Kuzbass Pischekombinat Livestock and Meat Processing Project

Non Technical Summary for the Environmental and Social Impact Assessment

Prepared for:

Kuzbass Pischekombinat
Novokuznetsk, Russia

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Contents

1 Introduction

This document provides a Non Technical Summary (NTS) for the Kuzbass Pischekombinat (KPK or the Company) Livestock and Meat Processing Project located in Novokuznetsk and the surrounding areas. It has been prepared as part of a package of documents that have been released in the public domain, with the purpose of providing an overview of the Project and summarising the main potential environmental and social impacts and KPK's approach to the management of those impacts.

1.1 Scope

This NTS is prepared as part of the Company's environmental and social disclosure programme in line with international best practice requirements, and undertaken in addition to all necessary permits as required by Russian Federal and local legislative requirements. The additional disclosure package has been prepared to meet the requirements of international lending institutions, such as the European Bank for Reconstruction and Development (EBRD).

International lending institutions are considering the provision of finance to KPK in support of KPK's overall expansion plan. Whilst lenders may only be considering direct funding for some elements of the overall project, the whole project is considered in this NTS, thereby setting those elements directly funded by lenders within the context of the overall expansion plan. There is significant inter-dependency between each project element, for example, a new slaughter house (being considered for funding by EBRD) is designed the meet a fully operational pig farm which is being constructed in two phases (not being considered for funding by EBRD). Thus the viability of the slaughterhouse is dependent on both phase 1 and 2 of the pig farm proceeding.

KPK's investment plan includes the expansion of existing meat processing facilities, expansion of the existing pig breeding farm with an associated new pig fattening farm, the upgrade of recently purchased dairy and beef cattle farms, the development of an animal feed (fodder) plant, a new slaughterhouse and an upgrade of an existing slaughterhouse.

Environmental and social assessments have been carried out for some of the facilities listed above. These include OVOS[1] documentation, in accordance with Russian Federation (RF) law, for: the first phase of the pig farm, fodder plant and the new slaughterhouse. Additional information is also provided in the form of 'supplementary documentation' for the diary farm and the new slaughterhouse. Collectively these materials have been prepared in accordance with RF requirements (where an OVOS is available) and industry best practice in the form of World Bank/IFC guidelines for environmental and social management. They

[1] The OVOS is an Environmental Impact Assessment required under Russian Law for projects with the potential to result in adverse environmental effects.

also take account of European Union reference documentation for Best Available Techniques.[2]

2 Project Description

2.1 Overview

The Kuzbassky Pischekombinat Company (KPK) produces meat products for sale within Siberia, operating a number of existing farms and meat processing facilities. KPK's main meat processing facilities are located in the town of Novokuznetsk, from where it distributes meat products throughout Siberia. The farms and other facilities are located to the north east of Novokuznetsk in agricultural land in the districts of Prokopyevsk and Promishlennaya.

Socio-economic setting

The Prokopyevsk district is situated in the southern part of Kemerovo region, bordering with Novokuzneck and Belovo districts and Altaisky krai. Novokuznetsk is located 40-50 km to the south-east from Prokopievsk. There are many coal mines in Prokopyevsk close to residential houses, which together with heavy traffic results in high levels of air pollution (dust, soot, CO, NO_2) and soil/groundwater contamination. The Prokopyevsk district was founded in 1965. The district accounts for 3.6% of Kemerovo regional area, comprising 50% of agricultural lands, 40% -- forests, 2%- developed lands and 8% other.

Coal mining comprises 99 % of district economy. There are more than 10 operational coal mines, 1/5 of Kuzbass region coal is mined in Prokopyevsk district. Villages and cities within the district are connected via roads, public transport buses. There is a railway station at Trudoarmeiskaya. The paved roads density is 167 km per 100 km^2.

The population has been steadily decreasing over recent years from 33,400 in 2004 to 32,800 in 2006. Unemployment was 4.8% in 2004 and 5.5% in October 2005. The increasing level of unemployment could be explained by a decrease of coal industry needs for employees.

The coal industry dominates local business activity. Other relatively minor commercial activities include beef and dairy cattle farming and forestry.

The Promishlennaya district includes 8 rural settlements including the Pushkinskoe rural settlement (PRS), consisting of 5 villages- Pushkino, Parhaevka, Krasninskoe, Ivano-Rodionovsky, Kamenka. The district is located in the western part of Kemerovo region in the central part of Kuzneck depression. The neighbouring districts are Leninsk Kuznetsky region (to the south), Toguchinsky district of Novosibirsk region (to the west), Topkinsky (to the

[2] EU guidance on Best Available Techniques is provided in IPPC BREF documents.

north), Krapivinsky (to the east). The administrative centre is the urbanised settlement of Promishlennaya (72 km from Kemerovo).

The Promishlennaya district covers an area of 3,100 km^2 equating to 3,2% of Kemerovo regional area, including 79 % of agricultural lands (including 50% of pasture lands), 17%-forests, 1,4% surface water, 9.4 other lands. It has a population of – 49,800 people including 32,100 people-involved in agriculture (as of January 1, 2008).

The Pushkinskoe rural settlement (PRS) covers an area of 330 km^2 which is comprised of 19,100 hectares of crops (including 12,700 hectares- grain crops, 6,100 hectares- feed crops). It has a population of 3036 people including Pushkino (212) people, Krasninskoe (1327) and Parhaevka (266), and a population density of 9 people per km^2. Agriculture represents the main commercial activity, dominated by grain, meat and dairy production. The area is served by 2 schools, 1 nursery, 1 hospital, 2 libraries and 4 houses of culture. There is also a bus service to other villages in the district.

Project activities

KPK is currently in the process of expanding its facilities through a series of farm acquisitions, expansions and the construction of new facilities (the 'Project'). Through its proposed investment plan the Company hopes to control all elements of the meat production process, including the production of its own animal feed, cattle and pig farming, slaughter, meat processing and distribution of the finished product to market. This approach will allow KPK to manage the quality of meat product throughout the product chain from the initial stages through to the point of sale to the public and ultimately result in an improved availability and quality of product.

KPK's current operational facilities include:

- an existing meat processing facility including an external warehousing facility in Novokuznetsk where they produce a variety of pork, beef and to a limited extent chicken based meat products, including smoked sausages;
- a newly constructed and part operational pig breeding farm located approximately 40 km North of Novokuznetsk near the village of Shkolnoe;
- a recently acquired beef cattle farm located 150 km east of Novokuznetsk near the village of Parhaevka;
- a recently acquired dairy farm located 165 km northwest of Novokuznetsk near the village of Pushkino; and
- a recently acquired small scale animal slaughter facility located close to the dairy farm and the village of Krasninskoe.

The Company also intends to invest in new build facilities and the upgrade of existing facilities as follows:

- a number of upgrades and improvements to the existing meat processing facilities by the end of 2008;
- further expansion (phase 2) of the newly constructed pig breeding farm (phase 1), and associated pig fattening farm, doubling the size and capacity of the farm by the end of 2009;
- upgrade of the recently acquired dairy farm replacing the old facilities with new build facilities (barns and milking parlour) and restocking the herd by the end of 2009;
- upgrade of the recently acquired beef cattle farm replacing the old facilities with new build facilities (over wintering barns) and restocking the herd by the end of 2009;
- upgrade of the existing slaughterhouse in mid 2009;
- construction of a 'new build' slaughterhouse, close to the pig farm, in mid 2009;
- construction of a 'new build' animal feed production plant from November 2008 through to the middle of 2009; and
- a distribution and sales network, including its own shops, between November 2008 and the middle of 2009.

At the existing meat processing site, the existing slaughterhouse, dairy farm and beef cattle farm the Company will either reuse existing buildings or in the case of the farms, existing facilities will be demolished and the same land used for the new facilities (cow sheds). For the 'new build' facilities (new slaughter house, expansion of the pig farm and feed production plant) construction will take place on 'greenfield' land that is designated for agricultural use. The facilities are widely dispersed with distances of between several kilometres and tens of kilometres separating the sites.

The location of these facilities is shown in the figure 1 below.

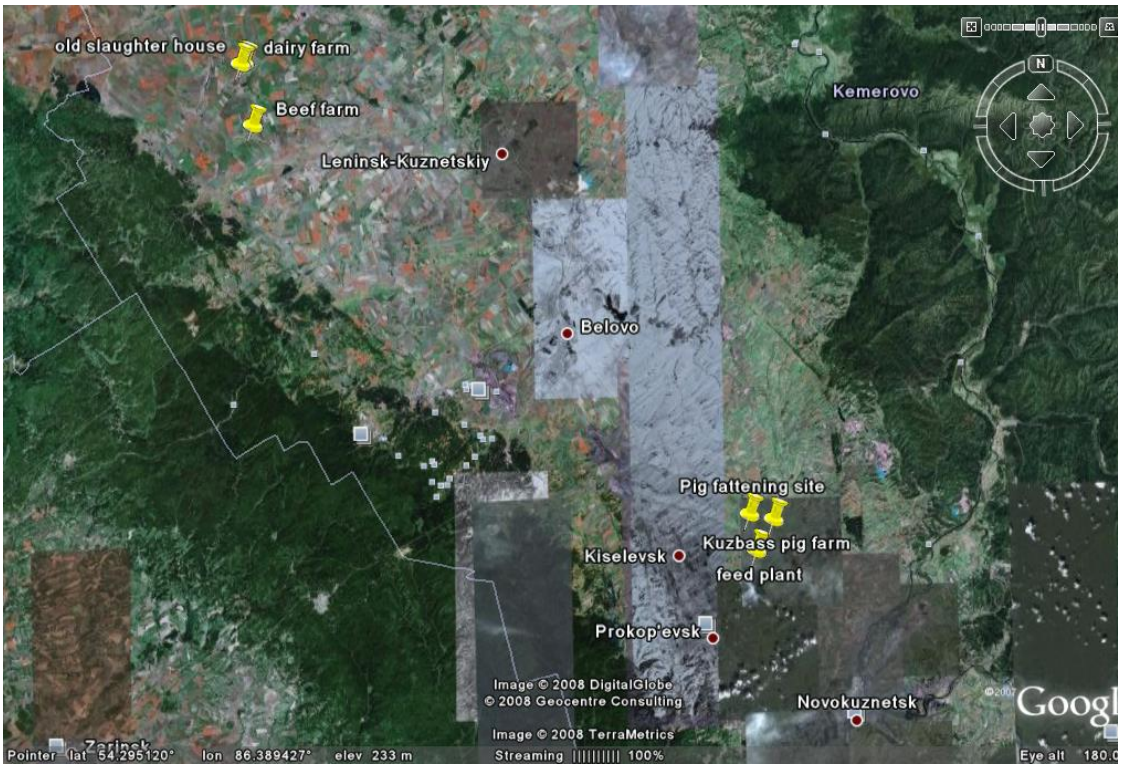


Figure 1. Location of KPK facilities

The Company intends to use modern technologies and equipment imported from Western Europe. The buildings have a relatively simply design and can be erected over short durations using KPK's own construction workforce (construction will be carried out by KPS, a contractor to KPK).

2.2 Meat processing facilities

Facility Description

KPK operates an existing meat processing facility in Novokuznetsk where it produces a variety of pork, beef and chicken based meat products, including smoked sausages. The Company has recently undertaken a number of facility upgrades and is planning further upgrades and improvements to the meat processing facilities in 2007/2008 on the existing Novokuznetsk site. Future improvements will include:

- Relocation of the existing workshop (currently located within the meat processing facility) to a new location that is separated from meat processing activities.
- Extension of the current warehousing facility located near to the main processing facilities and equipment therein to automate the despatch process;

- Expansion of the intermediate product department;
- Expansion of the smoked sausage manufacturing plant;
- New laundry facility; and
- Building repairs.

These works are already underway and expected to continue through to March 2009. In all cases KPK has already acquired the land and does not require an OVOS to undertake the works.

Impacts and mitigation measures

The expansion plans require construction activities in various locations of the meat processing facility, in industrial/commercial areas. There will be a number of general construction related impacts although these will be for the most part be short-term and confined within the existing sites boundaries or even within existing buildings. The impacts will be typical of those generally associated with construction (waste, dust, noise, increased traffic) and can be readily mitigated with a number of simple measures. For example, good driving standards, avoidance of excessive noise particularly during night-time and good waste management practices.

These practices are described in the Environmental and Social Management and Monitoring Plan (ESMMP) under 'construction'.

During operations the facilities will use large volumes of water and can emit unpleasant odours. IPPC BREF for Food, Drink and Milk Industries (dated: August 2006) promotes the use of air abatement techniques (e.g. an incinerator) to reduce emission of volatile organic compounds (VOCs) and a water treatment technique to reduce accumulation of tar in pipelines associated with smoke generators used for the smoking chambers. Furthermore, IPPC BREF promotes detailed metering of water consumption, segregation of water streams to enhance re-use and implementation of a water reduction program. None of these measures are currently taking place at the site. Recommendations for the management of these issues are provided in the ESMMP.

2.3 Pig farm

Facility Description

The current facility (phase1) is a newly constructed and part operational pig farm located approximately 40km North of Novokuznetsk near the village of Shkolnoe with a capacity of 4830 tonnes per year (meat on the bone). A further expansion to the pig farm (phase 2) is planned for late 2008/09, doubling the size and capacity of the farm to 9660 tonnes per year (meat on the bone). Figure 2 below shows the pig farm with Phase 1 nearing completion in the background and the foundations of Phase 2 in the foreground.

Figure 2. Pig farm under construction

Impacts and mitigations measures

An OVOS was undertaken in accordance with RF requirements for Phase 1 of the pig farm. The project design and consequently the OVOS environmental assessment largely took account of the future phase 2 expansion.

Phase 2 of the pig farm will use the same infrastructure as Phase 1, including the same boiler house, access road, manure lagoons, vehicle wash and offices. Additional impacts beyond those described in the phase 1 OVOS are therefore relatively limited and include:

- a continuation of current construction activities;
- additional land to receive manure
- incremental increases in air emissions from boiler house and manure lagoons;
- increased traffic; and
- grey water effluents (from construction and operations).

An additional finishing farm under construction at the time of writing, serving both Phase 1 and Phase 2 of the main farm will also be required to house growing (fattening) pigs following separation from their mothers from the age of 1 month until they are ready for slaughter at around 6 months.

Air emission studies for the Phase 1 project predict air pollutant concentrations to be well within (less than half) the permissible limits at the edge of the Sanitary Protections Zone (SPZ) [Ref. 1]. Phase 2 will cause additional air emissions from manure storage (mainly ammonia and associated odour) and boiler house emissions, although these will not double the existing emissions because:

- the boiler house will operate at its optimum efficiency, emitting less pollutants per unit of energy when serving both phases of the farm; and

- extra manure stored in a lagoon will increase the depth of the manure but will not increase the surface area by the same proportion thus limiting emissions of air pollutants.

However, even in the event that emissions did double, the maximum permissible concentrations would not be exceeded. Emissions to air are also reduced through the Project's design. For example, use of a new build (efficient) boiler house with ash collectors, storage of manure beneath the barns, positioning of the manure inlet at the base of the manure lagoon thereby maintaining the 'emission reducing' crust on the surface of the manure and use of plastic hexagons on manure surface. These measures combined with the distances separating dwellings from the farm also help to minimise the impact from odours.

Manure management

The impacts from manure are some of the most significant associated with intensive livestock farming and therefore requires careful management.

The manure will be stored in the lagoons before being used as fertiliser on nearby agricultural land, including land leased by KPK and nearby farmland (see Section 5 concerning availability of land). The manure will be spread in accordance with RF requirements for manure application, based on NTP 17-99 Technological design standards for manure removal systems and its reapplication treatment (dated October 1, 1999) and veterinary and sanitary rules for manure use for pastures irrigation and fertilizing #19-7-2/148 dated October 18, 1993 (VSR). These requirements specify:

- Average land requirement per animal, for example 0.3 hectares per cow/sow;

- Ammonia concentrations maximum permissible concentration of ammonia - 1000 mg/l for perennial grasses of the 1st year and 1500 mg/l for perennial grasses of the ≥2nd year and the need to measured ammonia concentrations at least once per month);

- Sensitive zones where manure application is prohibited, for example, within water protection zones;

- Manure storage period: 4-8 months (cows), 8-12 months (sows);

- Assumptions for manure use on pasture: 300 kg of N/hectare if irrigated; 200 kg of N/hectare without irrigation; and

- Time of application: optimally immediately prior to the crop growth period; also acceptable in winter where temperature ≥ -10^{0}C and snow cover is ≤20 cm.

Manure together with disinfected waste water is collected in the underground concrete pits underneath the stables that are between of 0.4-0.6 m deep. The manure basins underneath the pig stables are discharged into the central manure lagoons through an automatic pumping system once every five months. The lagoons have a designed storage capacity equivalent to a year's generation of manure. .

At the pig farm, NH3 emissions from the stables may arise due to animals standing in manure and/or during mixing/pumping of manure collected in basins underneath the stables. However, the Company uses slatted floors and prevents accumulation of manure using dry scrapers if necessary. The stables are equipped with an automatic ventilation systems which prevents accumulation of ammonia in the stables. A warning system is in place to notify appropriate staff in case the system breaks down.

The open manure lagoons at the pig farm are placed on a clay layer and lined with PVC plastic of 2-3mm thickness which is in line with the IPPC BREF requirements on Intensive Rearing of Poultry and Pigs (dated: July 2003). Best Available Techniques also promotes coverage of manure lagoons with either a plastic or floating covers. In this respect, the Company plans to provide coverage using plastic hexagons.. Of note, anaerobic digestion of manure causes emission of methane (CH_4) which is a flammable gas. However, the open nature of this structure at the lagoons will allow very good ventilation and thereby avoid the build up of flammable gases. Best Available Techniques also promotes the provision of a leakage detection system. The Company plans to install 6 groundwater monitoring wells in the vicinity of the manure lagoons in Q3,2009 to monitor groundwater quality in order to identify (potential) manure leakages. The manure is currently sold to third parties who collect the manure by truck.

The production of methane can be encouraged and recovered for use as a fuel using specially designed recovery systems. The size of the KPK farm would make methane recovery feasible, although the Company has no plans to recover methane at this time.

Other important issues for the pig farm include animal welfare and disease prevention/response to disease outbreak. These issues are discussed in Section 4 and 6. Further information is also available in the Phase 1 Pig farm OVOS documents [Ref 1,2, 3 and 7].

2.4 New Slaughterhouse

Facility Description

The proposed slaughter house will be constructed by mid 2009 approximately 5km to the west of the main pig breeding farm complex, based on a separation zone in accordance with European Union regulations, and 1km to the north east of the village of Shkol'nyy. It will only slaughter pigs from KPK's own pig farm facilities to minimise the risks of cross contamination between farms and has a design capacity to meet the needs of a fully operational phase 1 and 2 pig farm. The slaughterhouse will be designed and equipped using western European technologies and constructed by KPK's own construction division. It will have the capacity to slaughter 120 pigs/hour or 9660 tonne/year (meat on bone) and require approximately 30 employees once operational. Hot water for heating, cleaning and use in the treatment of the carcasses will be provided by the site's boiler house. The site will source electricity from Kuzbasenergo municipal supply. Water will be drawn from the same wells that serve the pig farm.

Impacts and mitigations measures

The main potential environmental impacts from this type of facility include air emissions (from a coal-fired boiler house and manure collected from the lairage[3] pens), discharge of effluents, water abstraction, waste management including disposal options for manure and diseased animals/unusable animal wastes, and construction impacts. Social impacts should generally be positive (economic development and improved availability of meat products) although some adverse impacts may result from increased traffic and odours if badly managed, or ill health if hygiene standards are poor.

The majority of the potential impacts will be effectively controlled by the use of best available techniques for slaughterhouse facilities. Potential impacts and mitigation measures are outlined below.

Odours from animal waste products and some carcass treatment (singeing to remove hairs from pigs) and manure in the lairage pens. These odours will be minimised by good manure management; the pigs will be held in lairage pens with slatted floors for manure collection with daily scrapping. Odours from inedible animal parts can be managed by good housekeeping and waste management practices, and for singeing odours using abatement equipment if necessary. Based on evidence from similar facilities elsewhere, the proximity of residential areas to the site and studies undertaken as part of the OVOS assessment, unpleasant odours amongst dwellings are unlikely.

Only a relatively small percentage of each pig is not used for either human or animal consumption. Inedible waste will be removed by specialist operators for rendering, or in the future, possibly utilised in the production of biogas that will subsequently be used as a fuel source for the facility. Any diseased animals/contaminated meat will be segregated from other animals/carcasses and collected by the veterinary authorities (see Section 6).

[3] Lairage pens are temporary holding pens used to house animals at the slaughterhouse prior to slaughter.

Water use and wastewater generation will be minimised by the use of water conservation techniques, for example trigger operated wash down hoses. Effluent treatment will include maximising the extent that solids and blood are collected before entering the waste water stream. The site will have effluent treatment facilities, consisting of mechanical clarification using a 1mm screen followed by chemical flocculation, flocculent removal and dewatering and disposal of resultant solid waste in order to meet its discharge consents. Drinking water for the pigs will be sourced from dedicated groundwater wells located approximately 2 km from the farm. Hydrological studies undertaken as part of the OVOS have confirmed that these wells are sufficient to supply the pig farm (and associated facilities including a new slaughterhouse) and that no other abstraction wells, for example village supplies, will be affected.

Strict hygiene standards will be imposed at the site with all staff entering the slaughter house required to where appropriate clothing, hair nets and footwear, and follow procedures for hand and foot disinfection. Vehicles entering and leaving the site will be subject to a disinfection procedure.

Further information is available in the slaughterhouse OVOS [Ref 4].

2.5 Dairy farm

Facility Description

KPK recently acquired a dairy farm located 165 km northwest of Novokuznetsk near the village of Pushkino. Currently the cows are housed during the winter months from November to April and graze on leased pasture land during the summer months returning twice daily to the farm for milking.

The Company intends to upgrade the dairy farm replacing the old facilities with new build facilities (barns and milking parlour) and restocking the herd in 2009. Two barns will be constructed each with a capacity for 600 cows using technologies from Western Europe. The barns will be based on a modern loose housing system design with various separated departments for milked cows, heifers, calves, dry cows, etc. Cows can move freely throughout the stable departments which are equipped with cubicles for resting, feed lots for the provision of concentrate and a centrally situated feeding fence. There is an indoor milking parlour. The barns have slatted floors and are equipped with automatic cleaning scrapers with manure basins underneath to collect manure (and urine). Following construction of the new barns, cattle will be housed indoor throughout the year and the pasture released. The existing buildings will be dismantled or possibly reconstructed and waste materials disposed to licensed waste contractors.

Construction of the two new barns will take approximately 6 months.

Impacts and mitigations measures

Potential impacts from the dairy farm include general construction impacts associated with demolition and construction of the barns, increased traffic and emissions of ammonia and disease causing pathogens from the storage and handling of manure.

Demolition/Construction

During demolition of the existing barns, the asbestos roofing will be removed and disposed by licensed specialist contractors (in line with RF requirements) and non hazardous materials disposed to a licensed landfill site.

During construction, traffic levels will increase due to the deliver of construction materials and personnel potentially resulting in some deterioration of roads surfaces, increased pedestrian risk, dust and noise. A number of measures will be put in place to reduce these risks/impacts, including speed restrictions close to residential areas and on vulnerable roads. KPK will construct the buildings with their own construction workforce. The workforce will peak at around 20 workers and temporary accommodation will be provided. The worksite/camp will have a set of rules to ensure minimal impact to the environment and to nearby residential areas. All temporary structures will be removed and the work area/camp will be reinstated to its former condition.

Operations

In the existing tie-stall barns, manure (and urine) is removed mechanically from the stables and stored on open ground which can lead to the uncontrolled release of nitrogen and phosphorus nutrients and impacts on soil and groundwater quality. Manure storage at the farm is not in accordance with the EU Directive 91/676/EEG promoting reduction of nitrogen release, including dedicated storage of manure with protection against rainfall. However, the new barns will be equipped with slatted flooring and manure scrapers which reduce ammonia emissions through regular collection of manure in collection basins underneath the flooring. The under floor manure basins will be periodically emptied and the manure pumped to a covered storage lagoon before sale to neighbouring farmers. There is ample demand for the manure due to the large areas of agricultural land in the area.

Clean (drinking) water is currently supplied solely by the municipality from wells shared with other users. KPK has plans to source water from a new groundwater well (also to be owned by the municipality) which will be installed before the end of 2008. This new well is located approximately 600m northwest of the site and will also be used to supply the slaughterhouse which is situated approximately 750km south of the dairy farm. The demand for water will increase in line with the increased number of cattle. Studies have been undertaken that confirm the well can supply the farm's needs without adverse impact on other users in the area.

Waste water at the farm will result from cleaning activities (e.g. in the milking parlour, wash down areas) will be relatively minor. Nevertheless the waste stream can have high

Biological Oxygen Demand (BOD)[4] levels, nutrients and suspended solids in the effluent. The new build farm will be designed with separated stormwater drainage and a process wastewater system. Process water will be treated in a waste water treatment plant, to be designed as part of the projects design documentation, in order to meet RF discharge limits (and WB/IFC discharge guideline values) before its anticipated release under license to the nearby municipal sewer system.

The new buildings will be designed to western European standards with **animal welfare** built into the design. The cattle will be housed in insulated buildings with controlled temperature and ventilation systems and ample space per cow (in line with SniP 2.10.03-84 "On buildings and constructions of livestock, poultry farms and fur farms).

Milk will continue to be collected by road tanker with the number of collection vehicles increasing from approximately 5 vehicles per week to approximately 10 vehicles per week.

The existing dairy farm employs 10 staff working in shifts, whereas the new dairy farm will employ approximately 20 full time employees once operational. Thus some employment may result from the new diary farm although overall **social impacts** (positive and negative) are anticipated to be negligible.

Further information is available in the supplementary information documents released within the project disclosure package [Ref 5].

2.6 Existing slaughterhouse

Facility Description

An existing small scale animal slaughter facility located close to the dairy farm and the village of selo Krasninskoe was purchased by KPK in summer 2007. The site is located approximately 160km northwest of the city of Novokuznetsk (Figure 1). The site is situated in a rural area on the edge of a grassy valley. The site currently employs 35 staff and is operated between 08:00-18:00hours from Monday to Friday.

The following neighbouring land uses were noted in the immediate vicinity of the site :

- to the south, a grassy valley which is used by the Municipality for the disposal of organic waste;
- to the west, a sand road, grassy areas and a former animal feed factory approximately 150m from the slaughterhouse which is reportedly owned by KPK and currently used for storage of hay;
- to the north, a grassy valley and a groundwater abstraction point within a few meters from the site boundary;
- to the east, a grassy valley.

[4] Biological Oxygen Demand (BOD) is a measure of water quality. A high BOD would indicate that water is polluted.

KPK continue to operate the facility slaughtering pigs and cattle from their own farms and other third party farms. The current daily capacity is approximately 20-30 cows and 50 pigs, with a maximum daily capacity of 40 cows and 200 pigs. Outside of the main building there is a small lairage pen (to house animals up to 4 hours prior to slaughter) and a basic wastewater treatment facility. Immediately adjacent to the main site is a yet to be commissioned coal fired boiler house, a workshop and a groundwater well to supply clean water.

In 2008/2009 KPK plans to upgrade this existing slaughterhouse. Upgrades will include:

- conversion of facilities to accommodate cattle only (with removal of pig slaughtering machinery);
- improved blood collection facility;
- Construction of new lairage pens;
- A new wastewater treatment site;
- Provision of a new clean water supply; and
- Commissioning of the new boiler house for hot water and heating.

The upgrade is intended to address some of the poor practice currently occurring at this acquired site. For example, the existing lairage pens are small, unsheltered and badly drained and therefore likely to cause unnecessary stress to pigs and cattle before they are slaughtered. The proposed new lairage facility will be designed to meet European standards and have facilities to manage manure which are similar to those described for the pig farm (slatted floors, ventilation and shelter, bedding if required and animal feed).

The current wastewater treatment consists of inefficient rudimentary settling ponds to remove solids and fats. KPK plans to implement a new wastewater treatment system to separate solid and liquid fractions and it will construct a separate sewer system for storm water collection by 2009. The commissioning of new wastewater treatment facilities will improve the quality of effluents, reduce odours and is required to bring discharges into compliance with RF effluent discharge standards.

A new water supply will be commissioned to replace the current dependence on a groundwater well located within the sites Sanitary Protection Zone. The new well is located 750 metres from the site and will serve both the slaughterhouse and the nearby dairy farm.

Impacts and mitigations measures

The upgrade of the existing slaughter house will result in some short term disruption during upgrade works. However most of the construction activities will be within the site's boundary, with the exception of a small bore water supply pipe from the new well. The water supply will involve some land take and disruption outside of the existing site boundary. There is also a possibility of ammonia emissions and odours from the additional manure, although these should be less significant than the current operations (because the manure

will be stored beneath the lairage pens), and it is noteworthy that KPK has not had any odour complaints whilst operating the slaughterhouse.

The facility is cleaned at the end of each working day. This includes washing of floors to remove blood and solids using hosed water and brushes. The hoses are not trigger operated which can typically result in unnecessary water consumption. Of note, IPPC BREF promotes detailed metering of consumption, segregation of water streams to enhance re-use and implementation of a water reduction program which is currently not taking place at the site. Corrective actions are recommended in the ESMMP.

These potential impacts can be readily managed to acceptable levels using good construction health, safety and environmental practices. Moreover, the upgrade should result in a number of significant improvements over the current situation including improved animal welfare, improved effluent quality and reduced odours. The larger facility may also result in additional employment.

2.7 Fodder plant

Facility Description

The fodder plant will be located close to the pig farm complex adjacent to a main road and a short distance from an existing railway line (Annex A4). A short rail spur line will be required to link the plant with the railway network.

The plant will produce concentrated animal feed from grain crops which will then be used at its pig and cattle farms. The production process will include the following operations:

- Raw products will be delivered via railroad transport. It is planned to use grain crops (wheat, barley), oil meals (soy, sunflower), mineral supplements (salt, chalk, phosphates) and premixes.
- Grain and meals will be stored in silos, where the raw products will be delivered by closed-type conveyors. Mineral products and premixes will be stored in bags in a warehouse.
- Husking of barley.
- Cracking of grain, meals and mineral components;
- Dosing of vitamin-mineral complexes (micro-dosage);
- Batch mixing of raw products with use of buffer and discharge bins.
- Pelletising the raw materials by additional mixing in a blade mixer whilst applying steam before cooling of the produced feed.
- Storage of pelletised feed.

Within the process chain the raw products are transported by closed-type conveyors, augers and elevators to minimise grain dust and spillage of raw and finished products. Areas where

there will be high levels of dust will fitted with controlled ventilation systems and high efficiency (99%) filters to minimise dust emissions.

The plant will cover an area of 3.72 hectares, employ approximately 30 staff and produce 116 800 tons of feed each year.

Impacts and mitigations measures

The construction and operation of the fodder plant has the potential to impact air quality in Prokopievsk raion, surface and groundwaters, soils and the local population.

The major impact sources will be emissions of air pollutants from the main and auxiliary production facilities and domestic and production waste as they affect all components of the environment (soils, surface water and groundwater).

Continuous air emission sources will include a service boiler house, transportation, grain cracking, husking, drying and cooling of finished products. Intermittent air emission sources include rail transportation of raw products to the facility and loading/unloading stations. Analysis of air pollution calculations undertaken as part of the OVOS study for 9 monitored substances (solid – 4, and gaseous -5) showed that pollution levels at the SPZ border (established equal of 300 m) and at the nearest residential area do not exceed the sanitary standards. The facility has been designed to meet air quality standards and therefore no further abatement equipment is required.

Water will be supplied from an artesian water well owned by the Company. Estimated annual water demand is 10,451 m^3/y. Process and domestic wastewater in the volume of 38.26 m3/d will be collected in storage ponds ready for collection and disposal by a licensed operator. Storm water will be accumulated in wastewater treatment facilities (a horizontal twin-section settler with a chamber of filters packed with wood chips); after treatment the wastewater will be used for watering of the nearby land. The plant design provides for zero wastewater discharge into surface water bodies.

The plant has the potential to generate over 11,000 tons of waste each year. Fodder dust and grain dust will make the major part of the process wastes (7.12% and 2.98% respectively). The generated dust will be collected to the maximum extent possible and reused in the technological process. Nevertheless, dust collection techniques are not 100% efficient and minor dust emissions are likely.

Other process wastes are spent sacks (generated when unpacking of primary mineral products), storm water sludge and waste from cesspools. Domestic waste will include mercury lamps, waste from domestic facilities, food wastes, waste from clean-up of the territory. The wastes will be either removed from the site to permanent disposal at a solid waste landfill or transferred to licensed recycling companies in authorised vehicles.

The fodder plant will use state-of-the-art technologies and equipment that minimize the wastes' impact on the environment. Collection and transportation of unutilized wastes at disposal sites will produce a minimum impact on the natural environment.

The Kemorovo region has been an extensive mining region for many years. Soils of the mining towns and the neighbouring areas are often contaminated with chrome, lead, zinc, manganese and cadmium, with concentration that in 6.1% to 30.5% cases exceeded the Maximum Permissible Concentration (MPC). However soil sampling results for the fodder plant site show that the soils are not contaminated (measured heavy metal concentrations do not exceed MPC). As a further safeguard, meat and grain are tested by governmental laboratories and the Company uses only certified grain.

KPK will use a nearby railway line to transport raw materials and finished products by building their own rail link extending less than a 1 km across gently sloping agricultural (pasture) land to the main line. The new line will be owned and maintained by KPK and although detailed construction details are not in place some earth works and grading of the site is anticipated.

The fodder plant will result in a number of temporary construction related impacts similar to those highlighted for the farms above. Of note the site can be accessed by a main highway and therefore congestion is not likely. The site's access will be managed to ensure road safety is not compromised by slow moving and/or turning vehicles. The site will be clearly visible from the road and possibly from some residential properties.

The handling and processing and storage of grains can lead to the build up of fine dust which in turn may represent an explosion risk. Risk assessment studies will be carried out during the design documentation development to determine the explosion risk and thereby influence the facility's design; the design process will consider means to control dust levels and consider the use of hermetically sealed (explosion proof) electrical equipment.

The OVOS concluded that the animal feed production plant commissioning in the areas of Kiselevsk and Prokpievsk will not cause worsening of public services and amenities in the project area, and will have positive benefits through the creation of new jobs.

Further information is available [Ref 6]

2.8 Beef cattle farm

Facility Description

The farm, acquired by KPK in 2007 as a going concern, is located 150 km north west of Novokuznetsk near the village of Parhaevka. The site is situated in a rural area, with residential houses located in close proximity of the site which are occupied by staff of the farm. The site is unpaved and comprises grassy land and sand/muddy areas. Manure is disposed of across the site in non-dedicated areas and has been stockpiled in an open air unlined area by the previous owner approximately 1km from the farm (although KPK does not intend to use silage at its farms). The site is occupied by five livestock barns used for over-wintering cows, a storage building and an unused drying and storage facility for grain.

Currently the cattle spend the summer months (May to October) on 500ha of leased pasture land.

KPK plans to upgrade the facilities in the summer of 2009 and restock the herd (currently approximately 700 cows) with more productive beef cattle. The existing barns will be replaced[5] with two new build facilities (each housing 600 cows) using design and materials from western Europe. These will be designed as free stall housing with solid concrete flooring covered by straw. The housing regime will be similar to the existing situation, i.e. cows are kept indoors in the winter period only.

Water is supplied by a groundwater well and electricity by a transformer both owned by the Municipality. The site employs 15-18 staff living in the close proximity to the farm.

Impacts and mitigations measures

Construction

The site is already operating as a beef cattle farm and for the most part operations will continue as before with the over-wintering of the cattle in barns and grazing on pastures during the summer months. However, there will be demolition of existing facilities and the construction of new facilities. During demolition of the existing barns, the asbestos roofing will be removed and disposed by licensed specialist contractors (in line with RF requirements) with the non hazardous materials disposed to a licensed landfill site.

During construction, traffic levels will increase during the delivery of construction materials and personnel potentially resulting in some deterioration of roads surfaces, increased pedestrian risk, dust and noise. A number of measures will be put in place to reduce these risks/impacts, including speed restrictions close to residential areas and on vulnerable roads. KPK will construct the buildings with their own construction workforce. A temporary camp will be organised for workforce and peak at around 20 workers. The work site will have a set of rules to ensure minimal impact on the environment and to nearby residential areas. All temporary structures will be removed and the work site area reinstated to its former condition.

Operations

In the existing loose housing barns with solid concrete flooring covered by straw during winter, waste products consisting primarily of manure with straw which is removed from the stables using a machine driven shovel and stored in an unlined area; this represents acceptable practice e for beef cattle and similar practices will be used in the new barns.

[5] The possibility of upgrading the existing barns has not been fully ruled out, although it is the least preferred option.

For manure storage, current practices are similar to those at the dairy farm and similarly they are not in accordance with the EU Directive 91/676/EEG promoting reduction of nitrogen release, which requires dedicated storage of manure with protection against rainfall.

Water use from a municipal supply will be used for cattle drinking water and cleaning purposes and wastewater effluent will be acceptable. Air emissions and odours will be minimal, particularly as the manure will be managed in accordance with good practice, using impermeable pits or tanks that are protected from rain and snow. Solids waste volumes will also be small and resulting impacts can be readily managed if disposed via a licensed contractor.

The new buildings will be made of materials that are similar to those at the pig farm and will therefore be properly insulated, glazed and ventilated resulting in improved conditions for the cattle.

2.9 Sales and distribution

Facility Description

KPK has plans to improve the current distribution and sales network for its meat products. In line with their aspirations to control the entire process from supply of feed to the retail outlet, they plan to open a number of shops in 2008. The location of these outlets has not been determined, although there will be a number of small outlets across Siberia. The objective is to ensure that KPK meat products arrive in the best possible condition in a timely manner via refrigerated trucks. Using this approach KPK can assure the quality of the product from start to finish and in doing so build customer confidence in the product. This should result in better products with positive impacts for community health and small scale employment

Impacts and mitigations measures

The use of additional outlets will lead to additional product mileage, most probably by refrigerated truck. The mode of transport has not been confirmed, nor have the location of the sites. Roads will be used in preference to rail because to help ensure products remain refrigerated. Vehicles will be properly maintained and driven by approved and well trained drivers to reduce emissions and the risk of accidents although it should be recognised that some impact from transportation of meat products is unavoidable.

3 Analysis of alternatives

An analysis of alternatives is an essential component of an EIA. It provides a justification for a project, considering the need for the project, alternative technologies/project locations and consideration of the ‘no project’ option. For this project, improved and increased production of meat products will result in an overall increase in the protein content of diets in the region, bringing it more in line with other parts of Russia and western Europe.

The project is diverse and located in a number of different areas. However, for all expansions/upgrades, the project is utilising western European technologies and good industry practice for intensive livestock production/meat processing. This approach will result in improved environmental performance and sustainable production.

The location of the expanded meat processing facilities is heavily influenced by the location of the existing facilities in Novokuznetsk. The expansions are a relatively small fraction of the overall meat processing facilities and it therefore makes economic sense to position expanded/new facilities within existing site boundaries or on nearby land. This approach also makes good use of the existing workforce and infrastructure, including road and rail links.

For the pig farm (including associated facilities such as the slaughterhouse and fodder plant) a series of locations were considered, taking account of land requirements and environmental sensitivities. KPK's initial site close to Novokuznetsk was rejected due to public objection on the grounds of the existing environmental loading from waste disposal site and a tailings pond from a nearby sinter plant, proximity to surface waters, and availability of land to receive the manure. The selected site was one of two located further from Novokuznetsk with several advantages including sufficient distance from residential areas to meet the requirements for a 1km Sanitary Protection Zone (SPZ)[6]. Furthermore the site does not infringe any Water Protection Zones (WPZ), has sufficient available land, and is close to arable and pasture land where there is sufficient demand for manure. The site was selected was also the preferred site for the majority of stakeholders expressing a view, including residents and local environmental representatives from Rospotrebnazdor and Rostechnadzor.

Once a site had been selected for the pig farm the slaughter house was located as close as possible taking account of the necessary separation zones, thereby minimising the distance between finishing farms and the slaughterhouse and reducing the mileage and distances that live animals must be transported. Of note the new slaughterhouse is essential to meet the output from both phase 1 and 2 of the pig farm complex.

The selection of the beef and dairy farms was influenced by the availability of existing farms. The acquisition of existing farms has numerous advantages in maintaining the same land use, maintaining and in some case increasing employment opportunities, and improving previous sub optimal practices.

[6] SPZ is a buffer zone around a facility where certain activities are prohibited to protect public health. Prohibited activities include: residential areas and individual dwelling houses; landscape and recreational zones; leisure areas; health resorts; gardening and cottage areas; summer resort communities and individual "dachas"/country houses and other activities with specified high/restrictive environmental quality parameters; sport facilities; children's playgrounds; educational and childcare centers; and medical institutions for public use.

4 Animal welfare

The conditions in which farm animals are kept, transported and slaughtered is not only an issue of public/consumer concern, but also effects the health of animals, likelihood of disease and ultimately the quality of meat. As a result there are a number of animal welfare standards which are applicable to the farming facilities and slaughterhouses operated by the Company under RF law, EU Conventions and Directives on animal welfare protection and under international good animal welfare practice.

4.1 Dairy farm, beef farm and pig farm

The UK Animal Welfare Council developed a model with “five freedoms” to assess animal welfare. These comprise freedom:

- from hunger and thirst;
- from discomfort;
- from pain, injury or disease;
- to express normal behaviour; and,
- from fear and distress.

The table below summarises current animal welfare practices at KPK’s facilities in relation to animal welfare conditions based on the EU Directive (98/58/EC).

Table 1. Animal Welfare Practice at the Farms

Requirement	Dairy farm	Beef farm	Pig Farm	Planned improvements
Adequate lighting available for inspection	Poor lighting observed	Poor lighting observed	Available	Improved lighting will be provided in the new dairy and beef barns
Adequate care of ill or injured animals, keep record of medical treatment and moralities (for at least 3 years)	n/a	No site-based veterinarian. However, dead animals are reported to authorities for off-site disposal.	On-site veterinarian; dead animals are reported to authorities for off-site disposal.	
Accommodation and animals securing material should not be harmful to animals and be capable of	Poor technical building integrity, including heavy erosion of concrete ceiling and flooring.	Poor technical building integrity, including heavy erosion of concrete ceiling	New stables with new equipment which was observed to be in good	New build buildings based on western European design will be constructed in

Table 1. Animal Welfare Practice at the Farms				
Requirement	**Dairy farm**	**Beef farm**	**Pig Farm**	**Planned improvements**
thoroughly cleaning	Rusty feeding fence and metal frames (e.g. feeding fence).	and flooring. Rusty feeding fence and metal frames (e.g. feeding fence).	condition.	case of dairy and beef farm
Comfortable indoor climate including sufficient lighting and dark intervals.	No cows were kept indoor; however barns had several windows without coverage, holes in the walls, broken asbestos roofing sheets, poorly sealed doors, etc.	No cows were kept indoor, however the barns had several windows without coverage, holes in the walls, broken asbestos roofing sheets, poorly sealed doors, etc.	Mechanical ventilation with automated temperature air control. Spraying of water in the stables for cooling down purposes. No issues identified.	New build buildings based on western European design will be constructed in case of dairy and beef farm
Provide sufficient protection of animals kept outdoors.	Herd is guarded by staff on horses. There is no coverage against adverse weather conditions provided.	Herd is guarded by staff on horses. There is no coverage against adverse weather conditions provided.	n/a (animals are not kept outdoors)	Dairy cattle will be kept indoors following construction of the new barns, Situation for beef cattle will remain unchanged
Regular inspection of automatic and mechanical equipment used for animals	Automatic and mechanical equipment used for animals is minimal. Mechanical gutter cleaner was observed to be very dirty and rusty.	n/a	Dedicated technical staff employed at the site. Alarm system in place to warn appropriate staff in case air ventilation system breaks down. Site has a diesel fuelled back-up generator.	Machinery in the new build beef and dairy facilities will be inspected regularly by on-site staff

At the Dairy farm the milking parlour is also poorly designed and badly drained resulting in inadequate conditions for the cattle. These conditions will be markedly improved following expansion of the dairy farm.

In addition to the findings included in above table, the following observations are made with respect to the animal welfare conditions at the pig farm based on EU Directive 91/630/ECC on standards for the protection of pigs, Directive 2001/88/EC on technical housing standards (e.g. required floor area and maximum openings of slatted floors) and farm management conditions (e.g. various requirements on pig group sizes) and Directive 2001/93/EC which provides an update of general conditions and specific provisions for various categories of pigs (e.g. sows, piglets and weaners).

In general, the new pig farm is constructed and operated in line with Best Available Techniques. For example:

- Floors are smooth but not slippery to prevent injury to the pigs (EU Directive 2001/93/EC, Chapter I, Condition 5).
- Dedicated housing systems are provided for sows, piglets and weaners including comfortable and dry lying areas and sufficient behavioural space and unobstructed flooring areas (Directive 2001/88/EC and Directive 2001/93/EC.
- Boars are housed such that they can, among others, turn around, hear, smell and see other pigs (Directive 2001/93/EC, Chapter II).
- Guidelines apply for the use of tail docking and teeth grinding, including when and how such practices can take place. However these practice are not carried out by KPK. Similarly, strict controls are required for castration on pigs (Directive 91/630/EEC, Chapter III, Condition 3), but these don't apply because KPK does not castrate pigs.

However, pigs must also be able obtain straw or other suitable material or objects in order to satisfy behavioural needs and to prevent tail biting (Directive 91/630/EEC, Chapter I, Condition 16). Dry pregnant sows and gilts must be given sufficient quantity of bulky high-fibre food in addition to high-energy food (Directive 91/630/EEC, Article 3, Condition 7). Recommendations to address these behavioural needs and dietary requirements are included in the ESMMP.

4.2 Slaughterhouse

Animals are slaughtered in line with the requirements addressed by the EU Convention for the Protection of Animals for Slaughter (Strasbourg, 1979) and EU Directive 93/119/EC on the protection of animals at the time of slaughter or killing, including appropriate restraining before killing (without tying animals' legs) and using approved/accepted stunning methods. Cows are slaughtered using a bolt gun positioned at the brains after which the throat is cut,

while pigs are individually slaughtered using an electrical shock after which they are stuck (cutting their throat). As required by the EU Directive 93/199/EC bleeding of the animals is started as soon as possible after killing.

Regarding animal welfare at the existing slaughterhouse significant are presented in the table below.

Table 2. Poor Animal Welfare Practice at the Slaughterhouse

Activity	Requirement	Finding
Delivery and unloading	Animals should be unloaded as soon as possible after arrival, by skilled staff and with care using suitable equipment and material that can not injure the animals.	Unloading equipment consisted of bridges and metal framework constructed gangways. The metal was rusty and the flooring dirty, covered by sand and mud.
Lairaging	Provide an adequate lairage area including sufficient number of stalls and pens (e.g. to separate aggressive animals and/or different sexes), protection against adverse weather conditions, clean and non-slip flooring, etc	The lairage area is constructed of a metal framework and roofing sheets. The flooring comprises sand, mud and manure. There are no facilities to separate animals.
General care	Animals which are not immediately slaughtered must be offered water. Animals that are not slaughtered within 12hours must also be provided moderate quantities of food.	Site management indicated that the lairage area is used to keep animals for a maximum duration of 4 hours. No water or food is available at the lairage area.

Current operations at the existing slaughterhouse fall short of acceptable animal welfare standards. However KPK plans to improve lairage facilities at the existing slaughter house to improve animal welfare standards at the site by addressing the issues highlighted above and bringing lairage facilities in-line with best practice requirements. See ESMMP.

4.3 Transportation of live animals

KPK uses leased trucks for the transportation of animals between the farms and the slaughterhouse in addition to its own vehicle. Vehicles are washed and disinfected post-delivery. Numerous guidelines are in place to ensure animals do not suffer undue pain or stress during their transportation including limits on number of animals per unit area, ventilation, water, temperature, separation of animals, loading and unloading.

In summary, the current animal welfare conditions at the farming facilities and the slaughterhouse fall short of international standards. For example, conditions at the dairy farm and the beef farm, including poor integrity of the housing system (both farms) and poor conditions at the milking parlour (dairy farm). Adverse animal welfare conditions were also

identified at the slaughterhouse, in particular related to poor conditions of the animal lairage area. However the Company is planning either to renovate or redevelop the dairy and beef farming facilities and construct a new lairage facility at the existing slaughterhouse in 2009.

5 Cumulative impacts

An assessment of cumulative impacts requires that *'Risks and impacts will be analyzed in the context of the project's area of influence. This area of influence encompasses, as appropriate…….areas potentially impacted by cumulative impacts from further planned development of the project, any existing project or condition, and other project-related developments that are realistically defined at the time the Social and Environmental Assessment is undertaken; and (iv) areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location*.[7]

With reference to the above there are currently no further planned KPK activities planned in the area that might result in cumulative impacts nor are there any known or foreseeable projects that are related or might be stimulated by this project other than those already addressed in this document. However, the environmental studies undertaken to date under RF requirements for environmental assessment have not considered the cumulative impact of all KPK activities. Particular issues worthy of consideration include:

- Increased traffic movements
- Management of manure (and in particular the availability of agricultural land to accommodate manure)
- The risks of cross contamination between sites and facilities to prevent the spread of infectious disease between animals (including disposal of diseased animals)
- Pressure on infrastructure (roads, rail, waste reception facilities, healthcare providers)
- Socio-economic impacts including employment and inflationary pressures
- Water use
- Air emissions including odours (particularly from the phase 2 pig farm in combination with the nearby fodder plant, finishing farms and slaughterhouse which are all within a 5 km radius).

The significance of each of these is discussed below. Where the site specific measures already described are not sufficient to mitigate the cumulative impacts, additional mitigation measures are also described in this section.

[7] IFC Performance Standard 1, Social and Environmental Assessment and Management Systems

Increased traffic

A small increase in traffic will occur at each of the farm locations, although these will be insignificant when taken in isolation. However the overall increased productivity will result in a more significant increase in the number of vehicles visiting the meat processing facilities in Novokuznetsk. The road network in this area is relatively efficient although some congestion might occur at the warehouse and main meat processing facilities. The increased traffic might warrant improved traffic control and improved signage/provision of pedestrianised areas in the loading/unloading areas. The company has submitted its plans outlining specifications and changes to current road use to the traffic authorities. The plans have been approved by the authorities.

Manure management

Storage and handling of manure represent the most important emission sources at the farms from an environmental point of view (Section 3.3 of the IPPC BREF on Intensive Rearing of Poultry and Pigs, dated: July 2003). Manure has relatively high concentrations of nitrogen (N) and phosphorous (P) nutrients excreted by the animals. The concentrations depend on: the animals' diet (e.g. concentration N and P in animals' feed), type of animal (pigs, cows, milked cows, boars, sows, etc.), the production level (growth factor, number of pregnancies, milk yield, etc.) and genetics (e.g. the feed conversion factor). In addition, ammonia emissions (NH3) from manure arise from mixing the solid and wet (urine) fractions.

Manure management and consequently emissions of ammonia and odour problems will be reduced following the various facility upgrades. However the overall production of manure will increase because of the increased numbers of animals housed at the various facilities. A key issue here is the availability of agricultural land to take this manure. Manure will be spread on land in accordance with NTP 17-99 Technological design standards and sanitary rules for manure use for pastures irrigation and fertilizing #19-7-2/148 dated October 18, 1993 which specify the indicative parameters for the spreading of manure as described in Section 2.3.

Based on the UK Guidance for Operators on Manure Management Planning for IPPC Installations, the following average areas of land are required for manure spreading (staying within 250kg N per ha) for each of the farms. The table below compares RF and EU requirements for manure application to agricultural land.

Table 3. Comparison of RF and EU requirements for application of manure to land

Issue	RF requirements	EU requirement[8]
Application rate	200kg/ha total nitrogen (without irrigation)	250kg/ha of total nitrogen within a 12 month period.
Timing	crop vegetation (pre growth) period; acceptable- winter time- temperature ≥ -10^{0}C, snow cover ≤20 cm.	Preferably when there is crop need for N in late winter/early spring. Manure should not be applied to frozen ground.
Proximity to surface waters	Prohibited within Water Protection Zones	Exclusion zones apply. At least 10m from watercourses (on flat ground) and 50m from boreholes/reservoirs used for human consumption.

International good management practice for manure management includes consideration of the total volumes of generated manure in relation to available land for manure disposal.

Table 4. Land availability requirements for manure produced at KPK facilities.

	Land required per animal *	Approximate number of animals	Months housed**	Approximate area of land required (ha)
Pig farm	0.078 ha per sow	2500 pigs	n/a	195 ha
Dairy Farm	0.039 ha per dairy cow	1200 cows	12	562 ha
Beef farm	0.019 ha per beef cow	1200 cows	6	137ha
Total				894 ha

* land requirements based on upper estimates.

** Months housed influences the total collected volume manure and consequently the land requirement (note that pigs are kept indoors all year round which is already anticipated in the conversion factor).

[8] Guidance for Operators on Manure Management Planning for IPPC installations

In addition to its own land KPK has agreement with the agricultural farm in the village Krasnoe (to use up to 20,00ha), the Prokopiesk (to use up to 8,000ha) administrations to spread the manure to land as fertiliser. In addition it can also use the manure on its own land. Table 4 shows that KPK will need approximately 894 ha of land for their manure. This requirement falls well within the available land discussed above and demonstrates that there is ample land to receive the manure.

Good (international) farming practices requires a Manure Management Plan with respect to use of both natural manure and/or fertilizer. A Manure Management Plan includes, but is not limited to:

- Records of current and expected volumes of manure and dirty water (e.g. from cleaning stables) generated and collected at the site (total volumes will depend on the number and types of animals, animals' diets, housing system, pasture, etc.);
- Manure applications strategies (availability of sufficient land, no application during winter when the soil will be frozen, consideration of the need of fertilizer in addition to natural manure, etc.).
- Application rates and timing to reduce diffuse pollution risk and maximise the efficiency of crop nutrient use (nutrient balances, optimal timing of nutrient supply to grass and/or grain, consideration of animal pasture management, etc.);
- Application methods (broadcast, band spreading, shallow injection, etc.) and precision to avoid unnecessary losses (emission to ditches or other sensitive land uses, manure run-off from hard soil cover layers, etc.).

KPK will comply with both RF and EU requirements for its own land and will also encourage other farmers purchasing KPK manure to apply the same standards. KPK will also develop a Manure Management Plan, for those operations under its direct control, to ensure all requirements are met and water resources are protected (see ESMMP). A system for recording manure collection and application, to help protect against over application, should also be described in the plan.

Cross contamination

The risks of cross contamination between sites and facilities to prevent the spread of infectious disease between animals is strictly controlled using appropriate separation ones (in accordance with EU guidelines), disinfection procedures for humans and vehicles and restrictions on the movements of animals and humans between farms. The use of a dedicated slaughterhouse that will only accept KPK pigs further reduces the risks of cross contamination. However, in the event of a disease outbreak procedures are in place, under the advice of the veterinary services, to quarantine animals/farms, control inter-farm vehicle movements and cull animals if necessary. Large numbers of diseased or potentially diseased animals can be buried at a licensed sites owned by KPK which has been designed for this purpose (See also Section 6).

Pressure on existing infrastructure

Large projects or projects with several concurrent elements occurring over a region can sometimes result in excessive pressure on existing infrastructure e.g. roads, rail, waste reception facilities, healthcare providers. Such pressures are often associated with the influx of large construction workforces, often from outside of the region of even outside of Russia. KPK will use its own construction company which employs local workers to minimise the likelihood of community worker conflict. Some temporary accommodation will be necessary but the overall number of workers will remain small and dispersed without any significant cumulative impact. Some extra pressure will be placed on roads although the measures outline for each individual site will be sufficient to address such problems. Extra use will be made of the rail network (especially for the transport of grain to the fodder plant) where possible although the rail network has spare capacity and therefore use of rail links should be encouraged.

Socio-economic

Socio-economic impacts including employment and inflationary pressures are also a risk for large projects. However such pressures are also associated with the influx of non local workers over prolonged periods that might often have extra disposable income, thereby increasing the demand for resources e.g. accommodation and food. The number origin and duration that construction workers present at the sites do not represent a significant socio-economic/community health risk.

The project will create/maintain long term employment opportunities at each facility. Estimates for each facility are fodder plant (30); pig farm complex (100), new slaughter house (30), beef farm (an extra ??), dairy farm (an extra 10). Collectively the project brings significant employment opportunities, particularly to the rural areas, and will therefore contribute significantly to the local economy.

Water usage

Studies have confirmed the availability for all KPK facilities, including facilities that share aquifers with other users.

Air emissions

The cumulative effect to air quality taking account of the collective emissions of the phase 2 pig farm, nearby fodder plant, finishing farms and slaughterhouse (all within a 5 km radius) has been considered. An environmental assessment has been undertaken for phase 1 of the pig farm. The results of predictive modelling has demonstrated that emissions levels are less than half the maximum permissible emissions (MPEs). The commissioning of a phase 2 will not result in a doubling of emissions (because the same manure lagoon will be used and surface areas will remain the same) and therefore cumulative impacts are not expected to breach emission limits. The OVOS takes account of background levels, in addition to the contribution from other KPK pig farm facilities, to predict that no harmful impact on air quality is likely from the slaughterhouse activities.

In summary, cumulative impacts for this project are relatively minor and will be managed through implementation of the site specific mitigation measures outlined in the ESMMP.

6 Emergency Response

A key emergency situation specific to farming activities relates to the outbreak and control of disease. In the event that there is a serious outbreak of disease it may be necessary to cull animals. In such a case the Veterinary Service assumes responsibility, including responsibility for notifying members of the public. A contract with Veterinary Service states that in case of disease outbreak the Veterinary Service will act in compliance with Federal Law #4979-1 “On veterinary” dated May 14, 1993 (last amended July, 2007), article 18. According to this law, the Company is responsible to isolate ill animals and immediately call the veterinary. Procedures for quarantine/culling and then disposal of animals are applied by the Veterinary Service. Depending on the nature of an illness, for example, whether or not it is infectious, the veterinary service will decide upon the most appropriate disposal route in accordance with the Sanitary veterinary rules for biological wastes collection, disposal and utilization” #13-7-2-469 dated December 4, 1995 (last amended in2007), article 1.3). If infectious, the entire farm will be isolated whilst the state Veterinary Service determines appropriate procedures. For non infectious illnesses the diseased animals are separated from other animals and either treated or culled and sent the a rendering plant to produce tallow.

KPK currently has the use of two burial sites for disposal of dead animals; one located 3 to 5km from the dairy farm and a second 2 to 3 km from the pig farm area. The burial site by the pig farm has not been used whereas the site located close to the dairy farm and operated by OOO “Borokovo” (also the operator of the dairy and beef farms) has been used in the past. These sites require careful management, including a secured boundary, measures to prevent scavenging animals hydrological survey and routine groundwater monitoring (see ESMMP). Vehicles used in the transportation of diseased animals must also be disinfected after each journey under advice from the veterinary authority.

Fire fighting – All facilities are equipped with fire extinguishers, Fire hoses are installed at the meat processing, warehouse, existing slaughterhouse and pig farm, Krasninskoe and are connected to municipal water supply system. Additional fire-fighting capability is provided by off site fire tenders a distance of 1 to 3 km from the beef and dairy farms. The slaughterhouse and the warehousing facility are equipped with an automatic fire detection system.

Written procedures detailing actions, responsible parties and contingency plans in the event of emergency should be in place, as outlined in the ESMMP.

7 Environmental and Social Monitoring and Management plan

The environmental assessment work identified a number of potential impacts that require careful management through the preparation of new programmes or specific actions. These are captured in the ESMMP which has been disclosed as part of the disclosure package. The Company has committed to implement the ESMMP in full if EBRD decide fund the Project.

8 Summary

The Project is largely concerned with the expansion and upgrade of existing sites and activities. The project has the potential to generate a number of adverse social and environmental impacts although these will be either short-term and/or relatively minor if managed properly.

The key negative impacts are presented in the table below along with a summary of mitigation measures and actions required to address the impacts.

Table 5. Summary of impacts and mitigation measures

Potential impact	Actions/Mitigation measures
Demolition and constructions activities;	Good construction practice and camp management including: - Waste management for non hazardous/hazardous wastes; - Traffic management; - Good house keeping and Health and safety practices - A code of conduct for construction workers; and - Site reinstatement following completion of works
Animal welfare	Construction of new/renovated dairy and beef farms using modern design and Best Available Techniques. New lairage facilities at the existing slaughter house Use of suitable vehicles for the transport of live animals
Groundwater and soil contamination	Upgrade of facilities for storage and handling of manure at the dairy and beef farms as planned. Additional studies to confirm the suitability of selected

	burial pits.
Emergency response measures	Maintenance of existing emergency response plans and the development of an emergency plan that is integrated with the procedures of the veterinary service to address an outbreak of disease at the KPK farms.
Air emissions, including odours	Good management of facilities including: - Good management of organic wastes; - Clean facilities; - Efficient waste water treatment facilities; and - Good manure management.
Water use and waste water treatment	- Confirmation of groundwater recharge rates using hydrological studies. - Groundwater monitoring (depth and quality) - Appropriate waste water treatment to in order to meet necessary discharge criteria.
Social Impacts	Maintain communications, including provision of a grievance procedure, throughout construction and operations.

As indicated in Table 5, all these impacts can be managed through the upgrade of existing facilities (beef farm, dairy farm and existing slaughter house) and the development of an environmental health and safety management system that includes, amongst others, detailed emergency response and manure management plans. Further detail of appropriate actions and mitigation measures to ensure responsible management of environmental and social concerns are outlined in an Environmental and Social Monitoring and Management Plan.

The Project should also bring a number of benefits to the region through additional employment opportunities, increased access to good quality meat products and generally promoting economic development in the area.

References

Ref 1. OVOS On choosing the site for Construction of pig farm complex with the capacity of 9660 t meat on the bone/year, designed by Eneco company, 2006).

Ref 2. State environmental review positive conclusion #Э1-399/344 On the OVOS On choosing the site for Construction of pig farm complex with the capacity of 9660 t meat on the bone/year.

Ref 3. Public consultation materials for OVOS On choosing the site for Construction of pig farm complex with the capacity of 9660 t meat on the bone/year.

Ref 4. OVOS On slaughterhouse of ZAO “KPK” pig farm in Prokopievsk region, designed by OOO “Sibirsky Consulting”, 2008.

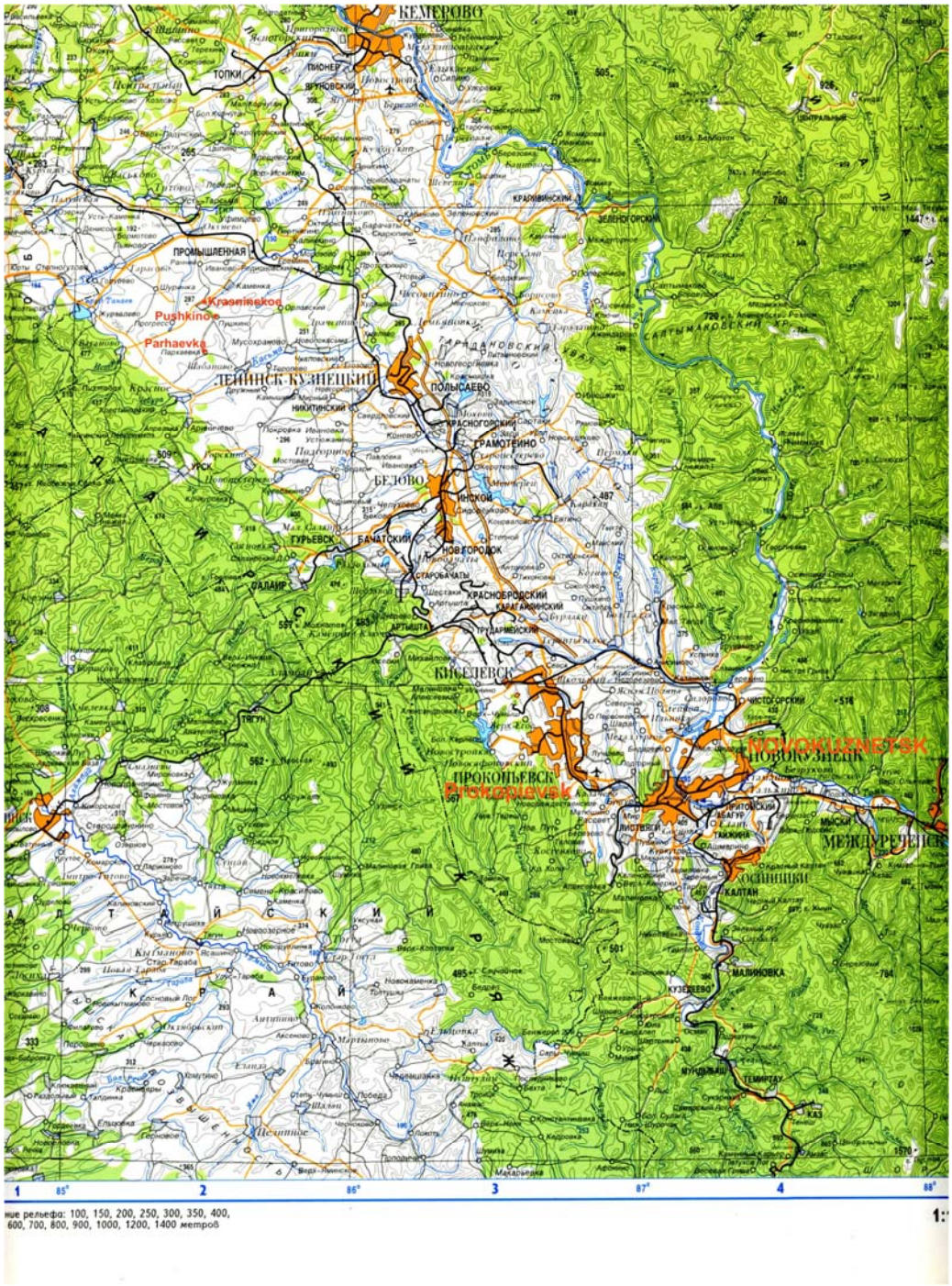
Ref 5. Supplementary Information for the document Kuzbass Pischekombinat Livestock and Meat Processing Project . ENVIRON Report no 61-C13873, October 2008.

Ref 6. OVOS On Fodder Plant of ZAO “KPK” pig farm in Prokopievsk region, designed by OOO “Sibirsky Consulting”, 2008.

Ref 7 Environmental Actions List and Environmental Impact Assessment Results as a part of design documentation, issued by OOO “Sibirsky Consulting”, 2008.

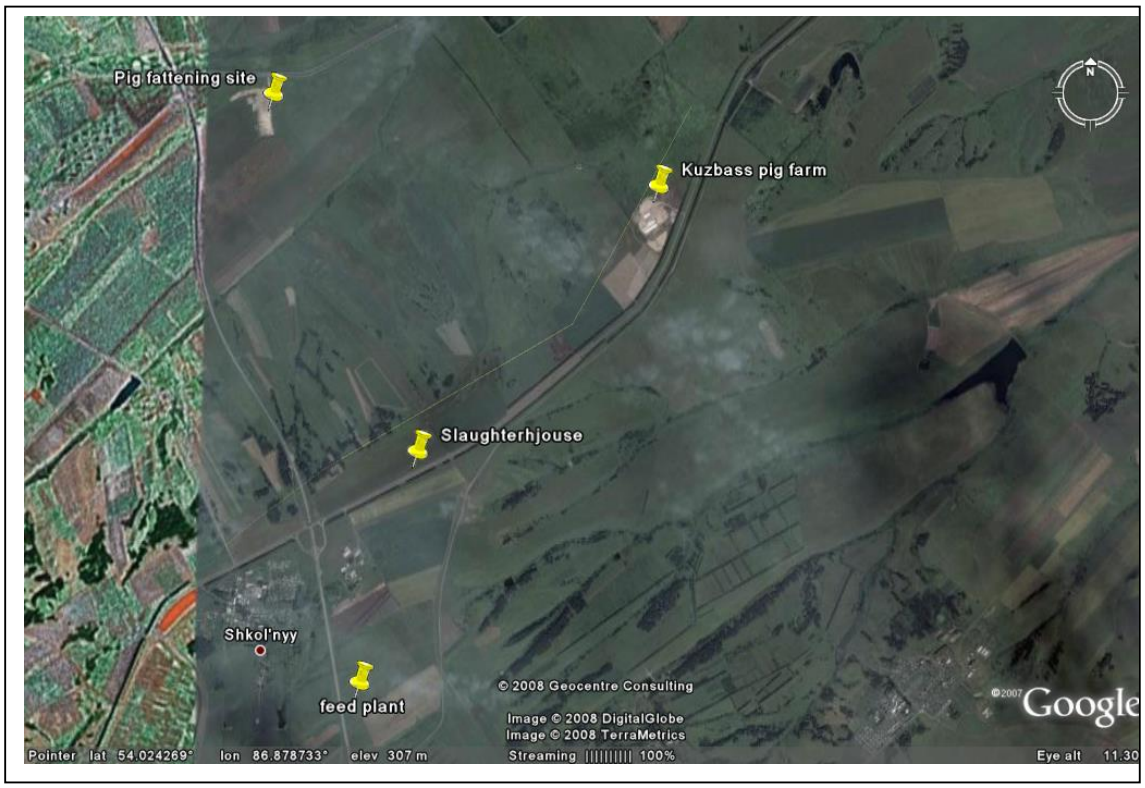
Annex A: Maps and photos showing the location of proposed facilities

Annex A1. Location of dairy farm and existing slaughterhouse(Krasninskoe), beef farm (Parhaevka) and Pig farm complex (Prokopievsk) relative to Novokuznetsk (meat processing facilities)



Annex A2. Map showing locations of the dairy farm, beef farm and existing slaughterhouse

Annex A3. The pig farm complex

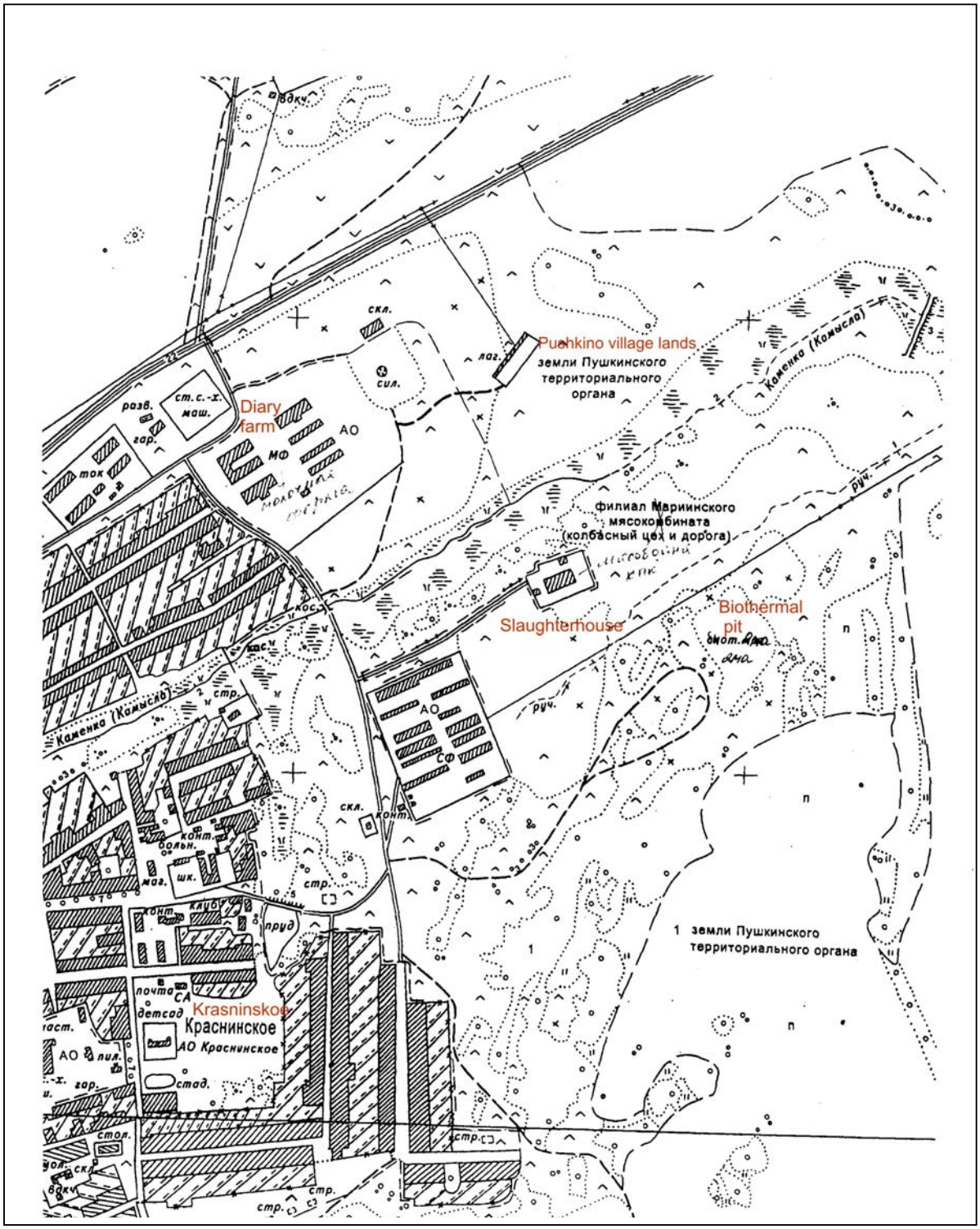


Annex 4. Photos at the location of the proposed fodder plant

Proposed site for fodder plant with railway line crossing the bridge in the distance

Proposed site for fodder plant

Annex A5. Map of the existing slaughterhouse and adjacent dairy farm



Environmental and Social Monitoring and Management Plan (ESMMP)

This document captures numerous mitigation measures, actions and future work requirements (the requirements) to be undertaken by KPK as part of their planned expansion programme and ongoing operations. The requirements have been identified through the preparation of environmental and social impacts assessment documents, including OVOS documentation prepared in accordance with RF law, and additional reports in the form of a Supplementary Information document and a Non Technical Summary.

The requirements described in this document make reference to both RF law and international good practice. It is a prerequisite that the Project is constructed and operated in compliance with RF law. Additionally the other measures outlined in this document, intended to compliment the requirements specified under Russian law, should also be implemented except where such implementation conflicts with RF Law.

The requirements are divided into environmental, social, health and safety and monitoring requirements and are either generic (applicable to all facilities and phases of the project) or applicable to specific facilities of phases of the Project.

ESMMP for ALL PHASES (Pre construction, Construction and Operations)

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
General requirements (all phases of the project)- Environmental												
GE1	Environmental permitting	All proposed activities must comply with RF permitting requirements, including the preparation of OVOS and environmental design documentation where deemed necessary.	KPK General Director	All stages	√							
GE2	Training	All workers (including construction workers) will be given Environmental Health and Safety training and informed of their obligations described in this ESMMP.	KPK and KPS management	All phases	√	√	√	√	√	√	√	√
GE3	Waste (non hazardous)	All wastes should be collected and removed from permanent facilities and construction sites. Food wastes will be contained in a manner that will not attract scavenging animals e.g. bins will have lids.	KPK and KPS management	All phases		√	√	√	√	√	√	√
GE4	Waste (hazardous)	Hazardous waste shall be stored so as to prevent or control accidental releases to air, soil, and water resources in area location. As appropriate • wastes will be stored in a manner that prevents the commingling or contact between incompatible wastes, and allows for inspection between containers to monitor leaks or spills. • wastes will be stored in closed containers away from direct sunlight, wind and rain. • Secondary containment shall be used if liquid wastes are stored in volumes greater than 220 litres. The available volume of secondary containment should be at least 110 percent of the largest storage container, or 25 percent of the total storage capacity (whichever is greater), in that specific location. • adequate ventilation will be provided where volatile wastes are stored. • spill containment and clean-up equipment will be in place on site (see hazardous materials below). • waste management practices shall be monitored through	KPS Construction management & KPK Corporate HSE Manager	All phases		√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		regular internal audit . Waste contractors handling, treating, and disposing of hazardous waste will be appropriately licensed by the relevant regulatory agencies and follow good international industry practice for the waste being handled. Hazardous wastes will not be commingled.										
GE5	Hazardous materials (fuel storage)	Adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids will be provided. Any refuelling/transfer of hazardous liquids will be undertaken above impervious surfaces. Portable spill containment and cleanup equipment on site. Workers will be trained in the use of the equipment. Provision of suitable personal protection equipment. Hazardous materials should be securely stored and have appropriate signage. They should also be accompanied with accessible hazard data sheets.	KPS Construction management & KPK Corporate HSE Manager	All phases		√	√	√	√	√	√	√
GE6	Air quality (including dust)	Minimizing dust from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content. Dust suppression techniques should be implemented, such as applying water or non-toxic chemicals to minimize dust from vehicle movements (particularly during construction) Managing emissions from mobile sources as follows: • Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines • Emissions from on-road and off-road vehicles should comply with national or regional programs. In the absence of these regardless of the size or type of vehicle, operators should implement the manufacturer recommended engine	KPK management and KPS Construction management/ site foreman	All phases		√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		maintenance programs Avoiding open burning of solid wastes.										
General requirements (all phases of the project)- - Social												
GS1	Social benefits	Use of local workforce to maximize direct and secondary local employment opportunities.	KPK and KPS management	All phases		√	√	√	√	√	√	√
GS2	Social impacts/ community engagement	Establish a communication channels, including a Public Consultation and Disclosure Plan, in order to engage with potentially affected people. Establish a formal Grievance Procedure and inform stakeholders.	KPK and KPS management	All phases	√							
General requirements (all phases) - Health and safety												
GH1	Occupational Health and Safety Management System	Implement good management practices through the development of an occupational health and safety management system in line with OHSAS 18000.	KPK management	All phases	√							
GH2	Contractor management	The Company will inform contractors of their EHS responsibilities, including requirements within this ESMMP. Applicable Environmental Health and Safety requirements shall be specified within contractual agreements.	KPK and KPS management	All phases	√							
GH3	Labour Issues	The Company will act as a responsible employer, operating in accordance in accordance with RF laws. It will also follow the conditions outlined in the Multilateral Development Bank Harmonised Edition of the 'Conditions for Contract for Construction – General Conditions, Section 6. International Federation of Consulting Engineers, March 2006, unless such compliance would contravene RF law. The Company will also ensure that its contractors apply the same standards. The company will establish monitoring and management system including periodic EHS meetings with the contractors and supervision of contractors by the Company nominated specialist and will act to resolve any breaches.	KPK and KPS management	All phases	√							
GH4	Labour Issues	The Company (and contractors) will ensure compliance with RF labour laws, with particular attention to ensuring that the RF laws transposing the ILO fundamental conventions concerning the abolition of child labour, the elimination of discrimination at the	KPK and KPS management	All phases	√	√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		workplace and the elimination of forced and compulsory labour are effectively complied with										
GH5	Workers Health and Safety	The Company will manage contractors to ensure a safe and healthy working environment, promoting best occupational health and safety practice. Provision of adequate Personnel Protective Equipment and enforcement of its use. Adoption of safe working practice, in accordance with RF requirements, for working: • in confined spaces • at heights • with moving machinery • dusty environments • electrical equipment • as a vehicle driver Workers shall only perform tasks that they are trained and competent to undertake. Signage and barriers shall be used to alert workers of any hazards. These requirements extent to contractor camps/housing.	KPK and KPS management	All phases		√	√	√	√	√	√	√
GH6	Medical facilities/first aid	All facilities will have an emergency first aid kit on site and trained first aiders. The main meat processing facility shall have a doctor on site at all times that the facility is operational.	KPK and KPS management	All phases		√	√	√	√	√	√	√
GH7	Site security	Facilities will have adequate security/barriers to prevent accident of injury to member s of the public/wild animals. For example, lagoons for the storage of manure will be fenced to prevent children and/or animals falling into the lagoon.	KPK and KPS management	All phases		√	√	√	√	√	√	√
GH8	Signage	Appropriate health and safety (and hygiene) signage shall be in place at all facilities	KPK and KPS management	All phases		√	√	√	√	√	√	√
GH9	Housekeeping	Sites shall be properly managed with a good standard of house keeping to reduce the risks of accidental injury.	EHS Manager/site foreman	All phases		√	√	√	√	√	√	√
GH10	Community safety including road safety	The Company will periodically review and assess the affects of the Project's vehicle movements and if necessary consider options to manage traffic and improve road safety.	EHS Manager/site foreman	All phases	√	√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		Measures will be put in place to prevent the accumulation of mud on public roads (e.g. from construction sites). This might include the provision of a wheel wash for construction traffic exiting a muddy site. Erect security/barriers and warning signs to prevent public access to hazardous construction areas.										
GH11	Incident tracking	A system will be used to monitor Health and Safety incidents, including near misses. Incidents should be logged and investigated with any corrective actions communicated throughout the Company.	KPK Senior Management	All phases	√							
General requirements (all phases) - Monitoring												
GM1	EHS audit	Establish an Environment, Health and safety audit programme to monitor the EHS performance of construction sites, and confirm compliance with the mitigation measures outlined for construction activities. A multidisciplinary audit team (of KPK Environmental, Health and Safety specialists) should visit each of the construction sites periodically, an in particular shortly following commencement of works.	KPK Senior Management	All phases n	√							
OM1	Legal compliance	Undertake all monitoring required under RF law as specified in the OVOS and associated environmental documentation.	KPK management	All phases	√							

KPK ESMMP for CONSTRUCTION

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
CONSTRUCTION specific - Environmental												
CE1	Traffic impacts	The movement and speed of heavy vehicles will be controlled (limited) to prevent damage to unpaved roads and soil. See also noise and vibration	KPK and KPS management	Construction		√	√	√	√	√	√	√
CE2	Noise and vibration	Use the following measures as appropriate: • Locate noise generating sources away from residential or other noise-sensitive receptors. • Comply with noise emission levels for the RF. • Plan activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance. • Avoid or minimise project transportation through community areas.	KPS Construction management/ site foreman	Construction		√	√	√	√	√	√	√
CE3	Wastewater discharges	Adequate portable or permanent sanitation facilities serving all workers should be provided at all construction sites.	KPS Construction management/ site foreman	Construction		√	√	√	√	√	√	√
CE4	Site security	All construction sites should be secured to prevent access by the public. Hazardous, capable of harming the public or animals, should not be left outside of the site's boundary	KPS Construction management/ site foreman	Construction		√	√	√	√	√	√	√
CE5	Terrestrial habitat protection	Sensitive terrestrial habitat will be avoided. Re-vegetation of disturbed areas with native plant species.	KPK Environmental Manger	Construction			√	√	√	√	√	√
CE6	Soil erosion (during earthworks)	Soil erosion will be reduced or prevented by: • Scheduling to avoid heavy rainfall periods (to the extent practical) • Mulching to stabilise exposed areas • Re-vegetating areas promptly Off-site sediment transport will be reduced through use of	KPK Environmental Manger/site foreman	Construction			√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		settlement ponds, silt fences if necessary and modifying or suspending activities during extreme rainfall and high winds to the extent practical.										
CE7	Site Reinstatement	Where possible and appropriate, top soil will be segregated and replaced on other back fill material to promote regeneration of vegetation. All materials and temporary structures will be removed from the site upon completion of construction works.	KPK Environmental Manger/site foreman	Post Construction		√	√	√	√	√	√	√
CE8	Pipeline installation	Pipeline routes (for water supply) shall be selected to minimize adverse impacts by preferential selection of a route that: • uses previously disturbed areas, • avoids sensitive areas (including steep slopes, watercourses, sites of archaeological or cultural value, protected areas), • minimizes pipeline length.	KPK Environmental Manger/site foreman	Construction								√
Construction - Social												
CS1	Code of conduct	KPS will prepare a code of conduct for project workers. The code will outline basic requirements and minimum expectations of workers both on-site and in surrounding communities to reduce the chance of any worker/community conflicts.	KPS senior management	Construction		√	√	√	√	√	√	√
Construction - Monitoring												
CM1	Dust and noise levels	Dust levels should be monitored through visual observation, including effectiveness of any dust suppression techniques. Noise levels should be monitored using hand held portable noise meters where particularly noisy activities are taking place or in the event that local residents raise concerns.	KPS site foreman	Construction		√	√	√	√	√	√	√

KPK ESMMP for OPERATIONS

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
OPERATIONS - Environmental												
OE1	General environmental and social management	Implement good management practices through the development of a social and environmental management system (SEMS), including: • grievance procedures • audit programme • stakeholder engagement plan • monitoring plan • training programme The Company should operate a SEMS in line with the international standards ISO14000 and SA 8000.	KPK General Director	In place for operations (end 2009)	√							
OE2	Site location	New sites will be selected with consideration given to environmental and social sensitivities and with public consultation. New and renovated sites will not infringe on any Sanitary Protection Zones or Water Protection Zones , or other protected zones.	KPK General Director	Pre-construction	√							
OE3	Air emissions (general)	Air emission will not exceed RF Maximum Permissible Concentrations (MPCs). Emissions will be controlled to acceptable levels through the use of good design and abatement equipment where necessary. In particular this applies to: • Boiler houses • Manure storage/transportation • Other combustion processes (pig singeing) Predictive studies are required to confirm adequacy of plant design ahead of construction (if a new build).	KPK Environment Manager	Pre-construction/ operations		√	√	√	√	√	√	√
OE4	Air emissions (dust)	Dust abatement techniques should be used to maintain dust below acceptable levels specified under RF environmental legislation. Dust abatement technologies shall be used where necessary, for example, the fodder plant.	KPK Senior management	Operations							√	
OE5	Air emissions (odours)	Odours should be minimised. In particular odours should not be offence to residents living close to KPK facilities. Measures to reduce odours from manure are outlined under 'manure management'. Odour abatement equipment should also be used elsewhere	KPK Environment Manager	Operations		√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		where offensive odours a noticeable beyond site boundaries.										
OE6	Water abstraction	Ensure all water is sourced from sustainable uncontaminated sources. Abstraction of water for the Project must not deprive other users of their normal water consumption or affect water quality.	KPK Environment Manager	Operations	√	√	√	√	√	√	√	√
OE7	Water usage	Monitor water use and explore opportunities to minimise water use through water conservation measures e.g. trigger operated hoses for facility/truck washing. Consider opportunities to recycle process water, for example, reusing uncontaminated process water to clean truck tyres (if appropriate).	KPK Environment Manager	During design phase and Operations		√	√	√	√	√	√	√
OE8	Wastewater generation	Take actions to minimise the amount of contaminants reaching the wastewater system, in particular milk at the dairy farm and blood at the slaughterhouses (both have a high BOD). Actions should include: • Optimising blood yield (e.g. allowing adequate bleeding time after sticking pigs); • At the end of each day when blood tanks are emptied use squeegies to remove as much residual blood as possible before washdown; • Use catch pits / filters in drains to minimise the amount of solids reaching the effluent system.	KPK Senior Manager/ Energy Manager	Operations				√	√			√
OE9	Wastewater treatment	Use appropriately designed water treatment plant to meet the more stringent of applicable RF discharge criteria or the IFC waste effluent standards.	KPK Senior Manager	During design phase and Operations		√	√	√	√	√	√	√
OE10	Manure management (storage)	Design facilities to minimise odour and other air emissions and leachate from manure in line with good international practice. Measures will include: • Storage of manure beneath pigs/cattle barns • Impermeable manure storage areas (e.g. lagoons) • Shelter from rain and snow Leakage detection system in place	KPK Senior Manager	Operations			√	√	√	√		√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
OE11	Manure management (application)	Application of manure in accordance with RF requirements. In line with international good practice a manure management plan will be prepared. The plan will outline: • Anticipated quantity of manure • Application strategies including availability of land to receive the manure • Application rates, locations and timing • Application methods and land use sensitivities that must be avoided.	KPK Senior Manager	Operations	√							
OE12	Silage management	Silage, if used by the Company, must be stored in accordance with good practice and in manner that prevents contamination of groundwater supplies, including but not limited to: • Storage of silage as bales or impermeable containers • Shelter from rain and snow fall • Leachate control Written procedures for the storage will be prepared should silage be used by KPK in the future. The procedure will take account of RF requirements and international good practice for the storage and handling of silage.	KPK Senior Manager	Operations	√							
OE13	Energy efficiency	Consideration should be given to energy efficiency review to identify energy saving options. Energy efficiencies should be considered at the design stage for new builds and as part of an energy audit for existing buildings. The audit findings should be integrated within the action programme of a Company wide Environmental Management System.	KPK Environment Management	During design phase and Operations		√	√	√	√	√	√	√
OE14	Animal welfare	Good animal welfare practices will be used in accordance with RF requirements and EU guidance for Best Available Techniques. Practices will cover amongst others: • Accommodation (including ventilation, and available space, access to other pigs, bedding) • Dietary needs • Behavioural needs • Veterinary care • Live animal transportation	Site managers	Operations			√	√	√	√		√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		• Provisions at the slaughterhouses										
OE15	Emergency response (outbreak of disease)	The will maintain emergency response procedures and contingency plans for the following eventualities, including as a minimum: • Fire • Loss of power • Failed Water Treatment Plant • Loss of refrigerant (for site using refrigerants) • Failed of heating and ventilation systems (including pig and cattle farms) • Outbreak of infectious disease (see row below)	KPK senior management	Pre – operations and operations		√	√	√	√	√	√	√
OE16	Outbreak of disease	A plan is required to address the Companies response in the event of infectious and non infectious diseases. This plan must address, amongst others: • Roles and responsibilities; • Communication channels and contact details; • Identification of disease; • Isolation and disinfection techniques; • Notification of relevant authorities/other parties; • Procedures for segregation/quarantine of ill or dead animals; • Culling of diseased animals; • Transport of diseased animals or carcasses; • Disposal options and appropriate locations. In such incidents the State Veterinary Services (SVS) will often assume a command of the incident. The KPK plan should be integrated with SVS procedures.	KPK senior management	Pre – operations and operations			√	√	√	√		√
0E17	Burial pits	Pits are available for the burial of large numbers of animals carcasses should there be an outbreak of infectious disease. The suitability of these burial pits must be assessed to ensure disease can be contained, groundwater supplies will not be contaminated and public health is assured.	KPK Senior management	Pre - operations			√		√			
0E18	Road journeys	Preferential use should be made of rail transport were possible e.g. raw material for the fodder plant. Elsewhere road vehicles will be essential including during product distribution. All vehicles	KPK Environment Management	Operations		√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
		should be properly maintained and driven by well trained drivers.										
0E19	Traffic management	Implement any measures to avoid congestion/improve safety at busy locations such as the warehouse and main meat processing facilities in accordance with recommendations by the relevant traffic authorities.	KPK Environment Management	Construction and Operations		√	√	√			√	
Health and safety - Operations												
OH1	Risk of explosion	The risk of explosive environments (from high levels of organic dust) will be determined during design of facilities. At the fodder plant measures will be in place remove any explosive risk.	KPK Management	Operations							√	
OH2	Hygiene standards	The highest levels of hygiene shall be maintained at all facilities. Strict disinfection and sterilisation procedures will apply.	KPK HSE Manager	Operations		√	√	√	√	√	√	√
Monitoring - operations												
OM1	Groundwater	Groundwater monitoring boreholes will be used for monitoring purposes at locations where there is a risk of soil and/or groundwater contamination. For example, in the vicinity of manure lagoons, burial pits and silage storage area (if applicable).	KPK management	Pre-operations and Operations			√	√	√	√		
OM2	Air quality (including particulates)	To be monitoring in accordance with RF requirements	KPK Environment Manager	Pre-operations and Operations		√	√	√	√	√	√	√
OM3	Odours	Routine odour monitoring should be carried out at pre determined sampling locations, including site boundary and residential areas. The frequency and location of obnoxious odours should be recorded during any odour incidents.	KPK Environment Manager	Pre-operations and Operations		√	√	√	√	√	√	√
OM4	Effluent quality	To be monitoring in accordance with RF requirements	KPK Environment Manager	Pre-operations and Operations		√	√	√	√	√	√	√
OM 5	Water use	Install water meters and monitor them regularly to measure efficiency. KPIs should be developed (e.g. water use per head) and performance benchmarked against best practice.	KPK Energy Manager	Operations		√	√	√	√	√	√	√
OM 6	Energy use	Install electricity meters and monitor them regularly to measure efficiency. KPIs should be developed (e.g. electricity use per head) and performance benchmarked against best practice.	KPK Energy Manager	Operations		√	√	√	√	√	√	√

Ref	Issue/ potential impact	Mitigation measure/action	Responsible party	Timeframe	Facility							
					Corporate	Meat processing	Pig farm	New slaughterhouse	Dairy farm	Beef farm	Fodder plant	Existing slaughterhouse
OM 7	Blood yield	Blood yield should be measured at the slaughterhouses. This indicates the efficiency of recovering a useful by-product. High blood yield also demonstrates that the BOD load being discharged via effluent is being minimised.	KPK Senior Management	Operations				√				