiler rather than for stack emissions testing. Tests mainly cover oxygen, carbon monoxide and carbon dioxide.

There are four natural gas fired boilers at the slaughterhouse facility each with a thermal input of 10MW. These boilers consumed 11,456,891m³of natural gas in 2015 and have annual emissions

testing for operability and oxygen trim. These annual emissions test do not include assessment of NOx emissions for which IFC have an emission limit of 320 mg/Nm³ for gas fired boilers.

2.4 GREENHOUSE GAS EMISSIONS

The IFC Environmental, Health, and Safety Guidelines General EHS Guidelines states that “*Sectors that may have potentially significant emissions of greenhouse gases (GHGs) include energy, transport, heavy industry (e.g. cement production, iron / steel manufacturing, aluminum smelting, petrochemical industries, petroleum refining, fertilizer manufacturing), agriculture, forestry and waste Management*”. Therefore, as agricultural operations are considered to have the potential for a significant release of GHGs they are considered further in accordance with the recommendations from the General EHS Guidelines detailed in Table 2.6 below.

Table 2.6 Recommendations for reduction and control of greenhouse gases

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Carbon financing	No carbon based financing as part of the investment programme.	
Protection and enhancement of sinks and reservoirs of greenhouse gases	The land bank used for agricultural purposes for the Vinnitsiya Poultry Complex does not include newly deforested areas. The access road does go through a wooded area and there is some deforestation restricted to the right of way which is the road plus a small distance either side of the road to ensure that trees are unable to fall onto the road.	Yes
Promotion, development and increased use of renewable forms of energy	The boilers at the fodder complex utilise sunflower husks produced from the fodder production process as a biomass fuel. This is a biogenic and renewable form of energy.	Yes
Carbon capture and storage technologies	Carbon capture and storage technologies not used at the Poultry Complex. The farming enterprise and crops grown would act as a carbon sink through the uptake of carbon through their growing cycle.	Yes
Limitation and / or reduction of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy (coal, oil, and gas)	The waste from the farm units mainly comprises sunflower husk with bird fecal matter. The sunflower husk is a very dry material and is not readily suitable for use in an anaerobic digestion plant for the generation of biogas. The waste from the poultry units are taken away for composting, This process would not readily produce methane under aerobic conditions.	Yes

MHP have benchmarked the greenhouse gas emissions for the Vinnitsiya Poultry complex and in 2015 these emissions were 787,870 tonnes of CO₂ equivalent. The greatest contributor of emissions was from vehicle fuel consumption and indirect GHG emissions from electricity consumption.

3 EMISSIONS TO WATER

3.1 WASTEWATER GENERATION

Preliminary waste water treatment, of process water, is undertaken at poultry farms, prior to being tankered off site and transported to an MHP waste water treatment plant for further processing, prior to being discharge to surface water.

MHP operates several waste water treatment plants across several sites. Many poultry sites have preliminary treatment, prior to being transported, typically, to a four stage treatment as follows:

- First stage – flotation solids removal, including flocculant and coagulant addition.
- Second stage – anaerobic treatment process.
- Third stage - aerobic treatment and further separation.
- Fourth stage - mechanical treatment (such as sand and carbon filtration) and disinfection by UV, followed by discharge to surface water.

The current WWTP has a capacity to treat 5,500m³/day. The first stage of treatment is flotation with chemical addition of flocculants and coagulants, followed by a secondary treatment through 4 sand filters and 4 activated carbon filters (2 biofilters). The water then passes through an ultra violet water disinfection treatment system. A 2nd phase of the plant is intended as part of Phase 2 of the overall project. This will largely mirror the 1st part of the plant as described.

The flow rate is continuously monitored at both the inlet and also the discharge points. Daily monitoring of several parameters is also undertaken in the onsite lab. A discharge permission is in place onsite and requires monitoring and reporting to the State.

The following Tables 3.1 and 3.2 show the compliance of the Vinnitsiya Poultry Complex with regards to wastewater generation and practices to minimise wastewater production.

Table 3.1 Recommended techniques to minimize generation of wastewater

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Removal of solid organic waste from transport equipment before rinsing and washing. Organic materials should be collected separately for recycling;	The organic wastes from the farm are collected in enclosed metal wheeled bins which are transported directly to the rendering plant and emptied of all contents prior to cleaning.	Yes
Use of grids and screens in the factory floor to prevent solid organic material from entering the wastewater collection channels;	Catchpots are used within the slaughterhouse and rendering plant to prevent solids entering wastewater systems. The solids are collected and sent for rendering.	Yes
Ensuring that leakage from animal by-product storage containers is avoided (e.g. preventive maintenance, corrosion inspection);	The poultry farm complex has protocols in place for the inspection of storage vessels in line with Ukrainian legislation. In addition there is a preventative maintenance programme as well as corrective action programme to prevent problems occurring and if they do so rectifying them when identified.	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Use of dripping trays to collect blood and ensure that it is transported to the blood tank rather than into the wastewater stream;	Blood drains to a drip tray below the kill area to a blood tank for onward treatment at the rendering plant.	Yes
Consider use of steam scalding of birds to avoid excessive wastewater generation from scalding tanks;	Scalding done using hot water in tank. The operators monitor the fill of the tank to prevent overflowing.	Partial
Where scalding tanks are used, ensuring the entry of birds to the scalding tank does not cause overflow of the tank liquid. Drippings from birds leaving the scalding tank and from overflows should be collected and reused in the scalding tank;	Scalding done to remove feathers using hot water. The entry of the birds does not cause an overflow and the drips from the birds as they immediately leave the tank are collected.	Yes
Regular adjustment of evisceration machinery to reduce accidental release of fecal matter due to the rupture of birds' intestinal tract (resulting in the need for frequent rinsing);	The birds enter and exit on an overhead conveyor on hooks. Feathers drop to the drain below and are conveyed to the rendering plant. Evisceration machinery is inspected throughout operation and adjusted if necessary.	Yes
Where feasible, transportation of organic material using vacuum pumps instead of water transport;	Entrails transported by water in vacuum tubes with other meat types transported by conveyors.	Partial
Application of appropriate tank and equipment cleaning procedures. Cleaning-in-Place (CIP) procedures are useful to reduce chemical, water, and energy consumption in cleaning operations;	Equipment is cleaned in accordance with procedures in place under the Hazard Analysis Critical Control Point (HACCP) ISO22000 system to ensure food hygiene as the first priority. Regard is taken through staff training to cleaning methods to ensure that water and chemicals are not overused.	Yes
Choosing cleaning agents and application rates that do not have adverse impacts on the environment, or on wastewater treatment processes and sludge quality for agricultural application.	Cleaning agents chosen are those that are acceptable for use within a food environment as defined by the HACCP ISO22000 system that MHP are certified to. This should ensure the absence of any potential chemicals having an adverse impact on either the wastewater treatment plant or landspreading applications.	Yes

Source : IFC Environmental, Health, and Safety Guidelines for Poultry Processing

Table 3.2 Recommended techniques to minimize generation of wastewater

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Reduce water use and spills from animal watering by preventing overflow of watering devices and using calibrated, well-maintained	Watering is undertaken via nipple feeders which supplies water upon demand.	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
self-watering devices;		
Install vegetative filters to trap sediment;	There are initial filters in place at the fodder complex to remove sediment prior to entering the water treatment process.	Yes
Install surface water diversions to direct clean runoff around areas containing waste;	Surface water system at the farm goes to the surrounding soakaways. There is very little waste at the farms and this waste is collected to dedicated areas away from surface water run-off. At the fodder complex surface purified water is separate from wastewater systems and goes to wastewater treatment facility by pipes.	Yes
Implement buffer zones to surface water bodies, as appropriate to local conditions and requirements, and avoiding land spreading of manure within these areas.	Buffer strips of a minimum 25m are maintained on the spreading fields.	Yes

Source : IFC Environmental, Health, and Safety Guidelines for Poultry Production

3.2 DISCHARGE TO WATER

Table 3.3 shows the compliance of the Vinnitsiya Poultry Complex with regards to wastewater discharge emissions against Ukrainian limits and guideline values from IFC Environmental, Health, and Safety Guidelines Poultry Processing. This shows that the Ukrainian regulations requires stricter emissions for discharge to water for the majority of the key parameters most notably BOD₅, COD, total phosphorous and total suspended solids.

Table 3.3 Wastewater Discharge Limits and Results

BEST AVAILABLE TECHNIQUE	UKRAINIAN LIMITS	IFC GUIDELINE VALUES MG/L	EFFLUENT RECEIVED AT THE TREATMENT PLANT (IN-FLOW) MG/L	EFFLUENT FOR DISCHARGE AFTER AEROBIC AND BIOLOGICAL TREATMENT MG/L	COMPLIANT?
pH	6.5-8.5	6-9	No details	No details	No details
BOD ₅	3.5	50	5931.25	2.323	Yes
COD	28	250	9998.5	22.634	Yes
Total nitrogen	Ammonium nitrogen 0.34	10	5.518	0.239	The Ukrainian requirements are for ammonium nitrogen rather than total nitrogen. MHP are compliant with the ammonium nitrogen standard.
Total phosphorus	0.25	2	33.239	0.214	Yes
Oil and grease	No details	10	7443.19	-	No details

BEST AVAILABLE TECHNIQUE	UKRAINIAN LIMITS	IFC GUIDELINE VALUES MG/L	EFFLUENT RECEIVED AT THE TREATMENT PLANT (IN-FLOW) MG/L	EFFLUENT FOR DISCHARGE AFTER AEROBIC AND BIOLOGICAL TREATMENT MG/L	COMPLIANT?
Total suspended solids	20.25	50	8436.25	7.09	Yes
Total coliform bacteria	No details	MPN 400/100ml	No details	No details	No details.

Source : IFC Environmental, Health, and Safety Guidelines Poultry Processing

In 2015 none of the readings exceeded the permitted limits.

4

PROCESS WASTE AND OPERATIONAL TECHNIQUES

4.1 PROCESS WASTE

The following Tables 4.1 to 4.3 shows the operational techniques of the Vinnytsia Poultry Complex and alignment with accepted best practice, with regards to waste generation and disposal.

Table 4.1 Solid Organic Wastes and By-products

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Halting feeding 6 to 10 hours 4 before transport to reduce the volume of excreta to be removed after transport or slaughter. Provision of adequate slurry storage capacity for excreta until it is transported for disposal or for use as agricultural fertilizer;	Feeding is halted 6 hours before transport to slaughter although the birds still have access to water. The site does not generate slurry as the sunflower husk absorbs all excreta and this is cleaned out at the end of the breeding cycle. This is then sent to the manure storage facility.	Yes
Reprocessing as much of the low-risk and high-risk material as possible. Recommended guidance on handling of risk materials includes: o Since disposal of high-risk material is typically conducted through off-site rendering in an energy intensive process, avoiding mixing low-risk and high-risk materials is recommended. A mixture of low-risk and high-risk materials should be classified as high-risk material and treated accordingly o Examples of reprocessing opportunities for low-risk material include use of feathers and down from waterfowl in garments and household items; use of heat treated products as animal feed for pigs, fish and shrimp production; and use of poultry feet for human consumption	The site has a rendering facility for the processing of animal components, blood, feathers and solids captured by catch pots in the slaughterhouse. There is no high risk material generated within the farm complex.	Yes
For low-risk material that cannot be reprocessed into by-products, alternative treatments such as acidification, biogas production, use as agricultural fertilizers, and incineration should be considered. Incineration should only be conducted in permitted facilities operating under international recognized standards for pollution prevention and control	All low-risk material is processed through the rendering plant for conversion into a high-quality animal feed product.	Yes

Table 4.2 Measures recommended to minimise the amount of manure produced and to facilitate handling of animal wastes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Implement a Comprehensive Nutrition Management Plan, including a nutrient mass balance for the entire farm. The plan should ensure that manure application does not exceed the nutrient uptake by vegetation and should include record-keeping of nutrient management practices	<p>A nutrient mass balance is not undertaken at the level of the poultry complex given the size and complexity of the operation.</p> <p>Nutrient balance is controlled through the correct feeding regime for each age of bird and ensuring that the manure is closely matched to the fields upon which it is to be spread.</p> <p>There are 5 different feed recipes which are produced by the fodder complex which are developed for the different age profile of the birds to ensure they receive the correct amount of nutrition at each stage of development.</p> <p>Samples of the manure mixture are analysed at the laboratory. The analysis process generates 'technological cards', which describe the specification of the manure. This information is then used to fully inform a specific manure spreading strategy which is produced for each spreading location.</p>	Yes
Match feed content to the specific nutritional requirements of the birds in their different production / growth stages;	There are 5 different feed recipes which are produced by the fodder complex which are developed for the different age profile of the birds to ensure they receive the correct amount of nutrition at each stage of development.	Yes
Use low-protein diets, supplemented with amino acids	Feed recipes include 0.758% mono calcium phosphate (0.201% phosphorous by molecular weight) as a highly digestible inorganic phosphate and lysine as an amino acid.	Yes
Use low-phosphorus diets with highly digestible inorganic phosphates (e.g. for poultry, a total phosphorus reduction of 0.05 to 0.1 percent [0.5 to 1 g/kg of feed] can be achieved)	Feed recipes include 0.758% mono calcium phosphate (0.201% phosphorous by molecular weight) as a highly digestible inorganic phosphate and lysine as an amino acid. The phosphorous fraction is less than 0.75% with the majority being inorganic which should lead to less of it passing through to the faecal matter.	No
Use quality, uncontaminated feed materials (e.g. where concentrations of pesticides and dioxins are known and do	MHP have their own feed complex which is able to produce the different feed recipes for the birds. The incoming raw materials are	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
not exceed acceptable levels) that contain no more copper, zinc, and other additives than is necessary for animal health	tested for any potential contaminants upon receipt before they are allowed to discharge their product to silo.	
Ensure production and manure storage facilities are constructed to prevent manure contamination of surface water and ground water (e.g. use of concrete floors, use of roof gutters on buildings to collect and divert clean storm water, and covering manure storage areas with a fixed roof or plastic sheeting)	The manure storage facility has a capacity of 450,000 tonnes (approximately 6 months' supply), which is stored on concrete hard standing in channels which are divided by concrete walls. There is also a lagoon present on site, for the collection of leachate. The manure can be covered with plastic sheeting if it is not required for long periods for example over the winter non-growing season.	Partial
Keep waste as dry as possible by scraping wastes instead of or in addition to flushing with water to remove waste, minimize amount of water used during cleaning (for example, by using high-pressure, low-flow nozzles)	The farm buildings are scraped out first to get the sunflower husk bedding out to reduce the amount of wet cleaning required.	Yes
Use hot water or steam in cleaning activities instead of cold water, as this can reduce the amount of water used by 50 percent;	The farm buildings are dry cleaned first and are then subject to steam cleaning.	Yes
Further reduce the moisture content of dry poultry excreta (e.g. by blowing dry air over it or by conveying ventilation air through the manure pits)	The humidity in the farm buildings are kept within a tolerable range for the birds. Temperature is effectively controlled through the use of ventilation during hot periods and gas heaters in cold weather to provide sufficient drying within the building. There are no manure pits in the farm buildings.	Yes
Minimize the surface area of manure in storage;	Currently manure is not specifically compacted. There is some compaction degree of compaction when the manure is placed through the use of excavator equipment.	Partial- some changes to practices can be implemented to improve this further.
Locate manure piles away from water bodies, floodplains, wellheads or other sensitive habitats	The buffer zone varies from between 25 metres to 100 metres, depending on the significance of the protection required.	Yes
Check for leakage regularly (e.g. inspect tanks for corrosion of seams, especially those near ground level, and empty tanks at least annually or as necessary)	MHP have protocols in place for the inspection and preventative maintenance for tanks to prevent any leakage.	Yes
Place dry manure or litter in a covered or roofed area	Manure is not stored under a roofed area. The manure can be covered with plastic sheeting if it is not required for long periods for example over the winter non-growing season.	Partial

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Conduct manure spread only as part of a comprehensive nutrient and waste management plan that takes into account the potentially harmful constituents of this waste including potential phyto-toxicity levels, potential concentration of hazardous substances in soils and vegetation, as well as nutrient limits and groundwater pollutant limits. 10 If possible, land spread manure directly after batch cleaning (most ammonia is emitted during the manure's first month of storage) and only during periods that are appropriate for its use as plant nutrient (generally just before start of the growing season)	<p>Periodically, samples of the manure mixture are analysed at the laboratory. The analysis process generates 'technological cards', which describe the specification of the manure. This information is then used to fully inform a specific manure spreading strategy which is produced for each spreading location. A chief agronomist is responsible for the crop strategies and manure management planning.</p> <p>Each field has an individual field passport. The field passport is a comprehensive document which is approved by the Ministry of Agrarian Policy and Food of Ukraine State Enterprise. The document provides an overview of the farming activities employed on each field as well as soil composition. The results from the analysis of the manure, as well as the growth period and the soil determine the specific spreading strategy. A strategy is also employed to use manure as close as possible to where it was produced (factoring in the nutrient requirements of the land), thereby reducing transportation cost and the potential for nuisance related impacts during transport.</p>	Yes
Manure storage facilities should have sufficient capacity for 9–12 months of manure production to so that manure can be applied to agricultural land at appropriate times	The manure storage facility has a capacity of 450,000 tonnes (reportedly 6 months' supply), which is stored on concrete hard standing in channels which are divided by concrete walls. An additional storage facility will be developed for the Phase 2 farms.	No- manure is utilised in accordance with the crop growing requirements for summer and winter crops where appropriate and storage of 6 months would be sufficient to ensure that there is sufficient capacity to store the manure during the non-growing period.
Design, construct, operate, and maintain waste management and storage facilities to contain all manure, litter, and process wastewater including runoff and direct precipitation.	All facilities are designed to ensure that there is no release of any materials. For example, at the slaughterhouse and rendering facility drainage is directed to the wastewater treatment plant and at the manure storage area any leachate goes to the storage lagoon for collection.	Yes
Remove liquids and sludge from lagoons as necessary to prevent overtopping	MHP owns tankers and would be able to remove liquids from the manure leachate lagoon should it be nearing capacity.	Yes
Build a reserve slurry storage lagoon.	There is no requirement for a slurry lagoon at the farm due to the	N/A

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	relatively dry nature of the sunflower husk bedding. At the manure storage area the leachate can be emptied by tanker if required.	
Transport liquid effluent in sealed tankers	All liquids are transported by sealed tankers. This is mainly applicable to the wash waters from cleaning at the end of the 45 day breeding cycle at each farm.	Yes
Manage sludge and sediments from wastewater treatment systems as part of the solid waste stream and according to the principles applied manure and other solid wastes with special consideration of potentially harmful constituents	Sludge and sediments are managed as solid waste and go to the manure storage area for landspreading. There are multiple screens before the sludge is generated which remove any organic materials.	Yes

Source : IFC Environmental, Health, and Safety Guidelines Poultry Production

Table 4.3 Recommended measures for the management and disposal of poultry carcasses

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Reduce mortalities through proper animal care and disease prevention	The farm complex has a dedicated veterinarian to manage the disease prevention activities and to ensure bird welfare. The farm complex also utilises approved medicines in order to ensure bird health. There have been no known outbreaks of high risk infections that have affected the farm complex.	Yes
Collect carcasses on a regular basis to prevent putrefaction	Carcasses are collected from farm buildings on a daily basis and transferred to the rendering plant.	Yes
Compost only disease-free carcasses and ensure that the composting process is managed to prevent leachate and odors (e.g. sufficient cover material, proper temperature and moisture content)	Carcasses are sent to the rendering facility and are not composted.	Yes
Use reliable commercially available options approved by local authorities that dispose of carcasses by rendering or incineration, depending on the cause of fatality. Incineration should only be conducted in permitted facilities operating under international recognized standards for pollution prevention and control	MHP utilise their own rendering facility and all bird carcasses and organic matter is sent back to the rendering plant for conversion to a high quality animal feed.	Yes
Where no authorized collection of carcasses is available, on-site burial may be one of the only viable alternatives, if allowed by the authorities. Whether on-site or off-site, the burial area should be	No burial undertaken.	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
accessible to earthmoving machinery and be designed and located so as to avoid contamination by vapors or leachate from buried, decaying carcasses; Open burning should be avoided		

Source : IFC Environmental, Health, and Safety Guidelines Poultry Production

From the tables above we can see that good international industrial practice is adhered to for the majority of the requirements with those exceptions being detailed within the ESMP.

Appendix D

**BEST AVAILABLE TECHNIQUES – BIOSECURITY AND ANIMAL
WELFARE**

BEST AVAILABLE TECHNIQUES

BIOSECURITY

ANIMAL WELFARE

NOVEMBER 2016

1 INTRODUCTION

This assessment of Best Available Techniques (BAT) has been undertaken in accordance with the relevant technical guidance issued by the International Finance Corporation (IFC). The guidelines which have been used to perform this assessment are detailed below and are relevant to the activities performed within the Vinnitsiya Poultry complex:

- Environmental, Health, and Safety Guidelines for Poultry Processing APRIL 30, 2007;
- Environmental, Health, and Safety Guidelines for Poultry Production APRIL 30, 2007;
- Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines April 30 2007; and
- IFC Good Practice Note Improving Animal Welfare in Livestock Operations December 2014

2

BIOSECURITY

2.1

ANIMAL DISEASES

The following Table 2.1 shows the management techniques in place at the Vinnytsia Poultry Complex against the IFC accepted best practice guidelines, with regards to animal disease prevention and biosecurity.

Table 2.1 Recommended management measures to minimise the potential for the spread of poultry pathogens

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Establish sound biosecurity protocols for the entire poultry operation that control animals, feed, equipment, and personnel, entering the facility (for example, quarantine periods for new animals, washing and disinfecting equipment, showering and protective clothing and footwear for personnel, and keeping out stray animals, rodents and birds)	<p>The whole Vinnitsiya Poultry complex is considered with regards to its biosecurity controls.</p> <p>For example, feed delivered from the fodder plant delivers feed into silos using extended hoses that allow them to do so without entering the poultry farm. Feed is then delivered by vehicles which remain within the lean zone of the farm. This consideration is applied at all sites and where appropriate the clean and dirty sides remain separated by barriers and fencing to ensure there are no errors.</p>	Yes
Control farm animals, equipment, personnel, and wild or domestic animals entering the facility (e.g. quarantine periods for new animals, washing and disinfecting crates, disinfection and coverage of shoes before entry into bird housing zones, providing protective clothing to personnel, and closing holes in buildings to keep out wild animals)	<p>All staff have to enter the facility are required to leave their clothing on the dirty side shower and provided with clothing on the clean side.</p> <p>This principal applies to vehicles which remain on either the clean or dirty side. The main exceptions being tankers and waste collection vehicles which are sanitised.</p> <p>The farm units and hatchery are provided with perimeter fencing to ensure that most wild animals are kept out. The farms have closed windows and are climate controlled which should minimise the potential for any interaction with wild birds</p>	Yes
Prevent the interaction of wild birds with feed, as this interaction could be a factor in the spread of avian influenza from sparrows, crows, etc	<p>Feed material is kept enclosed in silos or vehicles from its delivery at the fodder complex through to its final use at the farm.</p> <p>At the farm units the feed is store in a silo at the edge of site and distributed by vehicles to feed bins for each building by articulated hose which ensures that there is very little spillage.</p>	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	All spillages of feed are cleaned up as appropriate to ensure that there is little food available to attract wild birds to sites.	
Vehicles that go from farm to farm (e.g. transport of veterinarians, farm suppliers, buyers, etc.) should be subject to special precautions such as limiting their operation to special areas with biosecurity measures, spraying of tires and treating parking areas with disinfectants	The tankers that go in to site are appropriately sanitised before entering site. Other vehicles that move staff around site are not allowed to enter site and are parked outside the security perimeter.	Yes
Sanitize bird housing areas	All poultry farm buildings are scraped out steam cleaned and sanitized at the end of the 45 day growing cycle.	Yes
Establish a detailed animal health program supported by the necessary veterinary and laboratory capability. Identify and segregate sick birds 24 and develop management procedures for adequate removal and disposal of dead birds)	The Vinnitsiya Poultry Complex have a number of veterinarians who manage the birds through ensuring their correct growth and development, nutrient uptake as well as through identifying any illnesses and adopt any medicinal applications required for sick birds.	Yes
Where possible establish all in- all out systems with only one age group per farm	The farms operate an all in or all out system to ensure only one age group per farm.	Yes
Workers on multiple age bird farms should always work with the youngest birds first before moving on to the older birds.	If workers such as the veterinarians move between farms they start with the youngest age group and move to the older groups and adhere with the biosecurity measures such as washing in to each location.	Yes
Train workers in the application of animal health products.	All workers are provided with training appropriate to their roles which includes animal welfare requirements, developmental requirements and identifying any issues with the health of the birds.	Yes

3

ANIMAL WELFARE

The company is working towards global gap which is a Global Food Safety Initiative. The Poultry Standard covers: Stock Sourcing, Breeding (Parent) Flock, Hatchery, Feed and Water, Housed Poultry, Outdoor Poultry, Mechanical Equipment, Poultry Health, Hygiene and Pest Control, Handling, Residue Monitoring, Emergency Procedures, Inspection, Workers, Humane Slaughter of Casualty Poultry, Dispatch and Transportation.

3.1 ANIMAL HEALTH

The following sections show the management techniques in place within the Vinnytsia Poultry Complex, against the IFC Best Practice Guidelines, for each sub-subject area.

The following Table 3.1 shows the compliance of the Vinnitsiya Poultry Complex with regards to genetics and breed selection.

Table 3.1 Recommended management practices for animal health

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Animals must be maintained in good body condition and remedial action (veterinary attention, improved nutrition, or husbandry) taken when in poor condition, or when there are signs of significant distress, ill-health, disease, or injury.	Staff are trained to observe any sign of illness, maintenance of good health through adequate weight gain and no abnormal loss of feathers. The Vinnitsiya Poultry complex also utilises veterinarians to monitor the health and wellbeing of the birds and to monitor the application of medicines or food supplements if required.	Yes
Animals should be periodically checked for the presence of parasites, and any corrective treatment deemed necessary to prevent distress and suffering should be administered as soon as possible.	The Vinnitsiya Poultry complex also utilises veterinarians to monitor the health and wellbeing of the birds and to monitor the application of medicines or food supplements if required.	Yes
Any sick or injured animals should be treated or cared for to alleviate pain and distress as soon as practically possible, including being isolated or humanely destroyed if necessary.	Sick or injured animals are either treated with medicines or euthanised by a trained member of staff dependent on the recommendations of the veterinarian.	Yes
Animals should be confirmed dead before disposal, and any still alive should be euthanized immediately. Dead animals should be removed promptly and disposed of appropriately.	Staff are trained to assess whether animals are badly injured/sick or dead. Dead animals are collected and removed from each farm on a daily basis to the rendering plant. Sick animals are referred to the veterinarian for treatment if possible whilst injured animals would be subject to euthanasia by a trained member of staff.	Yes
Veterinary care should be available at all times and	The Vinnitsiya Poultry complex also utilises veterinarians to	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
medications and treatments given in accordance with advice and instructions. Good record keeping will assist with managing health and disease problems. A preventative health program should be established in consultation with a veterinarian. External audits on animal health are encouraged.	<p>monitor the health and wellbeing of the birds and to monitor the application of medicines or food supplements if required.</p> <p>The application of medicinal treatments is recorded.</p> <p>External audits are performed as part of the ISO22000 system and will be performed when accredited for Global Gap.</p>	

3.2

STOCKMANSHIP

The following Table 3.2 shows the compliance of the Vinnitsiya Poultry Complex with regards to stockmanship.

Table 3.2 Recommended management practices for genetics and breed selection

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
There should be a sufficient number of trained and well-motivated personnel proficient in good stockmanship to maintain animal health and welfare, and ensure that the physical, health, and behavioral needs of animals are met. Stock personnel should not be cruel and should at all times endeavour to avoid causing pain, suffering, or distress to animals.	<p>There is sufficient staff at each farm unit in the clean areas to manage the birds to ensure their overall health.</p> <p>Staff are trained in how to care for and handle the animals appropriately.</p>	Yes
Stock personnel should be skilled at handling, preventing, and treating illnesses and diseases, and caring for affected animals, including minimizing aggression. Knowledge of the normal behavior and function of stock is essential and individuals should be able to recognize early signs of ill-health, injury, disease, or distress requiring prompt remedial action.	<p>Staffs permanently based in the farm units are aware of the normal behaviour of the birds and are able to identify issues such as aggression.</p> <p>Staff are trained by the veterinarian to identify symptoms and the farms are subject to visits from the veterinarian to ensure the welfare of the individual birds and farm as a whole.</p>	Yes
Staff should be properly trained in humane destruction methods and when to apply them, and should be supplied with the required equipment.	Certain staff at the farm units are trained to euthanize the birds if required due to illness or injury.	Yes
Animals in intensive systems should be inspected at least daily, or more regularly under circumstances that could affect welfare (e.g., dietary changes, disease outbreaks).	The birds are subject to daily inspection and monitoring by staff at the farm. The monitoring relates to environmental factors such as temperature and humidity as well as growth factors such as the feed and water use and bird weights.	Yes
On-farm surveillance needs particular attention. Its adequacy should be assessed by reviewing the frequency and duration of the checks performed, as well as the	The on farm surveillance with regards to environmental factors such as temperature and humidity is noted by the operators throughout their shifts and they are	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
level of attention given to individual animals.	able to make adjustments to the climate controls in the event of parameters not being under optimal conditions. Other factors such as feed and water use and bird weights are recorded throughout the week to ensure that there is the correct weight and growth of the birds for their stage of development.	
Ongoing professional training programs should be available to stock personnel, and the development of such programs should be encouraged so that a culture of caring and responsible planning and management is developed.	MHP have a professional training programme for all staff defined by the job role to ensure that all staff are competent in the duties they are to perform.	Yes
Stock managers and handlers should have access to a disaster response and recovery plan (e.g., failure of feed or water supply, electricity supply, structural damage, fire or flood). Box 4 explains the benefits of good stockmanship	Feed and water supply is fully controlled by MHP.	Yes

3.3 QUALITY ASSURANCE PROGRAMS

The following Table 3.3 shows the compliance of the Vinnitsiya Poultry Complex with regards to quality assurance programs.

Table 3.3 Recommended management practices for quality assurance programs

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Many countries and their producers utilize quality assurance programs to ensure that optimal levels of animal husbandry are maintained.	MHP is working towards accreditation to the Global Gap integrated farm assurance system in 2017.	Yes
Quality assurance programs should provide training for the owner, operator, and all staff and require written protocols for production practices, including those directed at animal well-being.	All staff are trained to ensure compliance with the Global Gap and ISO22000 systems to ensure animal wellbeing and the quality of the final products.	Yes
Assurance programs should dictate continual review of existing systems and practices, especially as new science and technology become available and economically viable.	The ISO2001 system and Global gap will be subject to periodic review to capture changes and improvements to technologies, working practices, medicines etc	Yes
Many quality assurance programs apply auditing or assessment procedures, the features of which will depend on the livestock operation, program, and region.	The Global Gap integrated farm assurance standard includes auditing of the system.	Yes

3.4 FEED AND WATER

The following Table 3.4 shows the compliance of the Vinnitsiya Poultry Complex with regards to feed and water.

Table 3.4 Recommended management practices for feed and water

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Animals should receive a daily diet adequate in composition and quantity, and containing appropriate nutrients to maintain good health, meet their physiological requirements, and avoid metabolic and nutritional disorders. Feed should be palatable and free of contaminants, molds, and toxins.	MHP have their own feed complex which is able to produce the different feed recipes for the birds. There are 5 different feed recipes which are produced by the fodder complex which are developed for the different age profile of the birds to ensure they receive the correct amount of nutrition at each stage of development.	Yes
Food and water requirements vary with feed composition, physiological state, stage of growth, size and body condition, pregnancy, lactation, exercise and activity, and climate. Access to feed should be at intervals appropriate to the physiological needs of the animals, and at least once daily. Animals should have an adequate daily supply of water that is palatable and not harmful to their health.	MHP have their own feed complex which is able to produce the different feed recipes for the birds. There are 5 different feed recipes which are produced by the fodder complex which are developed for the different age profile of the birds to ensure they receive the correct amount of nutrition at each stage of development. Clean treated water is provided for all birds.	Yes
Food and water, including automated feeding and watering systems, should be provided in such a way that all animals have an opportunity to feed or drink without undue competition (including intimidation, bullying, and aggression) likely to cause injury or distress. Feeding and watering systems should be designed, constructed, placed, and maintained to prevent contamination or spoiling, and to minimize spillage.	Water is provided by nipple type drinkers. There is adequate provision of centre type feeder trays which allows feeding around the circular rim and access to multiple birds at a time.	Yes
Animals on highly concentrated diets may also require access to bulky or high fiber feed to satisfy hunger. Medicated or enriched food and water should only be used on professional advice.	No birds are on specialised highly concentrated diets. The birds will be on one of the 5 feed recipes designed for a specific age of the bird.	Yes
Reserves of food and water should be maintained to allow for interruption to supply.	The Vinnitsiya farm complex is vertically integrated and controls feed from the growth of the crops from their land bank through to making of the feed at the fodder complex. This should ensure continuity of supply. Any shortfalls due to conditions such as a poor harvest can be made up through	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	purchases on the open market	

3.5 HOUSING SYSTEMS

The following Table 3.5 shows the compliance of the Vinnitsiya Poultry Complex with regards to housing systems.

Table 3.5 Recommended management practices for housing systems

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Animal accommodation should be designed, constructed, and maintained to allow all animals space to stand, stretch, turn around, sit, and/or lie down comfortably at the same time.	The farm buildings are sized and stocked to ensure adequate room for the chickens to lay down, stand and stretch	Yes
Accommodation should allow all animals to directly interact with herd or flock mates, unless isolated for veterinary or nursing reasons.	The farm units are open on the inside and the birds are able to intermix with any other bird within the building.	Yes
Stocking densities should be low enough to prevent excessive temperatures and humidity; competition, stress, aggression between animals, and abnormal behaviour; and to enable good litter management.	Stocking densities are managed so as to provide adequate space for laying down, standing and stretching. All environmental factors such as humidity and temperature are monitored and managed to ensure that the birds are not given environmental stressors. Staff and the veterinarian monitor for any unusual behaviours such as aggression and pecking at other birds in the farm.	Yes
Each operation should have strategies to prevent overheating and excessive cooling. Animals should be protected from abrupt temperature fluctuations and cold drafts.	The building is enclosed but does have gas heaters for warming in cold weather and side opened vents to allow cooler air to enter in periods of warm weather.	Yes
All animals should have access to a clean and dry place within the confinement area. Floor litter must be kept free of excessive moisture and be loose and friable in the case of broiler chickens.	Floor litter is comprised of sunflower husk which is a dry and absorbent material which prevents excessive moisture build up. Water is supplied by nipple systems which ensure that there are no drips.	Yes
All surfaces and flooring should be non-slip, without sharp projections or edges likely to cause injury, and provide for the animal to bear weight on the entire sole of the foot.	Floors are non-slip and are provided with sunflower husk bedding which gives good grip for the chickens whilst they move around.	Yes
Housing should be constructed of fire-resistant materials, and electrical and fuel installations planned and fitted to minimize fire risk. Firefighting equipment and smoke detectors should be installed with sufficient exits	The building is constructed of a mixture of concrete and metal sheeting with a corrugated roof. All of the materials are not readily combustible.	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
to enable evacuation of the building in an emergency. There should be sufficient drainage to protect animals from flooding		
All automated systems supplying food and water, removing waste, and controlling temperature, lighting, and ventilation should be checked and maintained regularly, and backup systems should be available in case of failure.	<p>The automatic systems for the supply of food and water are monitored and part of the maintenance programme.</p> <p>The feed is delivered to a silo on the edge of the farm and then distributed to individual feed bins by trucks. If any of these breakdown then the feed can be delivered manually if required until repaired.</p>	Yes
Natural or artificial light (of an intensity of at least 20 lux) should be available in all buildings for a minimum of eight hours daily, and there should be a period of darkness sufficient to allow proper rest.	Lighting is measured and monitored within the farms. The chickens are given a 6 hour night time period to allow them to have a natural rest cycle.	Yes
Air quality should be maintained by minimizing transmission of airborne infectious agents and preventing the buildup of noxious or harmful waste gases, and minimize dust particles.	<p>CO₂ and ammonia emissions are monitored to assess their levels and whether any corrective actions are required.</p> <p>Sunflower husks are used which are less dusty than other bedding materials. The humidity is maintained at levels which are good for the welfare of the birds and to maintain the dryness of the bedding to prevent foot problems from occurring.</p>	Yes
Effluent and waste should not be allowed to build up to the extent that accumulation leads to discomfort and compromised welfare.	The sunflower husk bedding is a very dry and absorbent material and is removed at the end of every 42-45 day rearing cycle.	Yes
Animals should be protected from predators, vermin, and excessive noise.	<p>The farms have perimeter fencing and the chickens are housed in enclosed buildings which protects against predators.</p> <p>There are pest control measures adopted at each site (bait points and mechanical traps) which protects against vermin.</p>	Yes
Animals with access to, or living outdoors should have access to shade and shelter.	Chickens not living outdoors.	N/A

3.6 TRANSPORT

The following Table 3.6 shows the compliance of the Vinnitsiya Poultry Complex with regards to transport.

Table 3.6 Recommended management practices for transport

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Facilities for loading, transporting, and unloading should be designed, constructed, and maintained to permit proper handling of animals and minimize risk of injury.	The birds are transported in crated systems which staff are trained in the correct way of putting the birds into the crate to prevent injury.	Yes
Catching, handling, and loading should be carried out quietly and confidently by trained and competent personnel, and animals should not be inverted when handled.	The birds are not inverted when handled and all staff are trained in the correct management and handling of birds and stocking density for the crated systems.	Yes
Provision should be made for care of animals during the journey and at the destination. Particular care should be taken with fatigued, old, young, infirm, pregnant, and/or nursing animals.	The journey time is kept brief and the chickens are of a same age group and would not include any old, young or infirm chickens as any birds unsuitable for transport would be dealt with at the farm. The chickens are received into the slaughterhouse by trained staff to ensure they are slaughtered without any undue alarm or stress.	Yes
Animals should be neither too loosely nor too tightly loaded so as to reduce the risk of excessive movement or overcrowding resulting in injury.	The chickens are transported using crated systems. The staff are trained in how to stock these crates to ensure they are not under or overpacked.	Yes
During transport animals should be protected from extremes of heat and cold and provided with adequate ventilation.	Animals are packed into crates with natural openings on each side of the crate. The trucks are sheeted from two sides by special blinds when the temperature is below minus 5 degrees Celsius.	Yes
The distance animals are transported, and the time taken, should be minimized. Where animals are transported over long distances, appropriate provision should be made for feeding and watering.	The farms are located in an area where the slaughterhouse is in a relatively central location. Travel time will be less than an hour from all farms within the complex.	Yes
Animals should be fit to travel without unreasonable or unnecessary pain or distress. Non-ambulatory and other unfit animals must be promptly and humanely euthanized on-site.	The chickens are inspected by the staff as they are being crated. Any obviously injured or unwell birds would be set aside for euthanasia by a trained member of staff and the carcasses would then be included in the rendering waste stream.	Yes
Casualty animals should not be transported. However, should an animal become a casualty during a journey, then it should receive immediate veterinary attention or	Any obviously injured or unwell birds would be set aside for euthanasia by a trained member of staff and the carcass would then be included in the rendering waste stream.	Yes

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
be euthanized without delay.		

3.7

SLAUGHTER

The following Table 3.7 shows the compliance of the Vinnitsiya Poultry Complex with regards to slaughter.

Table 3.7 Recommended management practices for slaughter

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
Prior to slaughter, proper handling techniques, and lighting, space, and ventilation should be used to keep the animals calm.	Staff are trained in the handling of the birds and the receiving area is of sufficient size, well lit and part of a climate controlled building to ensure birds are kept comfortable.	Yes
Holding facilities should protect animals from adverse weather, have adequate and uniform lighting, sufficient space to allow animals to stand up and lie down, be well ventilated and drained, and be free from smooth floor surfaces and sharp protrusions.	There is a holding area within the facility which is adequately lit and ventilated with smooth floor.	Yes
Animals should be slaughtered as close as possible to the farm of origin to minimize the rigors of transport.	The farms are located in an area where the slaughterhouse is in a relatively central location. Travel time will be less than an hour from all farms within the complex.	Yes
Animals should be slaughtered as soon as possible after arriving at the slaughter facility. In cases where animals are kept for long periods prior to slaughter, feed and water must be provided.	The animals are sent for slaughter upon arrival at the slaughterhouse.	Yes
All animals must be handled, restrained, rendered unconscious until death, and slaughtered in the least distressing and most pain-free manner possible by trained and competent staff.	All staff are trained in how to handle the birds effectively in line with the production and slaughtering methods to ensure that no undue pain and stress is placed on the birds.	Yes
Contingency plans should be made for animal slaughter or accommodation in the event of the slaughter facility being unable to continue through unforeseen disruption or plant failure.	MHP have contingency plans in the event of unforeseen emergencies. MHP have more than 1 processing line and can leave the birds on the rearing site for extra time until any emergencies have been resolved.	Yes

4

ANIMAL WELFARE AND BIOSECURITY ARRANGEMENTS – STARYNSKA

The animal welfare arrangements set out in Appendix D are based upon corporate levels standards within MHP Group. These are described in detail for the Vinnytsia Facility. However, these same systems and procedures, including for areas such as animal feed standards, heating, lighting and ventilation, stocking density, disease prevention and control, sanitary and cleaning controls and litter control and manure management, and all aligned with the corporate standards as defined in Appendix D.

MHP are currently working using IFC funded technical assistance, to develop all of the formalized requirements associated with the 'Global Gap Standard'. Full certification to this leading standard is intended for the end of 2017.

At the present time Starinska Poultry farm operations management standards for animal welfare and biosecurity are in full alignment with all European requirements in this area, which is necessary for Export certification. By the end of 2017, the Starynska and Vinnytsia facilities are targeted to be fully covered by the Global Gap Certification, which will fully and independently verify alignment with the Global Gap requirements. Global Gap is a voluntary management system standard covering food production facilities, which assists in the demonstration of alignment with accepted global best practice standards.

Appendix E

LABOUR AND WORKING CONDITIONS

MHP GROUP
VINNYTSIA POULTRY FARM
LABOUR AND WORKING CONDITIONS

DECEMBER 2016

1 INTRODUCTION

The proposed Phase 2 expansion of the MHP Poultry production and processing operation at Ladyzhyn in the Vinnystia region have been assessed for compliance with IFC Performance standard PS2 on labour and working conditions.

2 ASSESSMENT

The results of the assessment are provided in the following table, followed by a summary of the issue of prisoner employment.

Table 2.1 Assessment of compliance with IFC PS2 Labour and Working Conditions

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
IFC PS2 Requirements summary		
<p>Human Resource Policies, Working Relationships and Procedures.</p> <p>The client will adopt and implement human resources policies and procedures appropriate it's the size and workforce that set out its approach to managing workers consistent with this performance standard and national law.</p>	<p>There are several policies in place at the corporate level:</p> <ul style="list-style-type: none"> • A general, detailed MHP HR Policy – includes coverage of anti-discrimination, anti-child labour, forced labour etc • Complaints policy • Staff selection and hiring policy • Payroll and benefits policy • Career development policy <p>Within the holding company, there is a document which defines 'Company Values' – this includes commitments to areas such as anti-bribery and corruption.</p> <p>The method for recruitment involves:</p> <ul style="list-style-type: none"> • Development of a job specification. • Advertisement of the role, using multi-media approaches. • Direct promotion of the job opportunities, such as through targeted visits, within local village meetings, schools and colleagues etc. list of current vacancies. • Preliminary selection, managed through the HR department, which may include interviews. • Further interviewing of a shortlisted number of candidates, dependent on the role. <p>Collection of documentation, medical examination etc</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>In relation to 'Whistle Blowing', concerns by employees can be made to line managers or direct to the HR dept. There is also a web based portal for postings of anonymous feedback , as well as 'comments boxes' which are located throughout the facilities as well as a weblink.</p> <p>MHP's procurement documentation requires compliance with national law on labour and working conditions and stipulate health and safety performance requirements at contract stage prior to awarding the works for contractors</p> <p>Dismissal processes are aligned with the Ukrainian law. There is a system of verbal and written warnings, and there are also specific conditions for considering dismissal, such as where three reported breaches occur in a month,</p> <p>Procedures are stated in the job description and employment information, there is a document which defines financial penalties, but this is restricted to loss of bonus payment only. This could for repeat offences such as terminal time keeping issues, or damage to company properties. There is a panel approach to evaluation of the offence which could lead to the loss of the bonus, with a minimum of 3 persons to evaluate this, and the person must admit the offence in writing. At that time, appeals are available and managed through the panel process.</p> <p>Instant dismissal can occur for gross misconduct occurrences, such as inebriation or theft.</p>	
<p>Terms of Employment, Wages, Benefits, Working Conditions and Accommodation</p> <p>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, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur.</p>	<p>MHP provides terms of employment, wages, benefits and working conditions align with national legal requirements, and are regulated by an employment contract, signed by the employee and the employer in accordance with Ukrainian Labour Law. Each role has a job description, this includes a summary of rights, duties and a personal 'code of conduct', which is featured within the section on 'personal responsibilities'</p> <p>Standard additional benefits relevant to all staff within MHP include:</p> <ul style="list-style-type: none"> For key personnel and managerial staff, there can be a bonus payments, based on KPIs set and a review against KPI achievement, for instance such as yield 	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
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	<p>achievement and cost control for the crop farming part of the Vinnytsia Farm. Additional performance beyond budgets also leads to budgeted bonus provision across teams, also dependent on KPI achievement. HSE targets are not specifically set in KPIs, although a major incident could be reflected in the review of personal KPIs.</p> <ul style="list-style-type: none"> • Each employee receives 6kg of product for free. • Subsidised lunch provision. • Free transport to and from main residential areas and the place of work. • Provision of affordable housing for certain workers, such as those who are not residents in that area. <p>Holiday allowances are set for different roles, but are aligned with Ukrainian legislation. Paid holidays are provided, and a specific formula is used to calculate holiday allowance, with public holidays granted further to this allowance. It was reported that the usual holiday allowance would be 24 days, based on 2 days per month accumulated per month. Annual vacation plans are maintained to ensure that holidays can be planned in without the specific need for additional overtime payments.</p> <p>If working is required on a weekend or public holiday, then there is additional compensation in the form of double payment.</p> <p>Maternity allowance is provided based on a calculation set in the Ukrainian legislation. There is a minimum allowance of 3 years (with a guarantee of maintaining the job), although return to work can be sooner according to the individual. Funding is through social security, according to a national calculator system. Any coverage of the role while an employee is on maternity cover, is based on that role being temporary as 'maternity cover'.</p> <p>MHP align with national minimum wage levels, currently 1,415 Ukrainian hr a month. MHP report that they do have many staff on the minimum wage level. The average wage level is 5,000 Ukrainian hr a month.</p> <p>Overtime payment is based on the Policy and alignment with the Ukrainian legal requirements. Additional payments are made, aligned with the law, so that (for instance) double payment is made for unscheduled weekend working). If the company requires additional work to be completed, then overtime payment is made. There is not a formal maximum hours level</p>	
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REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>set, before additional hours are deemed to be overtime, though work scheduling is used to ensure that every employee keeps to reasonable working time and has adequate rest etc.</p> <p>The working times is designed to be in line with the Ukrainian Regulatory Requirements, this is documented within the document 'Internal Work Routine', which specifies working time, holidays, etc. The requirements are different dependent on whether the role is classed as an 'operative' or a 'management' role. For a Management role, the working week is 5 days a week, and 40 hours, whereas for 'operative roles', there are specific shift system, although the overall working week is also aligned at 40 hours.</p>	
<p>Workers Organizations.</p> <p>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.</p> <p>The client will not discourage workers from electing workers representatives, forming or joining workers organisations of their choosing, or from bargaining collectively and will not discriminate or retaliate against workers who participate, or seek to participate, in such organisations and collective bargaining.</p>	<p>MHP allows membership of trade unions and cooperatives with the Unions, however, due to the historical situation in Ukraine, there is more of a tendency for internal collective representation groups to be utilised. There is a formal 'worker representation council' which is present within each of the main Farm Clusters, including at the Vinnytsia Facility.</p> <p>Membership of the worker organisation is formally nominated, though through an internal framework, rather than legally nominated.</p> <p>MHP is developing and adopting policies and management procedures covering collective representation processes, and the process of nominating and voting for worker organisation representatives along with the duration of their term.</p>	<p>Yes</p>
<p>Non-Discrimination and Equal Opportunity</p> <p>The client will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The client will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship. The client will take measures to prevent and address harassment intimidation, and/or exploitation, especially in regard to women.</p>	<p>There is a general policy of favouring local recruitment from within the regions that the company operates.</p> <p>There are no barriers for women to work at MHP sites as evidenced by the gender balance at all sites.</p> <p>There is not currently a specific policy on equal opportunities and anti-discrimination. However, there is a section of the main HR Policy with requires anti-discriminatory practices and MHP are developing an Equal Opportunities action plan to promote good international HR policies and practices with respect to gender and equal opportunities through improvements to HR Policies and Procedures and their application in areas of non-discrimination with regards to age, sexual orientation, religious belief and</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>ethnicity</p> <p>Trends are also monitored through the 'HR Matrix' which is updated on a monthly basis. This includes aspects such as number of recruits, dismissals and gender aspects etc. The gender balance of the company workforce and recruitment selection profiles are actively monitored for positive trends.</p>	
<p>Retrenchment</p> <p>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. The plan will be based on the principles of non-discrimination.</p>	<p>No retrenchment or collective dismissals have occurred and none is foreseen by MHP.</p>	<p>Yes</p>
<p>Grievance mechanism</p> <p>The client will provide a grievance mechanism for workers (and their organisations where they exist)</p>	<p>MHP operates a formal grievance mechanism which is used to respond to both internal and external parties</p>	<p>Yes</p>
<p>Child and Forced Labour</p> <p>The client will not employ children in any manner that is economically exploitative, or is likely to be hazardous or interfere with the child's education, or to be harmful to the child's health or development. The client will identify the presence of all persons under the age of 18.</p> <p>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, bonded labour, or similar labour contracting arrangements. The client will not employ trafficked persons.</p>	<p>MHP do not use child or forced labour. An "Ethics Code" is published at the holding company level that sets out a clear specific commitment on employee behaviour. The minimum working age in is 18 years old and proof of age is checked as part of the employment contracting process. Furthermore, there is a statement in the contracts with sub-contractors that they must comply with national law with a general working age of 18.</p> <p>MHP operate a programme of employing prison labour. The social programme implemented by MHP group is dedicated to the development of the prisoners and aimed at building future employability of the prisoners. The employment terms are aligned with the rest of the work force, with the prisoners receiving 100% of their salary paid via the prison. Individuals apply for the work and a character reference must be provided and approved prior to commencing employment. This scheme enables offenders with records of good behaviour to apply for work at the</p>	<p>Yes</p>

REQUIREMENT	ACTUAL PERFORMANCE	COMPLIANT (Y/N)
	<p>plant.. MHP also provide housing, meals and transport and endeavour to provide on-going employment and other assistance (e.g. training) after the end of the offenders' sentence.</p> <p>A current employee on the scheme was interviewed and no issues or grievances were reported.</p>	
<p>Non-Employee Workers / Workers Engaged by Third Parties</p> <p>The client will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises who have an appropriate ESMS that will allow them to operate in a manner consistent with this performance standard.</p> <p>The client will establish policies and procedures for managing and monitoring the performance of such third party employers in relation to this performance standard. In addition the client will use commercially reasonable efforts to incorporate these requirements in contractual agreements with such third party employers.</p>	<p>MHP requires all contractors and sub-contractors to comply with the requirements in the procurement documents in line with national legal requirements.</p> <p>Although H&S performance is considered, to some extent during contractor selection, and that contractors are required to commit to legal compliance, no project specific health and safety planning is required. Limited checks on contractor performance are conducted by MHP.</p> <p>They are also developing and enforcing management system procedures covering all contractors and sub-contractors to ensure their health and safety. This will be separate and distinct from the tender process and is for monitoring of performance whilst undertaking their duties in line with the contract.</p> <p>Health safety and environmental requirements will be enforced during sub-contractor activities. This will include a clear definition of EHS requirements during contracting, regular documented checks by MHP during work activities to ensure safe practices and mechanisms for sanctions if procedures are not followed.</p>	Yes
<p>Supply Chain</p> <p>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”.</p>	<p>MHP are a vertically integrated company with control over growing of grain, rearing of poultry, slaughtering, rendering and logistics.</p> <p>Whilst enforcement of construction contractors is via reliance on tender conditions to comply with Ukrainian law the MHP staff at site take a more proactive approach in enforcing infringements of good health and safety practice</p>	Yes

Source : IFC Performance Standard 2 **MHP Prison Labour Social Programme**

MHP employs 40 prisoners (out of 4,000 employees) at the Vinnystia Slaughterhouse. This has been implemented as a social programme in order to enhance the employability of prisoners following their release from prison. It is understood that there is an accepted issue area in Ukraine, with regards to the high unemployment of ex-prisoners and that the introduction of the prison workforce was for this purpose rather than to fill positions that could not be filled by the local hires.

MHP employ low risk prisoners. An application must be submitted for the job as well as the provision of a behavioural check and character reference by the prison administrator. The prison workers are employed within the same department, and conduct their work in a separate area from the rest of the employees. A (unarmed) prison guard supervises the workers.

The prisoner employees receive the same salary as the other workers. Wages are paid directly to the prison; 100% of the wages are then disseminated to the prison workers, in line with a specific regulatory system which is in place in Ukraine.

MHP gives employee references following the completion of the programme. They also aim to permanently employ the worker following their release from prison. In one case MHP has paid education fees for one ex prisoner who completed the programme.

SUMMARY OF COMPLIANCE WITH PS2

Overall the present and future Phase 2 labour and working conditions overall satisfy, and in some cases exceed, the PS2 performance standard. MHP has addressed, or is actively working to rectify, those issues identified through audits have been previously commissioned of the existing Phase 1 facilities. Given that the proposed Phase 2 facilities are extensions of existing facilities (Hatchery, WWTP, Fodder Plant, Slaughter house and Rendering plant) and identical additional broiler rearing brigades, the progress in implementation made by MHP for the Phase 1 labour practises and conditions is directly integrated into the planned Phase 2 expansion.

Appendix F

STAKEHOLDER ENGAGEMENT PLAN

MHP GROUP
VINNYTSIA POULTRY FARM
STAKEHOLDER ENGAGEMENT PLAN

PUBLIC

DECEMBER 2016

STAKEHOLDER ENGAGEMENT PLAN

MHP Group, Vinnytsia Poultry Farm,

Public

Date: November 2016

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TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	BACKGROUND.....	1
1.2	OBJECTIVES OF THE PLAN	1
1.3	SCOPE OF THE PLAN	1
2	PROJECT BACKGROUND	2
2.1	OVERVIEW OF THE PROJECT	2
2.2	PROJECT SETTING	2
3	CONSULTATION AND DISCLOSURE	4
3.1	NATIONAL LEGISLATIVE REQUIREMENTS	4
3.2	IFC AND EBRD REQUIREMENTS	5
3.3	BEST INTERNATIONAL PRACTICE	6
3.4	GENERAL STAKEHOLDER COMMUNICATION RECORDS MAINTENANCE	6
4	STAKEHOLDER IDENTIFICATION	7
4.1	IDENTIFICATION OF MAIN STAKEHOLDERS.....	7
4.2	KEY STAKEHOLDERS IDENTIFIED DURING THE DEVELOPMENT OF THIS PLAN	7
5	MHP GROUP STAKEHOLDER RELATIONS AND APPROACH.....	13
5.1	OVERVIEW OF EXISTING STAKEHOLDER AND COMMUNITY RELATIONS	13
5.2	PREVIOUS STAKEHOLDER ENGAGEMENT AND CONSULTATIONS.....	13
5.3	SUMMARY OF THE METHODS OF FUTURE ENGAGEMENT ACTIVITIES	13
6	STAKEHOLDER ENGAGEMENT PROGRAMME	15
6.1	DISCLOSURE OF INFORMATION.....	15

6.2	THE FUTURE PROGRAMME.....	16
7	REPORTING AND GRIEVANCES	25
7.1	MONITORING, REPORTING AND FEEDBACK MECHANISMS	25
7.2	GRIEVANCE MECHANISM	25
7.3	ROLES AND RESPONSIBILITIES	25

1 INTRODUCTION

1.1 BACKGROUND

This document is a Stakeholder Engagement Plan (SEP) for MHP Group and the Vinnytsia Poultry Farm, describing public relations and communication plans, regarding their operations and investment program planned for the further development of the Vinnytsia Poultry Farm.

The SEP takes into account best international practice in relation to information disclosure. It also outlines the general engagement principles that MHP Group will use for their strategic investment plans in the Vinytsia Region.

The SEP will be reviewed on a regular basis. If the activities change or new activities relating to stakeholder engagement commence, the SEP will be brought up to date.

1.2 OBJECTIVES OF THE PLAN

The methods, procedures, policies and actions undertaken by MHP Group to engage stakeholders, in a timely manner, with respect to the potential impacts and benefits of the project are the key subject of this document.

Key stakeholders have been identified in this document. If any stakeholders have not been identified, they should contact << Agejkina Svetlana Vladimirovna, Executive Director Vinnystia Poultry Factory 24320, Vinnystia Oblast, Ladyzhyn, UL. Sloboda, 141, edrpou code 35878908 Tel 04343 6-76-40, Tel/f 04343 6-76-41)) and ask to be included in future information and communications. Furthermore, this document describes the way that any concerns or grievances will be handled by MHP Group.

This document also provides a schedule for consultations / communications, which may be subject to revisions during detailed design / procurement / implementation. The resources available to implement the SEP are also described in this document.

1.3 SCOPE OF THE PLAN

This document covers the following:

- Chapter 2 – Project overview and setting;
- Chapter 3 – Public consultations and information disclosure requirements;
- Chapter 4 – Identification of stakeholder and other affected parties;
- Chapter 5 – Overview of current stakeholder engagement practices;
- Chapter 6 – Stakeholder engagement programme and methods of engagement and resources; and
- Chapter 7 – Grievance mechanism.

2 PROJECT BACKGROUND

2.1 OVERVIEW OF THE PROJECT

MHP Group is a vertically integrated agribusiness and food company undertaking a wide range of activities, including grain production, animal rearing and meat production. There are over 20 operating companies (enterprises) which form MHP Group.

The proposed Phase 2 project components at Vinnystia include:

- construction of new brigades 13, 14, 19, 42, 43, 47 and 49, 50 and 51 (the last two are initially planned but a location has not been finalised);
- construction of a new Waste Water Treatment Plant (WWTP);
- construction of by-pass roads (total of XX km);
- completion of construction, and purchase of equipment for the Hatchery;
- completion of construction, and purchase of equipment for the Fodder Plant; and,
- completion of construction, and purchase of equipment for the Slaughter House and Render facilities.

The location of brigades 50 and 51 is not currently confirmed, as MHP management is in the process of land lease agreement negotiations.

2.2 PROJECT SETTING

The project area of the Vinnystia Poultry Farm comprises the farm, the proposed project components, associated infrastructure and the immediate vicinity of these assets.

The project area is sited between the town of Ladyzhyn and surrounding villages of Mykhailivka, Fed'kivka and Hordiivka, and is located away from residential developments. The project area is characterised by open spaces and agricultural fields bordered by small access roads. The wider overall project area is estimated to be 27,000 hectares. (see maps and Project description in Section 2.5 of ESIA Supplementary Information Report)

The project area mainly consists of **industrial areas with existing building** (for the WWTP, and the extension of the existing slaughter house, fodder plant, WWTP and hatchery), or **arable cultivated fields** for the new brigades and by-pass roads:

- **Existing Facilities' Extension:** the waste water treatment facility is located approximately 2.5km north of Lukashivka and set within a farmed arable landscape. The slaughter house and render facilities are within an existing operational compound comprising buildings, hard standing and bare ground areas. The proposed extension of the hatchery (c.0.5ha) will be situated entirely within an existing operational compound, of managed grassland and hard standing. The proposed extension works associated with the fodder plant is entirely located with the existing site compound.
- **Brigades:** Brigade 13 is entirely situated within an arable field approximately 1km west of Lukashivka. Brigades 14, 42, 43 and 47 are surrounded by entirely cultivated arable land. Brigade 19 is entirely situated within an arable field cultivated for corn (at the time of the site visit in October 2016). Two further brigades (50 and 51) will be developed but the final location for these has not been finalised.

- **Bypass Roads:** Bypass Road 1 (to connect Brigade 49 and 50) takes a route north, from the main road (T0237) between Bohdanivka and Lukashivka, on an existing track towards Bilousivka. The existing track is located between extensive arable fields to the east and west and is lined with trees. Bypass No.2 - was partially constructed at the time of survey. The bypass routes from a road south of Lukashivka and travels 0.1km south over arable fields before joining an existing track through woodland. Bypass No.3 (providing access to Brigade 19) follows an existing track between lines of trees planted as windbreaks!

3 CONSULTATION AND DISCLOSURE

Public consultation and information disclosure undertaken by MHP Group will comply with the requirements of Ukrainian legislation and best international practice, as described in the requirements of the IFC Performance standards and guidelines for informing and engaging stakeholders concerned by the project.

3.1 NATIONAL LEGISLATIVE REQUIREMENTS

Ukrainian legislative and regulatory base consists of (in order of hierarchy):

- international conventions, treaties, protocols and agreements ratified by the Parliament (Verkhovna Rada);
- laws; resolutions (*Postanova*) and decrees (*Rozporiadzhennia*) of the Cabinet of Ministers of Ukraine (CMU);
- orders (*Nakaz*) of the Ministers; and, various norms, rules, standards and guidance, often jointly referred to as regulations (*normatyvno-pravovi akty*) are approved by resolutions of the CMU and orders of the Ministers.

In Ukraine, access to environmental information was ensured when the Parliament ratified the Aarhus "Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters" in 1999. Several regulatory acts were developed by the Ministry of Environment and Natural Resources (MENR) which specify provisions of this Convention.

The Ukrainian EIA implementation regulations contained in the Construction Standard DBN A.2.2.-1-2003 also include provisions for public consultation and information disclosure as part of the implementation of the Aarhus Convention to which Ukraine is signatory. According to the DBN 2003 Standard, for projects defined in its Annexe E (i.e. with significant environmental relevance), public hearings are mandatory, while for those Projects not listed there, only the decision on the result of the Environmental Assessment needs to be made public by the regulating authority.

In 2011, a law "On Access to Public Information" was adopted by the Parliament. This law covers much broader area, and it specifies also issues of environmental information (article 13, p.2). As a rule, public consultations (hearings) should be convened with local self-government organisations, either upon developers own initiative, or upon request from community members. Such consultations could be held on any level: village (*sil'skyi shid*), town, city, and their decisions are considered as recommendations. In some cases procedures for such consultations have been approved by self-government organisations

Of major importance are also by-laws (*Polozhennia*) of numerous government bodies (Ministries, State Agencies, State Inspectorates, State Services and other central government organisations) which define authority of the respective government organisation and its branches on regional (oblast and rayon) level. This section of legislation underwent very significant changes after the administrative reform of 2010, when the whole system of central government organisation was changed.

The Law of Ukraine on Environmental Review (1995)

The Law of Ukraine on Environmental Review(1995) specifically deals with environmental assessment and review in more detail. It sets the requirements and the process for carrying out state and public environmental review. The main provisions of the Law include the following:

- Environmental review in Ukraine is focused on determining the level of compliance of planned activity with respective regulatory requirements;
- The Law stipulates requirements to review project alternative options, and to incorporate public opinion about the project;
- Materials submitted for SER should include an EIA report as a separate volume, and a Statement of Environmental Consequences of planned activities (published in local media) as part of this volume; and
- EIA report materials should include: substantiation and description of planned activities; information about alternatives; environmental baseline; types and levels of impacts in normal and emergency conditions; possible qualitative environmental changes; ecological and economic consequences; and, mitigation measures.

Ukrainian State Construction Norm on EIA Components and Content (2003) with amendments in 2010

This is the most comprehensive national regulation for EIA in Ukraine and details specific requirements for components, procedure and content of the EIA on construction activities.

3.2 IFC AND EBRD REQUIREMENTS

The applicable IFC Performance Standards (January 2012) for stakeholder engagement are given in PS1 sections 25 to 33 along with those sections relevant to the project from PS2 (Labour and working conditions) and PS4 (Community Health and Safety). These require *an ongoing process of stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanisms and reporting to Affected Communities.*

This stakeholder engagement is an essential requirement for MHP in order to meet its responsibilities to inform and consult with those stakeholders and communities, both in the Vinnystia region and beyond, that may be affected by, or have an interest in, the continuing expansion of MHPs activities under the Phase 2 programme.

Appropriate and proportionate consultation processes and grievance mechanisms are to be put in place throughout the project life cycle i.e during the the design, construction, operation, and eventual closure of the proposed facilities.

Stakeholder engagement is also an essential requirement of EBRD's PR 10: *Information Disclosure and Stakeholder Engagement*, highlighting the need for on-going stakeholder engagement, which should be meaningful and unbiased and the findings communicated through a document such as this, a SEP.

As a Category B project, MHP Group will adopt this SEP including the grievance mechanism. The SEP is developed commensurate to the nature of the investment projected and the associated environmental and social impacts and benefits, and the level of anticipated public interest. The programme will be rolled out in a timely manner. It will include details of locations and timings of construction activities to ensure that adequate stakeholder engagement is conducted for all stages of the project.

On an annual basis, MHP Group will produce a public report on their social and environmental performance, including progress made with the implementation of their Environmental and Social Action Plan (ESAP) that has been developed, against agreed indicators and targets and also reporting on resolution of grievances (if any) associated with the project.

3.3 BEST INTERNATIONAL PRACTICE

The key principles of effective engagement for projects are summarised as follows:

- Providing meaningful information in a format and language that is readily understandable and tailored to the needs of the target stakeholder group(s);
- Providing information in advance of consultation activities and decision-making;
- Providing information in ways and locations that make it easy for stakeholders to access it and that are culturally appropriate;
- Respect for local traditions, languages, timeframes, and decision-making processes;
- Two-way dialogue that gives both sides the opportunity to exchange views and information, to listen, and to have their issues heard and addressed;
- Inclusiveness in representation of views, including ages, women and men, vulnerable and / or minority groups;
- Processes free of intimidation or coercion or incentivisation;
- Clear mechanisms for responding to people's concerns, suggestions and grievances; and
- Incorporating, where appropriate and feasible, feedback into project or program design, and reporting back to stakeholders.

These principles will be reviewed and accordingly adopted by MHP Group for the trolleybus project.

3.4 GENERAL STAKEHOLDER COMMUNICATION RECORDS MAINTENANCE

Communication records will be maintained by MHP Group clearly logging the key information provided to stakeholders and also the key incoming communications (i.e. general questions, complaints, queries etc.) to MHP Group along with a summary of the actions taken.

As part of this communications procedure, MHP Group will record and update these stakeholder engagement activities on an on-going basis.

4 STAKEHOLDER IDENTIFICATION

4.1 IDENTIFICATION OF MAIN STAKEHOLDERS

This section of the document identifies parties, i.e. stakeholders and others affected at a local, district and regional level.

Stakeholders can be individuals and organisation who may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views:

- **Stakeholders:** any person, group or organisation with a vested interest in the outcome of a body of work; and
- **Key stakeholders:** any stakeholders with significant influence on or significantly impacted by, the work and where these interests and influences must be recognised if the work is to be successful.

Stakeholders can be grouped into the following categories:

- International.
- Government (e.g. Ukrainian state, regional and local regulatory bodies).
- Advisory non-government organisations.
- Services / suppliers.
- Clients and customers,
- Education and training institutions (e.g. medical schools, universities, colleges, think tanks, etc.).
- Industrial sector (e.g. trade bodies, manufacturers).
- Internal stakeholders (e.g. employees, trade unions).
- General communities (e.g. nearby residents, local community groups).
- Public groups (e.g. nearby hospitals, local schools).
- The media.

If stakeholders are not on the list below and would like to be kept informed about the project, contact should be made with the Agejkina Svetlana Vladimirovna, Executive Director Vinnystia Poultry Factory (contact details provided above) who has responsibilities for stakeholder communications.

4.2 KEY STAKEHOLDERS IDENTIFIED DURING THE DEVELOPMENT OF THIS PLAN

Key stakeholders associated with the project have been identified in Table 1. This table will be updated if new stakeholders are identified during the course of the project. **In particular, this table will need to be updated with any new stakeholder groups following any future regulatory processes, such as new Environmental Assessments for future project components, and also in the further development of MHP's future engagement programme.**

Stakeholder Group	Key Stakeholders	Summary of Specific Interest
International	<p>OPIC</p> <p>Citi Bank</p> <p>IFC</p> <p>EBRD – London HQ</p> <p><i>One Exchange Square, London EC2A 2JN, United Kingdom, Switchboard: +44 20 7338 6000</i></p> <p>EBRD – Kiev Office</p>	<p>Standards adopted by the OPIC in its Consolidated Environmental and Social Policy Statement (October 2010)</p> <p><i>Obligations for Citi Bank as a Financial Institution signatory to the Equator Principles III .</i></p> <p><i>Environmental and Social Performance standards PS1, PS2 and PS4.</i></p> <p><i>EBRD Environmental and Social Policy (2014), including EHSS best practice, Environment and Social Impact Assessment and Environmental and Social Action Planning</i></p>
National Government	<p>Government of Ukraine, including: Service of the Ministry of Agricultural Policy</p> <p>Ministry of Emergency Situations,</p> <p>Service of the Ministry of Ecology and Environmental sciences.</p> <p>Ministry of Health,</p> <p>Ministry of Social Policy,</p>	<p><i>Design decisions</i></p> <p><i>Urban Planning</i></p> <p><i>EIA requirements</i></p> <p><i>Permission for emissions / discharges</i></p> <p><i>Emergency planning</i></p> <p><i>Details on operation and changes to services</i></p>

Stakeholder Group	Key Stakeholders	Summary of Specific Interest
	<p>The Public Health epidemic service</p> <p>Fire Safety Authorities,</p> <p>Social Insurance Fund</p>	<p><i>Employment and labour protection</i></p> <p><i>Land acquisition</i></p> <p><i>Worker Health and Safety</i></p>
Operational Suppliers, Services	<p>Various contractors for supply of services, products and equipment including:</p> <p>Llc «Metro Cash & Carry Ukraine»</p> <p>Llc «Lizoform»</p> <p>LLC "Energy Group</p> <p>LLC «Eco»</p> <p>Llc «Ekolab»</p> <p>CO., LTD "Food Plant</p> <p>JSC "Uhl-mash"</p> <p>Se «Festo»</p> <p>Llc "Ūnghajnrìh Lift Truck»</p> <p>Pe "Montažventilâciâ"</p>	<p><i>Supply information</i></p> <p><i>EHSS requirements and standards, including occupational safety requirements, maintenance and use</i></p> <p><i>Profitability and financial performance of the MHP operation,</i></p> <p><i>Transport and logistics links and infrastructure,</i></p> <p><i>Access to tenders and contracts for good and service supply to MHP</i></p>

Stakeholder Group	Key Stakeholders	Summary of Specific Interest
	SPE «Tehprilad Service» LLC «Mea food solúšnz» Llc «Mea Vestfaliâ» Llc «Galpodšipnik» and others.	
Customers/Consumers/Partners	Branch "Ptahokompleks" Ltd. Vinnitsa poultry factory " Branch "VKVK" Ltd. Vinnitsa poultry factory " <ul style="list-style-type: none"> • Llc "Sobar-Group" • ADONIS GLOBAL TRADING LTD • Llc «Agrotechnics " • Llc "Regulus Expedition» • Llc "Ūnghajnrĭh Lift Truck» • Pe "Montažventilâciâ" • SPE «Tehprilad Service» • LLC «Mea food solúšnz» 	<i>Product quality and biosecurity</i> <i>Supply chain security and reliability</i> <i>EHSS requirements and standards, including occupational safety requirements, maintenance and use</i> <i>Maintaining and securing product output levels</i>

Stakeholder Group	Key Stakeholders	Summary of Specific Interest
	<ul style="list-style-type: none"> • Llc «Mea Vestfaliâ» • Llc «Galpodšipnik» 	
Internal Stakeholders	<p>MHP Employees, managers and directors especially those of OJSC "myronivsky hliboproduct MHP Group within the Vinnytsia Region. Trade unions</p> <p>Retired workers</p> <p>Employees families</p>	<p><i>Internal training and responsibilities</i></p> <p><i>Employment and social policies & procedures</i></p> <p><i>Labour safety</i></p> <p><i>Employment</i></p>
Local Communities and Public Groups	<p>Local municipalities</p> <p>The Vinnystia district administration,</p> <p>Ladyzhyn City Council</p> <p>Ladyzhyn</p> <p>Lukashivka</p> <p>Kleban</p> <p>Mykhailivka</p> <p>Bilousivka</p>	<p><i>Engagement on development (including design decisions) / construction works</i></p> <p><i>Changes to the services and facilities, including pricing</i></p> <p><i>Changes to local access and public transport</i></p> <p>Local business tax receipts and service charges</p> <p>Environmental and other local community impacts</p> <p>Housing</p> <p>Employment</p>

Stakeholder Group	Key Stakeholders	Summary of Specific Interest
	Educational establishments -Vinnitsa National Agrarian University - Ladyzhinsky agricultural college VNAU - OOO "Vinnitsa oblast educational and manufacturing plant -LLC SC "MYON	Training Provision of drinking water and roads Waste water treatment discharges Forestry use and protection Local hospital and health care provision Local education and schooling
Media	Local newspapers and radio Local radio Television and online broadcasters. Local "new city", "Trostâneç'kì news", " Tul'činskij Krai", "Tribune of labour", "Bershad region) fm radio Lada, and internal (Corporate Edition" Ladyzhinsky bulletin "), the internal corporate portal http://mhp.com .	<i>Development and procurement plans</i> <i>Economic and local community impacts, including pricing</i> <i>Environmental impacts</i> <i>Advertising revenues</i> <i>Employment and statutory notices</i> <i>Public information campaigns and consultations</i>

Table 1 Stakeholder Groups

5 MHP GROUP STAKEHOLDER RELATIONS AND APPROACH

5.1 OVERVIEW OF EXISTING STAKEHOLDER AND COMMUNITY RELATIONS

MHP Group is responsible for the planning all phases of the Vinnytsia project and for any community engagement and communication with regards to the project.

Communications from the Municipality are generally in the form of letters or via social media. Meetings are also held when required and details of the meetings advertised on social media and in local newspapers. The Municipality also hosts drop in sessions every Wednesday, which is an opportunity for the local communities to raise any concerns or questions and to provide feedback to the Municipality. It was reported that following all public consultation meetings and drop in sessions, minutes are prepared and submitted to the Chief of Staff of the Mayor's office. Records of other correspondence are maintained within electronic archives. There is a responsible person within each structural unit who is responsible for the maintenance of records. Where grievances require a response, it was reported that all responses are in written form and copies are maintained within the Municipality.

Emergency planning is undertaken in collaboration with the Ministry of Emergency Situations.

A formal grievance mechanism is in place within MHP Group at the Corporate Level, which will also be used for the project, as described in Section 7. In the event of an external complaint or grievance, MHP Group will record all grievances (both formal and informal) received as well as details of the responses and resolutions as detailed in section 7 below.

5.2 PREVIOUS STAKEHOLDER ENGAGEMENT AND CONSULTATIONS

MHP consulted with a wide range of communities to understand the level of interest in having a cooperative approach to the project between the company and community. MHP hold consultation events about the project plans to which they invite the local community, local authorities and NGOs. MHP have subsequently undertaken public hearings as part the OVNOS process for brigades 42, 43, 47, 49 and 13.

Further consultations have also been undertaken for Phase 2 in October 2016, including village communities at Vasylivka, as part of MHPs on-going stakeholder engagement process and to inform a supplementary environmental and social assessment report to international standards.

5.3 SUMMARY OF THE METHODS OF FUTURE ENGAGEMENT ACTIVITIES

This SEP and the supplementary documentation will be available through designated websites and hard copies will be available in regional municipal offices. Further consultation will be held for brigades 14, 19, 50 and 51, in accordance with the SEP.

Prior to construction activities a number of awareness raising meetings will be organised with governments and affected people. Information leaflets will be distributed in libraries and other

public places. Consultation activities will discuss construction impacts and will provide updated timescales for Project implementation.

Local and regional newspapers will be used to disseminate Project information and raise awareness of construction works and potential impacts on traffic and noise. Bulletins with vacancies will be distributed in the relevant towns to ensure that local people are informed about Project related employment opportunities. MHP will designate a contact person responsible for the Project in general, as well as appointing a community liaison representative who is responsible for SEP activities and provide updated contact details for the grievance mechanism

Stakeholder engagement activities will record the following information on an ongoing basis:

- Type of information disclosed, in what forms (e.g. oral, brochure, reports, posters, radio, newspapers etc.), and how it was released or distributed.
- The locations and dates (where possible) of any meetings undertaken.
- Individuals, groups, and / or organisations that have been consulted.
- Key issues discussed and key concerns raised.
- Response to issues raised, including any commitments or follow-up actions.
- Process undertaken for documenting these activities and reporting back to stakeholders.

6 STAKEHOLDER ENGAGEMENT PROGRAMME

6.1 DISCLOSURE OF INFORMATION

The types of information disclosed and the specific method of communication to be undertaken by MHP Group for this project are summarised in the Stakeholder Engagement Programme in Table 2 below. The objectives of external communications are to provide continuous engagement with targeted audiences with regard to the activities, performance, development and investment plans and their implementation. The external communication methods will typically include the following forums of communication, frequency of events and specific stakeholder groups.

Table 2 Stakeholder Communication methods.

Communication forums	Frequency	Message content	Stakeholder groups
Press releases	Quarterly Financial results ; Other information as required	Activity/results (financial, operational, social), specific events/projects	Investors, government agencies, domestic stakeholders, the public, suppliers, clients
Press-conferences	As required to respond to enquiries	Comprehensive information requests with resulting coverage in the media	Local and national media Public, investors
Public meetings	At least 4 times per year	Ongoing dialogue and response to local community needs and issues.	Local communities
Radio/television programmes	4 times a year	Coverage of current events and activities.	The local community, NGOs, State administration, internal stakeholders
Local newspapers	2 times a month	Coverage of current events and activities	The local public, all interested parties
Corporate newspaper	6 times a year	Coverage of current	The local public, all

		events and activities	interested parties
Brochures	If necessary as a specific communication method project	Specific targeted information on a distinct issue.	Any interested parties
Excursions to the MHP facilities	On request	Demonstration of the activity of the enterprise and its individual branches	Media, schoolchildren, students, representatives of public organizations
Exhibitions	As appropriate	Presentation of the company	all interested parties
Reports on Health and safety labor, and environment as required by EMS and Certified systems and protection of the natural environment	At least annually or as required by certified systemr	Measures taken by the enterprise to ensure safety and health of its employees, working conditions and sustainable use of environmental resources.	Internal stakeholders

6.2 THE FUTURE PROGRAMME

Sources for the communication of information will be presented at key locations, these will include information presented on notice boards in the trolleybus stations and other local community locations as required.

The MHP group contact details are; :

Name Agejkina Svetlana Vladimirovna,
 Job title Executive Director, Vinnystia Poultry Factory
 Contact address 24320, Vinnystia Oblast, Ladyzhyn, UL. Sloboda, 141, edrpou code 35878908
 Contact phone number Tel 04343 6-76-40,
 Contact email address> s.ageykina@mhp.com.ua

MHP Group will collate any comments and feedback associated with the project and will document these. All comments received will be reviewed in accordance with the commitments made under 'Best International Practice' as documented within 'The Requirements' section provided in Section 3.3.

All communications will be reviewed for the feasibility to make changes to satisfy the request and interest and the communicator will be informed of the outcome.

The programme of specific engagement and consultation in relation to the Supplementary Environment and Social Information Report issued in November 2016 is show in the table below.

This is then followed by the plan for future Stakeholder Engagement in relation to each engagement topic area or the keys stages in the development of the future project. This will be reviewed and updated on an on-going basis.

Table 3 Stakeholder engagement programme

Activity / Stage	Means of Engagement	Proposed Duration	Target Date	Start
Preliminary engagement and consultation Appointment of local community liaison representatives	Meetings with specific stakeholder groups. Local village communities, Local media, NGOs, Trade unions and workplace representatives, Ladyzhyn and village councils, Suppliers and customers	60 days	October 2016	
Announcement of consultation and issue of draft Supplementary Environment and Social Information Report	Public workshops / meetings (or meetings with specific groups if appropriate) and notices on Project or MHP's website, radio broadcasts, in local newspapers and key locations (e.g. Ladyzhyn Council Offices, Village Halls in each major settlement).	30 days	December 2016	
Consultation on draft Supplementary Environment and Social Information Report	Public workshops / meetings (or meetings with specific groups if appropriate)	60 days (OPIC Policy, other investors differ, so dependent on the needs of specific investors)	January 2017	
Analysis of comments and reporting	Public workshops / meetings (or meetings with specific groups if appropriate) and issue of a newsletter to key stakeholders summarising the outcome of the consultation on the scope of the assessment	30 days	April 2017	

Activity	Type of Information Disclosed	Locations and Dates of Meetings / Forms of Communication	Stakeholder Groups Consulted
A) General Stakeholder Engagement in relation to ongoing operations at the Vinnytsia Poultry Farm:			
Annual Reporting to Investors	Annual reports regarding the environmental and social performance of the project against requirements, including implementation of Stakeholder Engagement Plan and resolution of any grievances associated with the project.	One year after loan signing agreement / reports provided annually comprising: → ESAP status → Resolution on grievances	Disclosure to Lenders, Including IFC, OPIC, Citi Bank and EBRD
Regular general engagement with the local community and wider audiences in relation to MHP's ongoing general operations	MHP Group development plans and news: Changes to the facilities and any intended future facility Promotion of the benefits and opportunities presented by the facilities. Updated regional project development schedule, including future intended operations, construction and operational commencement timing Announcements to stakeholders detailing any temporary disruptions	Informative announcements and press statements in local papers, local TV and potentially state level media. Distribution of information at each main settlement location. Progression update summary – at least annually to all key identified project affected communities.	Communities, including specific demographic groups within those communities as appropriate Public Groups Government, including internal employees Media

Activity	Type of Information Disclosed	Locations and Dates of Meetings / Forms of Communication	Stakeholder Groups Consulted
	<p>Nuisance / environmental issues and mitigation measures</p> <p>Grievance mechanism</p> <p>Safety initiatives</p> <p>Employment / local service opportunities</p>		
Regular engagement with any parties more specifically affected by the project	<p>Follow up actions, initiatives and their results for stakeholder concerns identified during the consultations.</p> <p>Specific information in response to concerns and grievances.</p> <p>Employment / local service opportunities</p>	<p>At MHP offices, stakeholder premises or local forums/ mutually agreed dates.</p> <p>Reports, presentations, visits, discussions,</p> <p>Minuted meetings if required as per the grievance mechanism</p>	<p>Specific interest stakeholders identified from stakeholder mapping and analysis or encountered during initial consultations.</p> <p>Aggrieved parties made known through the grievance mechanism,</p>
Engagement in relation to the specific use of prison labour within MHP Group	<p>Numbers of prisoners employed</p> <p>Type and conditions of work</p> <p>Details on social programme for prisoners,</p> <p>Numbers of ex-prisoners employed by MHP</p>	<p>At MHP offices or stakeholder premises</p> <p>Focus group sessions with prisoner groups,</p> <p>Press releases, brochures</p> <p>ESMS reports</p>	<p>NGOs,</p> <p>Trade unions and workplace representatives</p> <p>Local community representatives</p>

Activity	Type of Information Disclosed	Locations and Dates of Meetings / Forms of Communication	Stakeholder Groups Consulted
Engagement with Public Authorities, Approval Authorities and Regulators	Supplementary Environment and Social Assessment and ESMP reports, monitoring results, corrective actions, Permit applications and renewals, Planning and construction permit applications. Presentations,	Local council, public authority or regulators offices, MHP site inspections/ mutually agreed or according to statutory timetable. Reports, meetings and interviews	Ladyzhyn council and its service departments, Fire service Local representatives of national ministries; health, agriculture, environment, emergency situations, social policy.
Engagement with local colleges, universities or other establishment in relation to skills development relevant to MHPs operations.	Employment opportunities Training courses Excursions to MHP facilities, Exhibitions	Local newspapers and radio stations, Visits to and presentations in establishments by MHP community liaison representatives on request. Brochures and Company website	Schools, colleges, universities, agricultural training institutions, Local households and community representatives
B) General Engagement in relation to development of all new Project Components (eg by road, rearing farm location etc):			
Engagement in relation to initial site / location or routing selection:	Proposal for brigade locations, access and by pass roads, associated land and access requirements. Provisional works schedule and planning,	Local village public meetings, Local media, briefings and press releases Ladyzhyn and village councils,	Land owners, Local authorities and planning services Local representatives of national ministries; agriculture and

Activity	Type of Information Disclosed	Locations and Dates of Meetings / Forms of Communication	Stakeholder Groups Consulted
	Results of Supplementary Environment and Social Assessment	meetings During initial stakeholder consultation period and at least 4 times per year Plans, reports, Presentations/Company website	environment, Hunting, fishing associations, NGOs Local community representatives, Aggrieved stakeholders made known through the grievance mechanism.
Engagement with Land Owners, users and those directly affected by any new project development component (i.e. new rearing farm location etc)	Location and design decisions, construction works scheduling, Risks associated with the worksite, the increase of traffic, the possible service disruptions, etc... Changes to land access and other potential environmental impacts and benefits Results of Supplementary Environment and Social Assessment	At land owners or associations premises and MHP offices During initial stakeholder consultation period and at least 4 times per year Plans and reports, Presentations/Company website	Individual property owners Consultation with individuals or associations that will experience restriction to land access or loss of resources.
Engagement in relation to project component future operations, access, traffic and other project key considerations.	Proposal for brigade locations, access and by pass roads, associated land and access requirements. Works schedule and planning,	Local village public meetings, Local media, briefings and press releases Ladyzhyn and village councils,	Land owners, Local authorities and planning services Local representatives of national

Activity	Type of Information Disclosed	Locations and Dates of Meetings / Forms of Communication	Stakeholder Groups Consulted
	Results of Supplementary Environment and Social Assessment	meetings During initial stakeholder consultation period and at least 4 times per year Plans, reports, Presentations/Company website	ministries; agriculture and environment, Hunting, fishing associations, NGOs Local community representatives, Aggrieved stakeholders made known through the grievance mechanism.
Appointment of construction contractors and all suppliers for all Project Components	Tender documents for suppliers, including selection criteria Award of contract Job opportunities	Advertisements in press, trade journals Announcement in the local newspaper and on local radio Internal communications Distribution of information at trolleybus stations and on notice boards	Contractors / Suppliers Communities Internal employees Media
Commencement of construction for each project component	Ongoing schedule of construction works and activities Progress of construction. Construction impacts and mitigation measures (with opportunities for	Local village public meetings, Ladyzhyn and village councils, meetings During initial stakeholder consultation period and at least 4	Local authorities and planning services Local representatives of national ministries; agriculture and environment,

Activity	Type of Information Disclosed	Locations and Dates of Meetings / Forms of Communication	Stakeholder Groups Consulted
	<p>feedback from affected communities).</p> <p>Announcements to stakeholders detailing any disruption due to Project activities and updates to traffic management plans for construction</p> <p>Employment and supplier opportunities</p> <p>Awards of contracts</p> <p>Public information on environmental and social performance of the project</p>	<p>times per year</p> <p>Plans, reports,</p> <p>Local media briefings and press releases</p> <p>Presentations/Company website</p>	<p>Hunting, fishing, countryside associations,</p> <p>NGOs</p> <p>Local community representatives,</p> <p>Aggrieved stakeholders made known through the grievance mechanism.</p>
<p>Completion of Construction, prior to project component operation.</p>	<p>Completed construction works and activities</p> <p>Construction impacts and mitigation measures</p> <p>Number and type of additional employees</p> <p>Public information on environmental and social performance of the project</p>	<p>Local village public meetings,</p> <p>Ladyzhyn and village councils, meetings</p> <p>During initial stakeholder consultation period and at least 4 times per year</p> <p>Plans, reports,</p> <p>Local media briefings and press releases</p> <p>Presentations/Company website</p>	<p>Local authorities and planning services</p> <p>Local representatives of national ministries; agriculture and environment,</p> <p>Hunting, fishing, country side associations,</p> <p>NGOs</p> <p>Local community representatives,</p> <p>Aggrieved stakeholders made known through the grievance mechanism.</p>

Table 4 Stakeholder engagement activity and information disclosure

Following the above specific plan for development of a new project component set out in Part B, the engagement in relation to that project component will be added to the general engagement plan for the Vinnytsia Region set out in Part A.

7 REPORTING AND GRIEVANCES

7.1 MONITORING, REPORTING AND FEEDBACK MECHANISMS

Through communication channels such as local media, weekly and one-to-one meetings, and other community feedback, MHP Group will monitor and provide response as appropriate. Should future important public consultation meetings or public exhibitions be arranged at venues to enable stakeholders to participate, an open book (with pens provided) will be positioned in a suitable location for recording comments anonymously. This book will be presented in an obvious area of the exhibition but in an area that will not be directly monitored by host staff (e.g. by the exit). The information will be recorded by MHP Group so that a response and feedback can be made to stakeholders.

7.2 GRIEVANCE MECHANISM

A grievance mechanism will be adopted as presented in Figure 3, in which the grievance form presented below will be used as required to handle grievances from employees, contractors and external stakeholders. The assessment of grievances will be carried out in accordance with Ukrainian Law and responses will be provided within one month of the grievance being lodged. The mechanism will be as follows:

- Grievance received;
- Grievance recorded in a register;
- For an immediate action to satisfy the complaint, the complainant will be informed of corrective action;
- Implement corrective action, record the date and close case;
- For a long corrective action, the complainant will be informed of proposed action within 30 days of receiving the grievance; and
- Implement corrective action, record the date and close case.
- In all cases, the grievance will be acknowledged within 14 days, and either the corrective action taken, or the plan for corrective action provided, within 30 days.

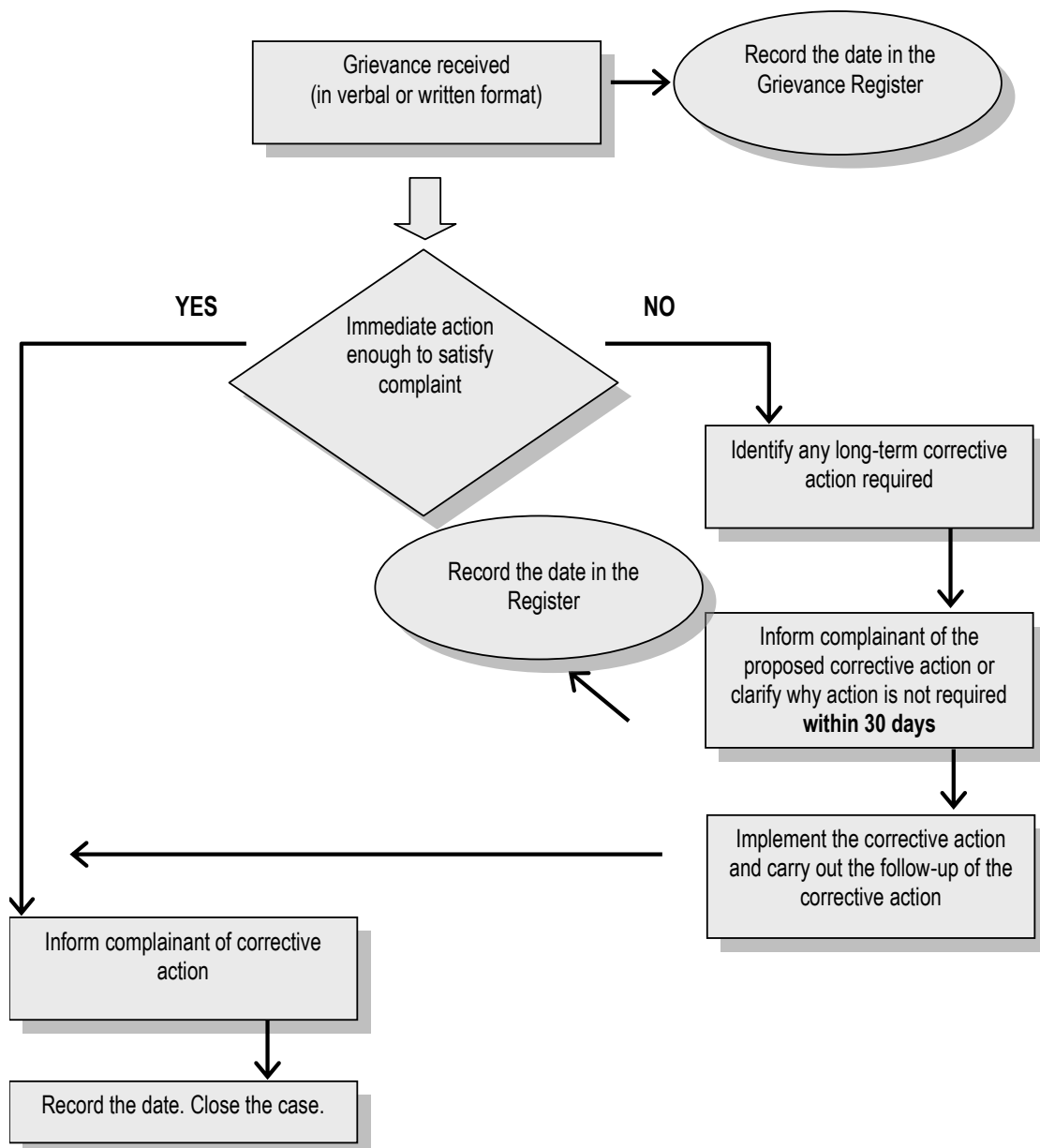
A grievance should be recorded by the complainant using the grievance form below, ensuring that contact details are provided with the preferred method and language of communication. A clear description should be provided of the incident or grievance. Any verbal grievances will also be logged and responded to in accordance with the requirements above.

7.3 ROLES AND RESPONSIBILITIES

MHPs Vinnystia Executive Director and Environmental department will have the overall responsibility for handling the consultation and information disclosure process, including organisation of the consultation process, communications with identified stakeholder groups, collecting and processing comments / complaints, and responding to any such comments and complaints. Depending on the nature of a comment / complaint, some comments or complaints will be provided to the appropriate person in the company for a response.

Name of the person and title	Contact Information
Agejkina Svetlana Vladimirovna, Executive Director Vinnystia Poultry Factory	I24320, Vinnystia Oblast, Ladyzhyn, UL. Sloboda, 141, edrpou code 35878908 Tel 04343 6-76-40, Tel/f 04343 6-76-411r

Figure 1 Grievance Mechanism



Public Grievance Form

Reference No:

Full Name

Note: you can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent

My first name _____

My last name _____

I wish to raise my grievance anonymously

I request not to disclose my identity without my consent

Contact Information

Please mark how you wish to be contacted (mail, telephone, e-mail).

By Post: Please provide mailing address:

By Telephone: _____

By E-mail _____

Preferred Language for communication

Ukrainian

Other (please specify)

Description of Incident or Grievance:

What happened? Where did it happen? Who did it happen to? What is the result of the problem?

Date of Incident/Grievance

One time incident/grievance (date _____)

Happened more than once (how many times? _____)

On-going (currently experiencing problem)

What would you like to see happen to resolve the problem?

Signature: _____

Date: _____

Please return this form to: Agejkina Svetlana Vladimirovna, Executive Director Vinnystia Poultry Factory 24320, Vinnystia Oblast, Ladyzhyn, UL. Sloboda, 141, edrpou code 35878908 Tel 04343 6-76-40, Tel/f 04343 6-76-41

Appendix G

STAKEHOLDER MEMO

MHP GROUP
VINNYTSIA POULTRY FARM
STAKEHOLDER ENGAGEMENT MEMO

DECEMBER 2016

STAKEHOLDER ENGAGEMENT SUMMARY – VINNYTSIA POULTRY FARM COMPLEX

1.1

YEAR 2013

2013: KEY ENGAGEMENT ACTIVITIES

- Reinforcement of national and international media monitoring and engagement,
- Growing links with local NGOs,
- Development of a formal grievance mechanism.

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>Engagement with local newspapers</p>	<p>MHP continues to cooperate closely and on a constant basis with international, national and local Media through inquires, conference-calls on the financial results (4 times a year), press tours to the production facilities of the company, also providing the latest and true information about its activities. Carrying out constant media monitoring, the Company follows all media news about its operations and is able to react if there is inaccurate information.</p> <p>The Company cooperates with nationwide Ukrainian media among, which are: Focus, Novoye vremya, Business, Delo as well as regional newspapers and magazines. For example, in order to keep local communities of Ladyzhyn (Vinnytsia Region) updated regarding our Vinnytsia poultry complex business activity and progress, the Company keeps strong cooperation with the Ladyzhyn media. We interact with the following Ladyzhyn papers: Nove Misto, Ladyzynska Gazeta, Trostyanetski Visti and others. We also cooperate with local TV channel VDT-6 and radio channel TRK "Lada". Specialised media on agriculture and animal breeding is an important part of the Company's cooperation. The Company works with such publishers as Agroperspective, World Meat Technologies, Products and Ingredients, ProAgro, Food.Ua, Latifundist and others.</p>
<p>Cooperation with local environmental NGOs</p>	<p>Cooperating with NGOs in the environmental sphere and so on The Company is ready to cooperate with local non-governmental organizations responsible for environmental issues or other spheres of public interest in those regions where our facilities are located.</p> <p>As an example, MHP is an active member of Centre of Corporate social responsibility in Ukraine. On the local level the Company cooperates with the Ladyzhyn local NGO "For the clean environment".</p>

2013: OVERVIEW OF GRIEVANCES AND COMPLAINTS

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>No use of formal grievance mechanism in place by locals – use of informal methods</p>	<p>Unfortunately, MHP didn't receive complaints through the use of the grievance forms. People don't use it, they prefer to write letters or give verbal complaints instead. Our enterprises received several letters (up to 10 in average per enterprise). All problems were solved. MHP (HQ) received 6 letters.</p> <p>As a part of the SEP, MHP decided to update the Grievance Mechanism to make it work. As soon as SEP 2017 is adopted by the CEO, we will translate it into English and provide you with it. SEP 2016 is available at http://www.mhp.com.ua/en/responsibility/sustainable-development</p>
<p>Anonymous complaint mechanism in place for employees</p>	<p>For MHP employees a mailbox for anonymous letters was installed at the enterprises and in the HQ as well. Employees can address their complaints either directly to CEO, Yuriy Kosiuk, or to the director of the enterprise.</p>

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:

1.2

YEAR 2014

2014: KEY ENGAGEMENT ACTIVITIES

- Meetings with national environmental NGOs
- Expansion of graduate training programme `Start your career with MHP`
- Exchange visits between sites programme for employees,
- Increasing engagement with local stakeholders and media.
- Continued Improvement of grievance mechanism

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>Update of SEP</p> <p>Consultation with NGO</p> <p>Engagement with students and graduates from Ukrainian agrarian and technical universities, including site visits and internships.</p> <p>Public disclosure of updates on environmental, social and safety issues through company's website and magazine.</p> <p>Consultation with locals and other stakeholders upon request.</p> <p>Cooperation with local, national and international medias (newspapers and TV)</p> <p>Cooperation with local environmental NGOs</p>	<p>In 2014 MHP implemented the company's Stakeholders engagement plan (SEP) according to its content, and at the end of a year each enterprise worked out its own SEP for 2015.</p> <p>According to MHP's SEP for 2014, the company provided the next meetings and initiatives:</p> <ul style="list-style-type: none"> - Face-to face meeting with representatives of the NGO National Ecological Centre of Ukraine where the ecological aspects of the company's activity were disclosed and discussed; - - - The company continued the project "Start your career with MHP" for students and graduates from Ukrainian agrarian and technical universities, meeting with them and selecting candidates to train in their speciality and then gain employment at the enterprise. Thus, during 2014, 352 student visited MHP production facilities, 93 of them undertook the internship and 151 were recruited to the company after a probation period; - The "Start your career with MHP" profiles in social media Vkontakte and Facebook resulted in a continuous trending with stakeholders with 2550 and 2441 followers accordingly. These profiles were also used as channels to engage with the Company's stakeholders on all aspects they were interested in; - MHP provided excursions to its facilities to interested students out of the program "Start your career with MHP". It also launched the excursions for its employees who had never been to the company's production sites before (e.g administration staff). - The company continued to conduct various initiatives to engage with its stakeholders and on the way to foster links with them. For this purpose MHP used different methods and channels to interact with stakeholders on its operations, performance index, investment plans and development on a constant basis. - <p>Information provided to members of the public and other stakeholders during the report period relating to environmental, social or safety issues.</p> <p>The company constantly provides an update of its environmental, social and safety issues to all groups of stakeholders through the company's website (press releases and news), Intranet website, corporate magazine (available in Russian and Ukrainian languages) and local in-house newspapers, meetings with local communities, on request and so on. The company also interacts with Ministry of Environment and Natural Resources, laboratories and research centres.</p> <p>Details and examples of keeping stakeholders updated may be found on the following link to corporate web-site: http://www.mhp.com.ua/en/media/press-releases.</p> <p>Coverage in media MHP continues to cooperate closely and on a constant basis with international, national</p>

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
	<p>and local media through inquires, conference-calls on the financial results (4 times a year), planned and on-request press tours to the company production facilities, also providing the latest and true information about its activities. Carrying out constant media monitoring, the Company follows all media news about its operations and is able to react if there is inaccurate information.</p> <p>The Company cooperates with nationwide Ukrainian media among which are: Focus, Novoye vremya, Business, Delo as well as regional newspapers and magazines. For example, in order to keep local communities of Ladyzhyn (Vinnytsia Region) updated regarding our Vinnytsia poultry complex business activity and progress, the Company keeps strong cooperation with Ladyzhyn media. We interact with the following Ladyzhyn papers: Nove Misto, Ladyzynska Gazeta, Trostyanetski Visti and others. We also cooperate with local TV channel VDT-6 and radio channel TRK "Lada". Specialised media on agriculture and animal breeding is an important part of the Company's cooperation. The Company works with such publishers as Agroperspective, World Meat Technologies, Products and Ingredients, ProAgro, Food.Ua, Latifundist and others.</p> <p>Cooperating with NGO in environmental sphere and so on The Company is ready to cooperate with local non-governmental organizations responsible for the environmental issues or other spheres of public interest in those regions where our facilities are located. As an example, in 2014 MHP was an active member of Centre of Corporate social responsibility in Ukraine. On the local level the Company cooperates with Ladyzhyn local NGO "For the clean environment".</p>

2014: GRIEVANCES AND COMPLAINTS

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>No use of formal grievance mechanism in place by locals</p>	<p>Despite the fact that all measures were provided to install grievance boxes for stakeholders on available premises near each company enterprise, MHP didn't receive any complaint in 2014. The company reminds stakeholders about their ability to complain through articles in the corporate in-house journal. Every enterprise has a responsible person for the grievance mechanism.</p>

1.3

YEAR 2015

2015: KEY ENGAGEMENT ACTIVITIES:

- Significant increase in engagement with of NGOs, associations, state and local government institutions. (over 40 engaged)
- Continued Implementation of the SEP
- Deepening of links with social and mass media

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>Engagement with local state institutions, public organisations and associations, charities and health institutions.</p> <p>Engagement with local newspapers and radio broadcasters.</p>	<p>LLC Vinnytsia Poultry Farm</p> <p>According to plan for 2015, in the course of the year the Company cooperated with the following state and private institutions and organizations, interested parties:</p> <ol style="list-style-type: none"> 1. State institutions of the city of Ladyzhyn, Trostianetsk, Tulchyn districts of Vinnytsia region. 2. District Football Federation. 3. Ukrainian Orthodox Church of Sviatotoitsky Stavropihiyny convent. 4. Municipal organization of veterans of Ukraine. <p>Throughout 2015 Information about the Company was made public and published in the following media: local newspapers: "Nove Misto", "Trostianetski Visti", "Tulchynsky Krai", "Trybuna Pratsi", radio broadcaster Lada fm, TRC "VINTERA".</p>

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
No change to SEP	There were no changes to the SEP and the plan was observed as agreed with the EBRD..

2015 – GRIEVANCES AND COMPLAINTS

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>12 grievances issued in 2015 for LLC Vinnytsia Poultry Farm, regarding:</p> <ul style="list-style-type: none"> - Financial assistance – rejected - Traffic speed – action taken - Sludge on roadway – action taken - Concrete on the roadway – action taken - Noise and garbage from elevator (fodder plant) - action taken - Tendering - responded - Waste transportation - responded 	<p>During the reporting period, there were appeals to LLC Vinnytsia Poultry Farm,</p> <p>LLC Vinnytsia Poultry Farm</p> <p>During the reporting period the Company received 10 appeals.</p> <p>From individuals - 5 appeals.</p> <p>Main points of appeals – provision of financial assistance (2 appeals).</p> <p>Decision taken: refusal of assistance because of the fact that such assistance was provided to these individuals earlier.</p> <p>Main points of the appeal - complaint of high speed truck driving at the poultry farm “Vinnytsia Broiler” (1 appeal).</p> <p>Decision taken: adopted speed limit for Company transport, also lighting was installed at a specific street according to agreements with the local village council.</p> <p>Main points of the appeal - complaint of emptying of sludge to the roadway by a truck of the poultry farm “Vinnytsia Broiler” (1 appeal).</p> <p>Decision taken: the Company organized the removal of sludge and cleaning of the road.</p> <p>Main points of the appeal - complaint that the concrete mixers owned by the poultry farm “Vinnytsia Broiler” poured remains of concrete onto the roadway (1 complaint).</p> <p>Decision taken: the Company organized and carried out cleaning of the road and the curb. It was decided to reduce the fill level of concrete in the mixer in order to prevent pouring of concrete onto roadways.</p> <p>From Ladyzhynske village community (2 appeals)</p> <p>Main points of the appeal: noise, stench, and garbage from the elevator (1 appeal).</p> <p>Decision taken: provided technical and financial assistance to repair SPS used by residents of village Ladyzhynske.</p> <p>Main points of the appeal: stench of fried oil (1 appeal).</p> <p>Decision taken: Branch Complex for Manufacturing Feeds collected garbage from village Ladyzhynske (carried out on a regular basis).</p> <p>State and private organizations:</p> <p>Main points of appeals: explanation of choice of the winner of the tender (2 appeals).</p> <p>Decision taken: provision of written response-explanations to addresses of the appealing companies.</p> <p>Main points of the appeal: misconduct during transportation of waste from keeping chickens (1 appeal).</p> <p>Decision taken: provision of written response-explanation to address of appealing Company.</p>

1.4

YEAR 2016

2016 KEY ENGAGEMENT ACTIVITIES

- Full time Head of CSR&PR and Managers (Head Quarter and facilities) Employed
- More information published on the MHP Website
- Updates to project level SEPs
- New system of recording and reporting responses to grievances and complaints / comments and requests

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>Meetings with locals upon demand.</p> <p>Financial assistance to charities.</p> <p>Financial assistance to infrastructure development in local cities/villages.</p> <p>Open discussion and voting for the residents regarding the expansion of Vinnytsia poultry farm in region</p>	<p>Vinnytsia Poultry Farm:</p> <p>W Both director of the enterprise and social workers meet with local population. During the last reporting period (3rd quarter 2016) social workers made over 350 visits to the settlements. The director has a reception day (2 times a month) and makes regular visits to the communities in settlements.</p> <p>Key Engagement Activities within the framework of the CSR policy: (http://www.mhp.com.ua/library/file/csr-eng.PDF)</p> <ul style="list-style-type: none"> - Sponsor of City Day (Ladyzhin), the Day of the village (few villages); - establishment of playgrounds; - Infrastructure development (repairing of roads, water pipelines etc.); - targeted charitable assistance; - provision of public services and organizations, cooperation with authorities, citizens, leaders of opinion, local NGO's, media; - Social Shop works in Ladzhin and some villages; - assistance for schools, kindergarten; - the development of sport; - the organization number of events for the public; - help for soldiers of ATO. <p>In all villages where Company has expansion plans in this region, LLC Vinnytsia Poultry Farm was invited to the public hearings (which were organized by village councils) where there was detailed discussion about the plans for the company development, environmental and other consequences, with responses to all questions. An open vote was held by the residents regarding the expansion of Vinnytsia poultry farm in these villages.</p>

2016: GRIEVANCES AND COMPLAINTS

WSP PB SUMMARY	TEXT FROM MHP ON ENGAGEMENT:
<p>Vinnytskiy Broiler (LLC «Vinnytsia poultry farm»)</p> <ul style="list-style-type: none"> - a complaint regarding serving in social shop <p>action taken</p>	<p>During 9 months in 2016 received grievance/complaints:</p> <ul style="list-style-type: none"> - A complaint regarding serving in social shop. <p>Decision taken: confirmation of facts of improper maintenance weren't founded. Company provided explanatory instructions for the seller. Cash registers established to avoid disputes.</p>

EHSS Audit and subsequent progress

Recommendation made as part of 2015 EHSS Audit	Progress/status	
<p>Review of stakeholder engagement plan and communication of this at a Regional Project / Enterprise level, ensuring that it is effectively tailored and implemented on a project by project basis.</p>	<p>The SEP has been updated as part of the ESIA process and will be communicated at regional project level.</p>	<p>Green</p>
<p>Ensure that OVNS are publicly available for review. Disclose the location of the OVNS and ensure that these locations are easily accessed;</p>	<p>OVNS are publicly available for review. However, there is the potential for improvement in the provision of publically available information, and meaningful public participation, which goes beyond the requirements of the regulatory regime.</p>	<p>Yellow</p>
<p>Ensure that all stakeholders have been identified and included within the SEP;</p>	<p>The SEP has been updated as part of the ESIA process and includes all relevant stakeholders. The SEP is shared online and at information spots in the locations of MHP activities.</p>	<p>Green</p>
<p>Prepare non-technical summaries for all OVNS that provide a summary of the project as well as the identified environmental and social impacts and the proposed mitigation and management techniques to be implemented. Information should be presented in a clear and concise manner and meaningful to those with minimal project knowledge;</p>	<p>The OVNS system does not require NTSs and these are not currently provided. The Supplementary E&S Assessment will have an NTS for publication.</p>	<p>Yellow</p>
<p>Organise appropriately advertised public meetings, in addition to those required by law (and organised by the Regional State Administration), in an easily accessible place (provide transport where required);</p>	<p>Public hearings are organised as part of the ESIA process. Informal consultation is also conducted at earlier stages during the site selection process.</p>	<p>Green</p>
<p>Provide training to relevant personnel at site level, to ensure awareness and implementation of the SEP;</p>	<p>It has been undertaken</p>	<p>White</p>
<p>Record all grievances (both formal and informal) received as well as details of the responses and resolutions.</p>	<p>Grievances and 'appeals' are now recorded and the responses and resolutions are detailed as part of SEP procedure.</p> <p>Grievances from any source (not just on the form as previously) are now handled.</p>	<p>Yellow</p>

Stakeholder (NGO) Complaints identified as part of EHSS Audit conducted in 2015

TOPIC	CONCERN	STAKEHOLDER GROUP	SUMMARY AND RECOMMENDATIONS MADE IN THE EHSS (2015)
Access to information	<p>OVNS assessments were not made publically available.</p> <p>Non-technical summaries of the OVNS were not made available.</p> <p>Denied access to information following formal requests.</p> <p>No invitation received for the public hearings organised by the state</p>	NGOs ./ local communities	<p>From a review of the OVNS assessment and public hearing process it appears that MHP is operating within accordance with Ukrainian legislation.</p> <p>However, there is the potential for improvement in the provision of publically available information, and meaningful public participation, which goes beyond the requirements of the regulatory regime.</p> <p>It was evident, following discussions that MHP were willing and looking to be proactive with regards to engagement and consultation, however additional efforts will need to be made around the themes listed above.</p> <p>Recommendations have been proposed.</p>
Pressure on land owners to sign lease agreements	An overaggressive approach to secure land leases agreements as well as significant pressures being put on land owners.		<p>A process is in place, based on the same themes, across MHP facilities. However, following a series of common grievances it was concluded that MHP would benefit from a formalised and standardised, documented land acquisition framework.</p> <p>This should be summarised and communicated to potentially affected communities in advance of future new land acquisition.</p> <p>Further detailed recommendations have been proposed.</p>
Water quality – discharge of polluted water	<p>Questions have been asked regarding the quality of the water discharged to surface water.</p> <p>Monitoring results were reportedly requested from MHP, however these were not obtained.</p>		<p>It is considered the waste water treatment arrangements are excellent, and are aligned with EU Best Available Techniques as well as being in compliance with the Ukrainian requirements. However, water quality is still perceived as an impact within the local communities, and therefore it is suggested that an awareness and communication programme is put in place to manage this potential grievance area.</p> <p>Install an inline monitor for COD at the Vinnytsia WWTP to demonstrate continued compliance with emission limit values.</p>
Community health impacts associated with the storage and spreading of manure	<p>Leaching of nitrogen and phosphorus impacting human health.</p> <p>Impact on air quality</p>	NGOs /; Local communities	<p>Following on site discussions and the visit to the manure storage facility, it was ascertained that the manure management practices were overall well established.</p> <p>During manure application processes, there is considered to be a low likelihood of health</p>

TOPIC	CONCERN	STAKEHOLDER GROUP	SUMMARY AND RECOMMENDATIONS MADE IN THE EHSS (2015)
			<p>related risks, mainly due to short application timescales, but also due to spreading and incorporation techniques featured as part of the MHP procedures.</p> <p>Following a review of BAT requirements, it was established that MHP are generally in alignment with BAT. As discussed, currently the site is not connected to a drainage system to drain leachate from the site, although a fully sealed leachate collection pond is in place, and it was reported that due to the low moisture content of the manure, the collection of the leachate had not yet been required.</p> <p>Recommendations have been proposed for the manure storage facilities to fully employ BAT based on the draft revised BREF. However, this has not yet been published, and even after publication, typically a company based in the EU would be given up to 4 years to align with any new requirements. There are no significant current departures from BAT. The only major future requirement is related to the use of covers over the manure stores, such as sheeting.</p>
Odour impacts	Sources of odour caused during manure transportation, storage and land spreading practices.	Local communities	<p>Effort is made to minimise impacts from odour as a result of spreading and storage activities, through locating storage facilities away from sensitive receptors, taking into consideration prevailing wind directions, as well as incorporation of manure in a timely manner following spreading.</p> <p>Following the update of the BREF note and the addition of some further requirements MHP will likely be required to upgrade their storage sites / techniques to ensure these are continued to be aligned with BAT, once these additions have been approved. These include covering the manure in storage and compaction. Once the BREF note has been approved there will be a transitional period of up to 4 years to implement the required changes.</p>

TOPIC	CONCERN	STAKEHOLDER GROUP	SUMMARY AND RECOMMENDATIONS MADE IN THE EHSS (2015)
Damage to properties associated with vehicle movements	Transportation of manure was also raised as a concern, reporting that vehicle movements were a source of nuisance in local communities as well as causing damage to properties as a result of an increase in vibration.	Local communities	During the site visit, the accusation from local communities regarding the damage to property caused by truck movement could not be proved or disproved.
Illegal dumping of manure slurry	<p>Illegal dumping of waste in fields not leased by MHP.</p> <p>Dumping and spreading of manure for the purposes of waste management.</p>	Local communities	<p>A field passport is developed for each field as well as a manure spreading plan, based on the nutrient profile of the soil and the manure and the requirements an appropriate manure application rate is determined and implemented.</p> <p>MHP perceive manure as an asset and therefore spreading manure unnecessarily as a method of waste disposal would not constitute standard practice.</p>
Labour management and working conditions associated with the employment of prisoners	Prisoners are subject to forced labour, and are conducting work that locals were unwilling to do	NGOs	<p>Findings suggest that the social programme is a voluntary scheme, paying the prison labour salaries aligned with other workers.</p> <p>Despite this, there is a perception of forced labour and the requirement of prison labour to fill the unwanted positions at the slaughterhouse. It is therefore recommended that MHP prepares a communication summarising the details of the social programme and the work that is completed by the prisoners.</p>