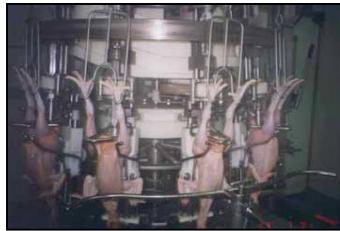




Environmental Consultancy for 888XY

# Development of a Poultry Slaughtering and Processing Plant in Sheung Shui

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## Project Profile

3 January 2007

Report no: 123456R013



Consulting



Architectural Services Department

Environmental Consultancy for 888XY

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## Project Profile

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**Report no:** 123456R013

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# Contents

<b>1</b>	<b>Basic Information .....</b>	<b>1</b>
1.1	Project Title.....	1
1.2	Purpose and Nature of Project .....	1
1.3	Name of Project Proponent .....	1
1.4	Name and Address of Contact Person.....	1
1.5	Number and Types of Designated Projects to be Covered by the Project Profile .....	1
1.6	Location and Scale of Project.....	2
<b>2</b>	<b>Outline of Planning and Implementation Programme .....</b>	<b>8</b>
2.1	Project Team .....	8
2.2	Project Timetable.....	8
2.3	Interactions with Other Projects.....	8
<b>3</b>	<b>Possible Impacts on the Environment.....</b>	<b>9</b>
3.1	Air Quality .....	9
3.2	Noise .....	10
3.3	Water Quality.....	11
3.4	Waste Management .....	12
3.5	Ecology .....	14
3.6	Landscape and Visual .....	15
3.7	Hazard to Life .....	18
<b>4</b>	<b>Major Elements of the Surrounding Environment.....</b>	<b>20</b>
<b>5</b>	<b>Environmental Protection Measures to be Incorporated into the Design and Any Further Environmental Implications .....</b>	<b>22</b>
5.1	Construction Phase Measures .....	22
5.2	Operational Phase Measures .....	23
<b>6</b>	<b>Reference To Previously Approved EIA Reports.....</b>	<b>24</b>

# 1 Basic Information

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## 1.1 Project Title

Development of a Poultry Slaughtering and Processing Plant in Sheung Shui ("the Plant").

## 1.2 Purpose and Nature of Project

In order to pursue the goal of segregation of live poultry and humans so as to minimise the risk of an outbreak of avian influenza, the Government of the HKSAR (the Government) has proposed to develop a poultry slaughtering and processing plant for terrestrial poultry. A site in Sheung Shui has been identified for the development of the plant under a Build, Own, Operate and Transfer (BOOT) approach.

The Plant is expected to provide a wide range of poultry products and services including, but not limited to, fresh, chilled and frozen poultry. The Plant products will cater for market demand for poultry products, such as the restaurant trade, fresh provisions shops, wet markets and supermarkets.

Architectural Services Department (ArchSD) is the works department responsible for the planning of the project and for preliminary design of the Plant.

## 1.3 Name of Project Proponent

Architectural Services Department.

## 1.4 Name and Address of Contact Person

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## 1.5 Number and Types of Designated Projects to be Covered by the Project Profile

Under Schedule 2, Part N, Category N.1 of the Environmental Impact Assessment Ordinance (EIAO), an abattoir with daily slaughter capacity of more than 500 numbers of livestock is a Designated Project (DP). Since the Plant involves slaughtering of up to 63,000 poultry per day, it is a DP.

## 1.6 Location and Scale of Project

### 1.6.1 Location

With an area of about 15 000 m<sup>2</sup>, the site in Sheung Shui along Man Kam To Road is currently used for public carpark and vehicle-repairing purposes on short-term tenancies. The site is over 2 000m away from the Man Kam To border and over 900m from major residential areas. The site is now zoned “Open Storage” and “Other Specified Uses” annotated “Petrol Filling Station” on the Fu Tei Au and Sha Ling Outline Zoning Plan (hereafter called “OZP”).

The Government will initiate a zoning amendment to the OZP to make it permissible for the site to be used for developing the Plant before handing over the site to the Plant operator. The surroundings of the site are mostly open carparks, open storage yards and vehicle-repairing workshops. Hung Kiu San Tsuen, which has 16 permitted structures, with about ten of residents, is located next to the site. Basic infrastructure such as water and electricity supply and sewerage network is readily available.

Figure 1-1 shows the location of the Site and Photograph 1-1 shows its current use:



**Photograph 1-1 Current Use of the Proposed Site – a Lorry Park**

### 1.6.2 Scope

The Plant will be a purpose-built building and will occupy approximately 4,600m<sup>2</sup> of the Site. The maximum number of live chickens to be slaughtered at the Plant per day is 60,000. In addition, manual slaughtering of small sized poultry such as pigeons, chukar, guinea fowl and pheasant will also take place, with a maximum slaughtering capacity of 3,000 birds per day. The Plant is anticipated to operate 365 days per year, 24 hours per day.

To prevent cross-contamination between live poultry and finished poultry products, the Plant will provide an automatic/semi-automatic and single-direction flow slaughtering line, including the shackling, stunning, bleeding, scalding, de-feathering, evisceration, inspection and chilling processes (see Section 1.6.4). Separate slaughtering lines for production of warm and chilled/frozen chickens will be provided. Back-up lines will be provided in case of breakdown.

There will be a live poultry reception area, holding area pending inspection results, waiting area pending slaughter, isolation area for segregating poultry suspected of having contracted diseases, area set aside for hanging chickens to be shackled manually for stunning and bleeding, slaughter hall where the slaughtering line(s) operate, suspected carcass retention area for detailed inspection, chilling/freezing facilities for slaughtered poultry, sorting, labelling and packaging area, cold storage rooms and poultry despatch area. All areas where live chickens are kept will be well ventilated.

Other ancillary facilities including loading area for freshly slaughtered, chilled and/or frozen poultry, garbage room, staff rooms (changing, toilet and shower facilities, office, accommodation for authorised officersinspectors), vehicle-washing area, crate-washing area and storage area will be provided. An isolation room for autopsy or samples taken from sick/dead birds will be provided.

### 1.6.3 Construction of the Plant

The scope of works comprises:

- Construction of the Plant building.
- A slaughtering line that includes hanging chickens onto shackles, stunning, bleeding, scalding and de-feathering, evisceration, chilling/ freezing and semi-automatic cutting for processing frozen chickens and chicken parts.
- Provision of an area for manual slaughtering of pigeons and other small sized poultry such as chukar, guinea fowl and pheasant.
- Provision of separate areas for holding live chickens and other small sized poultry.
- Provision of separate areas for temporary storage of recalled products.
- Installation of water spray equipment for washing both inside and outside surfaces of carcasses. It shall have sufficient water pressure at all spray outlets to enable carcasses to be thoroughly and efficiently washed/cleaned.
- Provision of a ventilation system with a negative pressure maintained inside the Plant. Installation of odour removal and disinfection equipment at the ventilation exhaust is required.
- Provision of a preliminary wastewater treatment facility with disinfection equipment. The facility shall also be able to cope with the daily load of disinfectant without affecting its performance.
- Provision of ancillary facilities, including unloading area, vehicle washing area, crate washing area, changing rooms, garbage room, storage area and toilet facilities.

An indicative schematic layout of the Plant is shown in Figure 1-2.

## 1.6.4 Operation of the Plant

- Lorries with crates of live chickens and other poultry coming from either local farms or from the Mainland will enter the Site to unload the crates. Designated areas are provided for the lorries and empty crates to be washed and disinfected before leaving the Site.
- Live chickens and other poultry awaiting slaughter within 24 hours of their arrival are kept inside the holding area, which will be sheltered from inclement weather and direct sunlight. They will be given sufficient rest and water before slaughter, although feeding facilities will not be provided. Ante-mortem inspection will be concluded at this point.
- During the slaughtering process, the chickens will be hung upside down with their claws on the shackles and suspended on the slaughtering line.
- The chickens will first be humanely stunned, using electricity of the appropriate voltage and current for the size of the bird. Stunned birds are then bled and dropped into a scalding tank where feathers are loosened. The chickens are then passed to the automatic spinning and picking machine for de-feathering. Fine feathers remained will be plucked by hand.
- Leaving the slaughtering area, the chickens will enter the evisceration and post-mortem inspection area. The evisceration line is continuous from the transfer point through to the washing area. It runs above a conveyor belt that carries away waste materials.
- The viscera in the chickens are removed using a venting gun. The whole of the viscera, including lungs and edible offal (i.e. heart, liver and gizzard) are drawn from the body cavity and left hanging from the carcass.
- Edible offal is further cleaned and the remains are discarded. A suction tube is introduced into the body cavity to remove any contamination or lung remaining intact on the carcass.
- Chickens are then spray-washed for general cleaning.
- Chickens are then dropped automatically from the evisceration line into the long spin washing tank. They are propelled along the tank against the direction of chilled and chlorinated water. Chickens shall be air-chilled or water-chilled to 4°C or below.
- Chickens (with head and feet attached) are then sorted, individually wrapped (in plastic bags) and labelled with the batch code and date of slaughter. The finished products are stored in chillers. NB. Frozen/chilled products will be treated differently.

Figure 1-3 provides a summary of the operation of production line of the Plant.

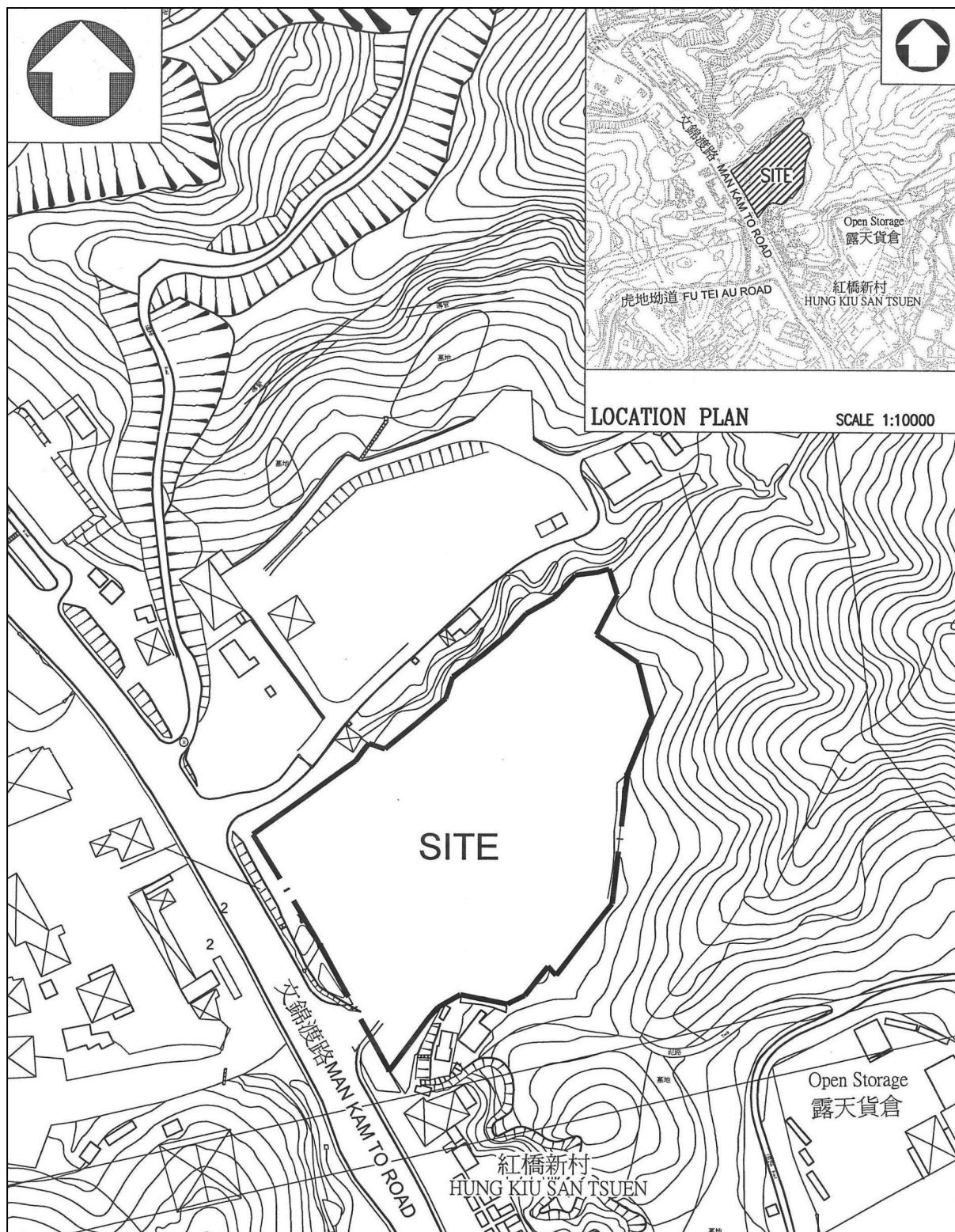
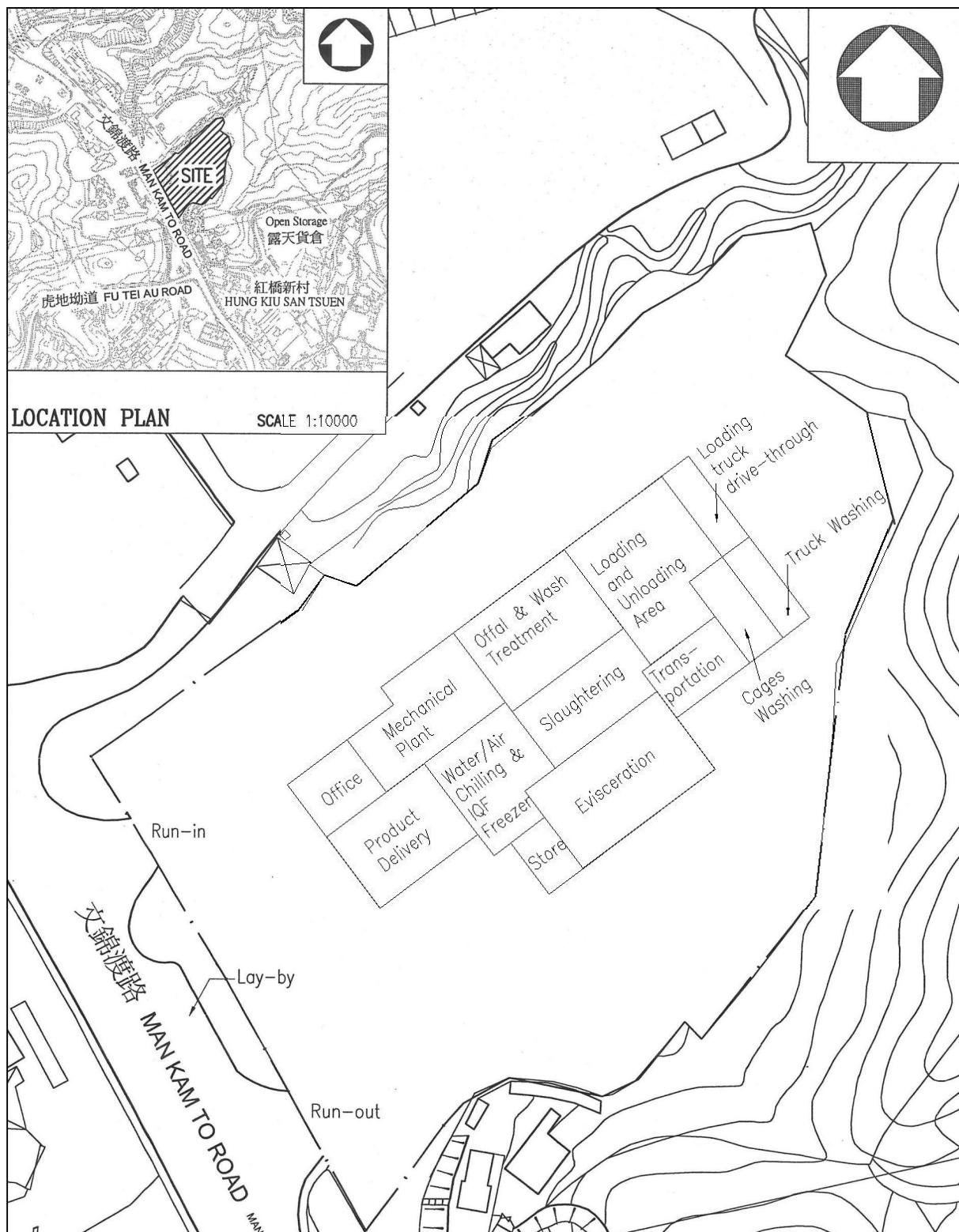
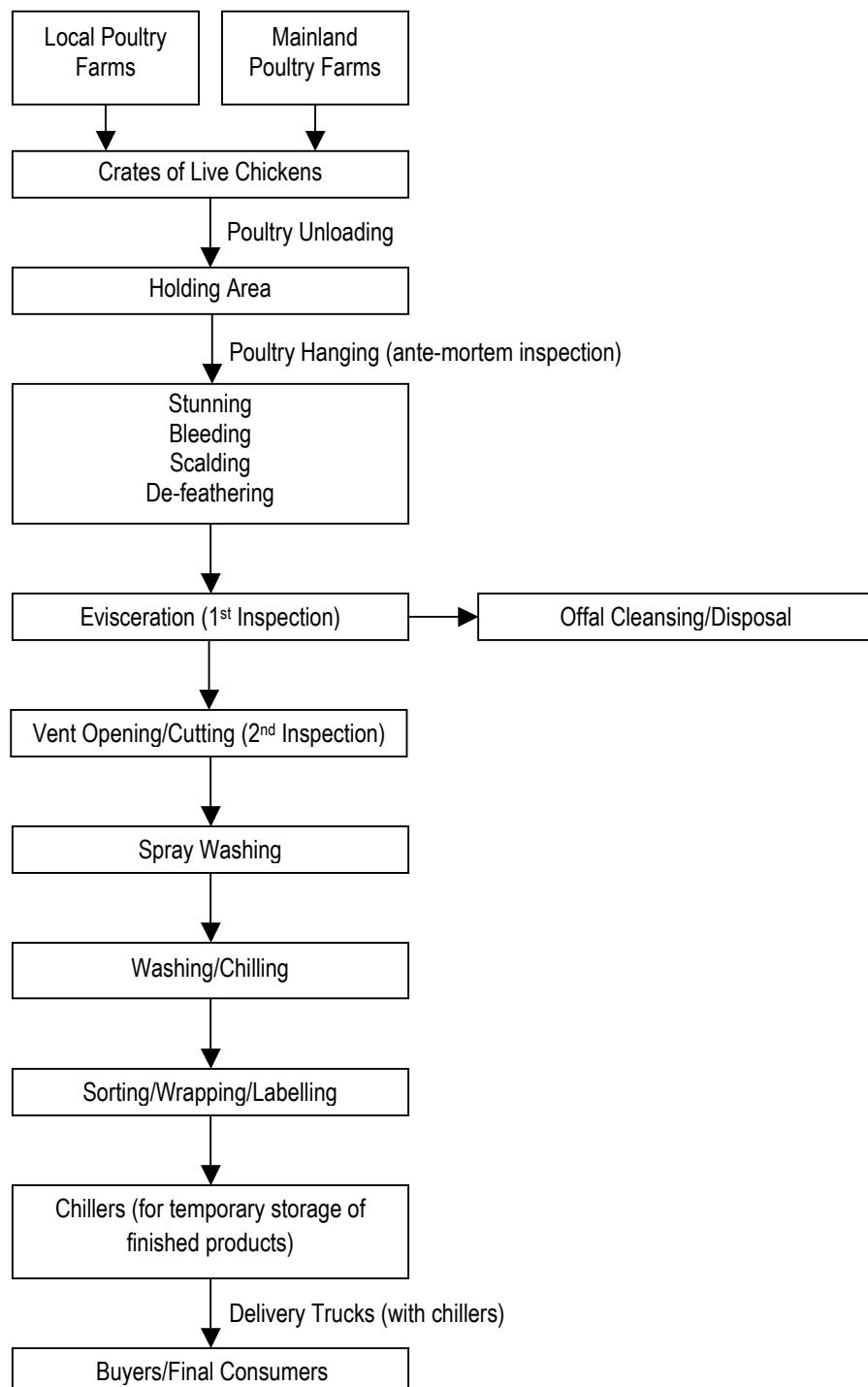


Figure 1-1 Location of the Proposed Site



**Figure 1-2 Conceptual Layout of the Plant Within the Site**



**Figure 1-3 Operation of Production Line in the Plant**

## 2 Outline of Planning and Implementation Programme

### 2.1 Project Team

The Health, Welfare and Food Bureau (HWFB) acts as the project overseer, whilst ArchSD acts as technical advisor for the project and engaged Hyder Consulting Limited to undertake the Environmental Impact Assessment (EIA) in accordance with the EIAO.

The Government intends to have the Plant developed under a BOOT arrangement by a private operator ("the Operator"). Under such arrangement, the Government will make available the Site for the development of the Plant whereas the Operator will have to design, build, operate, manage and maintain the Plant at its own cost. The Operator will initially be granted a period of ten years to operate the Plant with effect from the commissioning of the Plant. The Government will have the option to extend the contract for five years. On expiry of the operation period of the Plant the Operator will have to transfer both the ownership and possession of the Plant to the Government, free from any encumbrances and liabilities. The Plant, including the equipment therein, should be in good working order at the time of transfer and the transfer should be at no cost to the Government.

The Operator will be required to apply for the EP prior to commencement of construction, and may use the EIA Report prepared by Hyder Consulting Limited for this purpose. The EIA Report, together with any comments from EPD, will also form part of the tender documents for the BOOT tender, and the Operator will design the Plant to meet the recommendations of the EIA Report.

### 2.2 Project Timetable

Key dates for the programme are :

- 2007      Invite Open Tenders for the BOOT Contract
- 2008      Award Contract
- 2008      Site Available
- 2009      Commencement of Construction
- 2010      Commencement of Operation

### 2.3 Interactions with Other Projects

There is no interaction with other projects, however, a dedicated foul sewer may be constructed by the Operator in parallel with construction of the Plant if no foul sewer is available for effluent discharge.

## 3 Possible Impacts on the Environment

---

### 3.1 Air Quality

At present, the air quality in the Study Area is mainly affected by vehicle emissions from Man Kam To Road and from open-air paint spraying from the adjacent vehicle repair shop, shown in Photograph 3-2:



**Photograph 3-2      Poor Air Quality Due to Open-air Paint Spraying at Adjacent Repair Shop**

The closest Air Sensitive Receiver (ASR) is the office of the adjacent vehicle repair shop (green coloured “portacabin” in Photograph 3-2, above) and this is located at about 20m from the Site boundary. Next to this ASR is the a small village called Hung Kiu San Tsuen, with tens of residents

#### 3.1.1 Construction Phase

Fugitive dust emission is likely to be the only air quality pollutant upon the sensitive receivers during the construction phase. Having regard to the small scale of the construction work, the number of construction plant and truck movements will be limited.

With the adoption of the mitigation measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, the potential dust impact can be minimised to comply with the dust criterion.

### 3.1.2 Operation Phase

The potential sources of air quality impact during the operation of the Plant include vehicle emissions from the poultry delivery trucks and potential odour from the Plant itself. Given that the number of delivery trucks is less than 50 trucks per day, air quality impact associated with gaseous emissions from the delivery trucks will be minimal. Potential odorous sources in the Plant will include the faeces of chickens in the holding area, by-products from the slaughtering processes, particularly blood handling, poultry and their waste and the wastewater treatment processes.

Since the Plant will be a fully enclosed building, the ventilation system will require the installation of odour removal equipment to reduce odour impact from the ventilation exhaust. Sufficient air current will be maintained within the poultry unloading, holding and waiting areas with adequate cooling facilities provided during hot weather to minimize heat and odour stress, so as to reduce the mortality rate of poultry and prevent potential development of disease.

## 3.2 Noise

The Plant is located within an area enclosed on three sides by hills that form a “bowl” within which the Plant will be located. The noise environment in the Study Area is mainly affected by vehicles on Man Kam To Road, to the southwest of the Site. Delivery of live poultry as well as the slaughtering process will generally occur during night-time.

The closest Noise Sensitive Receiver (NSR) is the office of the adjacent vehicle repair shop (green coloured “portacabin” in Photograph 3-2) and this is located at about 20m from the Site boundary. Next to this NSR is the small village of Hung Kiu San Tsuen, with tens of residents.

### 3.2.1 Construction Phase

Construction noise may result from the use of Powered Mechanical Equipment (PME). The number of PME to be used during construction is limited given the relatively small size of the Plant and nature of the construction works. Most works will be undertaken within the “bowl” which will attenuate the noise and so adverse construction noise impact is not envisaged.

### 3.2.2 Operational Phase

Potential noise sources during the operation of the Plant include:

- Traffic noise from delivery trucks / collection vehicles.
- Unloading of poultry.
- Noise from poultry holding area.
- The slaughtering and processing equipment.
- The air conditioning unit.

The number of delivery trucks is less than 50 trucks per day, and deliveries will generally be made at night time. There will be no off-site queuing of vehicles as provision will be made within the site for queuing. Delivery trucks will unload live poultry at the back (northeast) of the Site, within the Plant building enclosure. As a result, noise will be attenuated by the bowl-effect of the surrounding hillsides and also shielded by the Plant building itself. As such, traffic noise impact associated with the movement of trucks will be minimal.

Unloading of poultry will be undertaken in a covered area with an opening facing northeast, while other noise sources will be located inside the Plant building. Given that the closest NSR is located to the southeast of the Site, with no direct line of sight to the unloading area, adverse noise impact to the NSR is not anticipated.

The air conditioning unit will be placed at the roof of the Plant building and positioned away from the NSR. The design specification of the air conditioning unit will meet the relevant noise criteria stipulated under the *Noise Control Ordinance (NCO)* and the *Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM)*.

## 3.3 Water Quality

The Site is landlocked and distant from the sea. The nearest Water Sensitive Receiver (WSR) is the open channel, which is currently being constructed immediately next to the Site by the Drainage Services Department (DSD) and will be completed in 2007. No other WSRs, such as bathing beaches or significant water courses, have been identified within the vicinity of the Site.

### 3.3.1 Construction Phase

The major sources of water quality impacts that can potentially arise from the construction of the Plant will be typical of normal land based construction activities, including construction runoff and sewage from construction work force. Since the scale of construction work is small, adverse water quality impact due to construction runoff is not anticipated with the implementation of good site practice. It is anticipated that the number of workers at the Site will be limited and they will use portable chemical toilets and hence no adverse water quality impact will result from toilet facilities.

### 3.3.2 Operational Phase

The sources of wastewater from the operation of the Plant will come from floor washing, delivery truck washing, trade effluent and domestic effluent. Wastewater generation from these sources are estimated as follows:

- Floor washing:  $0.02\text{m}^3/\text{m}^2/\text{day}$ . Given a total area of  $4,600\text{m}^2$ , daily floor washing wastewater amount would be about  $92\text{m}^3/\text{day}$ .
- Delivery truck washing:  $0.144\text{m}^3/\text{lorry}$ . Given maximum of 50 lorries per day, daily truck washing wastewater amount would be about  $7.2\text{m}^3/\text{day}$ .

- Trade effluent: 700m<sup>3</sup>/day.
- Domestic effluent: 0.05m<sup>3</sup>/capita/day. Assuming maximum of 125 personnel will be staying in the Plant every day (50 process line workers + 50 management/administration staff + 50% of lorry drivers) then the sewage generation would be about 6.25m<sup>3</sup>/day.

As such, total daily wastewater generated from the Plant would be about 805m<sup>3</sup>. This figure will be further verified in the EIA Report. The wastewater is likely to be contaminated with blood and excretions containing high concentrations of organic matter and nutrients. Disinfectants will also be present. Expected composition of the wastewater will be provided in the EIA Study.

Current information indicates that there are no foul sewers in the area, however, foul sewer manholes were identified within and adjacent to the Site. This will be further examined. The possibility of other Government Departments laying a foul sewer in the area (that could be used by the Plant) will also be investigated.

If no foul sewers are available, the Operator has to commit itself to providing a dedicated foul sewer from the Plant to the nearby Shek Wu Hui Sewage Treatment Works (STW), to be implemented when the Plant becomes operational.

A preliminary wastewater treatment facility will be installed in the Plant (within the Offal & Wash Treatment zone as shown in Figure 1-2) to treat all wastewater generated within the Plant. Effluent from this facility will be discharged into foul sewer leading to the Government STW at Shek Wu Hui. The quality of effluent discharged to public sewer has to comply with the standards stipulated in EPD's Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS). As the effluent from the wastewater treatment facility will be discharged directly to public sewer, the operator will need to apply for a discharge license under the Water Pollution Control Ordinance (WPCO).

## 3.4 Waste Management

The management of wastes from the Plant will be a key concern, particularly the waste animal parts, which have the potential to harbour infection and so pose a potential public health concern if not properly handled.

### 3.4.1 Construction

The waste arising during the construction of the Plant includes construction waste, general refuse and chemical waste.

#### Construction Waste

As the Plant will be located on existing land, no major earthworks will be required for construction. Minor excavation work will be required for foundations and for the laying of utilities, etc. Most of these excavated materials will be backfilled.

Having regard to the small scale of the construction work, it is anticipated that only a small amount of construction waste will be generated.

At present the Site is entirely covered in hardstanding (asphalt), which is in very poor condition, as shown in Photograph 3-3.

Given the condition of this material, it is unlikely that it can be reused and so will need to be excavated and either reused on site or disposed of. Given that the Site is 15,000m<sup>2</sup> in area and assuming that the depth of hardstanding to be removed would be approximately 0.25m, this means that some 7,750m<sup>3</sup> of material would need to be excavated. It is possible that some of this material could be reused on site as backfill to provide a level surface within the Site, but this will require further investigation.



**Photograph 3-3 Existing Poor Condition of the Hardstanding within the Site**

## General Refuse

General refuse will be generated from site operations and personnel. It is estimated that the number of workers working at the Site will be limited. Hence the quantity of general refuse generated is expected to be small.

Notwithstanding, segregation of general waste will be practiced so as to maximise the potential for recycling. Surplus general refuse will be disposed of to landfill.

## Chemical Waste

The chemical waste likely to be generated from the construction of the Plant will, for the most part, arise from the maintenance of construction plant and equipment. As the number of construction plant and equipment is expected to be small, the quantity of chemical waste to be generated will be limited.

### 3.4.2 Operation

The following wastes will be generated from the operation of the Plant:

- Waste from poultry (including feathers and offal)
- Dead and condemned poultry
- Packaging materials
- Sludge from preliminary wastewater treatment plant
- Chemical waste (disinfectant, used lubricant oil, etc. from equipment maintenance)

These wastes will require proper collection and disposal, to be determined in the EIA Study.

### 3.5 Ecology

The proposed Site has little or no ecological value as it is currently operated as a lorry park and comprises entirely of hardstanding, as shown in Photograph 3-3.

The Plant itself will cause no direct ecological impact as it will be constructed and operated entirely within the area that is already covered by hardstanding. Around the perimeter of the Site there is some vegetation but this is generally scrub and does not contain any valuable species. Notwithstanding, this shall be retained for landscape and visual amenity and is discussed in the Section 3.6.

In terms of indirect impact, the surrounding hillsides are generally undisturbed (except for electricity pylons, graves and a large pipeline). However, there is evidence of recent hill fires, shown below in Photograph 3-4, which have certainly reduced the ecological value of the surrounding area.



**Photograph 3-4      Low Ecological Value of the Surrounding Hillsides**

As can be seen from Photograph 3-4, there is no significant vegetation on the surrounding hillsides with the exception of one or two small trees. The lack of vegetation precludes the existence of any significant habitats.

Given the present low ecological value of the Site and the surrounding hillsides, it is considered most unlikely that there will be any adverse ecological impact from the construction or operation of the Plant, either directly or indirectly.

## 3.6 Landscape and Visual

The existing Site is being used as lorry park, as shown in earlier photographs. The surrounding area is visually unappealing, comprising the small village of Hung Kiu San Tsuen and numerous abandoned vehicles, together with significant amounts of waste and other refuse, as shown in Photograph 3-5, below. The adjacent vehicle repair yard with open-air paint spraying further reduces the visual appeal.



**Photograph 3-5 Existing Visually Degraded Environment in the Vicinity**

### 3.6.1 Construction Phase

#### Landscape Character and Resources

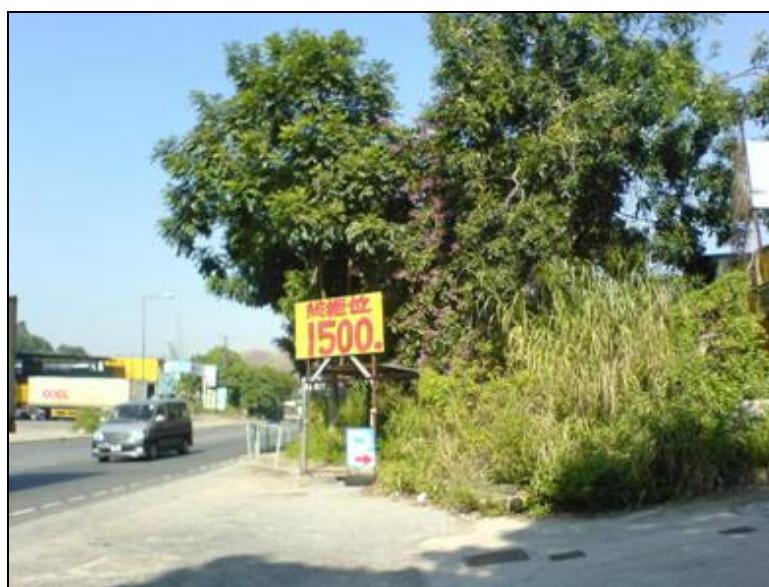
The character of the Site itself is presently defined by its use as a car park, which is in poor landscape condition and of no value. It is bordered by Man Kam To Road on the one side, which has some peripheral tree lining adjacent to the site and provides much-needed greenery along a road that generally has very little and poor quality landscaping.

The northwestern periphery of the Site is defined by an abandoned construction yard and a rural refuse sorting yard. Beyond these yards and to the north and east of the Site are hills that are mostly covered with grass, with scrub on the

foothills. These hills contain some graveyards, but are otherwise fenced off, securing the electricity pylons and surface pipes located further uphill. This is shown in Photograph 3-4.

The character of the site will change during the construction phase, but the surrounding landscape character will not be altered. This change will be brought about by construction plant and activities, converting the site from a car park to a construction site. In light of the poor landscape character of the site, the character changes during construction will be negligible and acceptable.

The site has no noteworthy landscape resources with the exception of a stand of mature trees along Man Kam To Road, shown in Figure 3-6, and some trees on and adjacent to the site boundaries. Besides these, there are also a few trees (approximately 10 no.) within the site, which are all common species, such as *Macaranga tanarius*, and are generally in poor condition.



**Photograph 3-6 Existing Stand of Mature Trees Along Man Kam To Road**

The construction of an ingress to the site from Man Kam To Road would require the removal of approximately two trees in the stand along Man Kam To Road. The selected location is where a natural break in the tree stand occurs with two smaller trees on each end of the break. Trees on and adjacent to the Site perimeter shall be retained and protected during construction. Trees within the Site may be removed for hygiene and construction reasons.

The stand of mature trees along Man Kam To Road will generally be retained and protected during construction, and removal of the two smaller trees would only account for a small impact on the tree stock. Removal of trees within the Site also constitutes a small impact as these trees are of low value.

In consideration of the above, the impact on landscape resources will be acceptable. It should be noted that tree removal will only take place upon approval from relevant tree felling / transplantation authorities.

## Visual Impact

Passengers in vehicles using Man Kam To Road represent a Visually Sensitive Receiver (VSR) group. The Site is currently screened from this VSR group by a stand of mature trees, shown in Figure 3-6.

While some small trees and shrubs may need to be removed from within the Site, it is intended to retain the existing mature trees to act as a visual screen and also to retain the scrub at foothills along the periphery of the Site, provided that this is acceptable to Plant operations in terms of hygiene concerns.

The proposed layout of the Plant requires a separate run-in and run-out, as shown on Figure 1-2. The existing site access road will be used as the run-out and so a new run-in will need to be constructed. A suitable location for this has already been identified and would only require removal of two small trees within the stand of mature trees, as there is a natural break in the existing vegetation at this location. While this would make the Site more visible, in consideration of the fast-moving nature of VSRs using the Man Kam To Road, visibility of the Site would be minimal and the resultant impact small.

Other VSRs able to view to the Site include people occasionally visiting the graveyards, workers in the adjacent rural refuse-sorting yard, workers at the vehicle repair shop and the remaining residents of Hung Kiu San Tsuen. Views of these VSRs to the Site are presently of poor quality looking onto the lorry park. Construction plant and activities would not generate significantly views, in qualitative terms, and hence the impact on these VSRs is considered to be negligible.

### 3.6.2 Operation Phase

After the construction of the Plant, the character of the Site will have changed from that of a lorry park to a building. This change is considered small and beneficial since the Site would be much tidier. The impact on trees during operation would continue, as no additional trees are likely to be planted due to hygiene reasons.

With the existing stand of mature trees providing visual screening from Man Kam To Road, the only visual impact will be to anyone walking on the hills (to visit graveyards, electricity pylons and above-ground pipes) behind the Site. These VSRs would see the new Plant. With a sympathetic architectural design for the Plant, and clean, tidy operations, the presence of the Plant is considered to be a visual improvement over the present lorry park and so represents a beneficial impact on the visual environment.

As described above, the Plant will be located behind the stand of mature trees along Man Kam To Road, so vehicles on this road will not be affected by any glare from the Site. There are no nearby VSRs with direct line of sight to the Site and therefore no VSRs will be affected by glare from any lighting within the Site.

## 3.7 Hazard to Life

There is one Potentially Hazardous Installation (PHI) located in the vicinity of the Site – the Sheung Shui Water Treatment Works (WTW). This is located approximately 500m east of the Site and is a PHI due to storage of chlorine.

Based on the size of the Plant, it is estimated that less than 150 construction workers will be present on site at any one time. During operation, it is estimated (based on similar plants overseas) that there will be 50 no. workers on the process line and an additional 50 no. management/administrative staff working at the Plant on a daily basis. At shift change, an additional 50 workers will be present in the Plant (although for less than 1 hour) and so the maximum number of workers at any one time will be around 150.

While the operation of the Plant will increase the number of workers within the Consultation Zone of the PHI, it is not considered that this will give rise to an unacceptable increase in risk. This is because the increase in the maximum number of workers is relatively small compared to the maximum number of lorry drivers who could be present with the existing Site at any one time, and because the PHI is separated from the Plant by a physical barrier (a natural hill) which will mitigate any hazard to life impact.

This hill is shown on Photograph 4-10 (with an electricity pylon on the top of the hill) from the main access road into the Site. Photograph 3-7, below, provides an aerial view showing the extent of this physical barrier.



**Photograph 3-7 Location of the Plant and the WTW PHI**

Small quantities of chlorine will be used in the processing/cleansing of chickens. If feasible, chlorine will not be used in the on-site wastewater treatment facility. In any event, storage of chlorine on site will be limited to no more than exempted quantity under the Dangerous Goods Ordinance (e.g. 250 litres for sodium hypochlorite solution, etc.). Storing such small quantities would not pose a hazard to life and proper handling and use of chlorine would be enforced by the Operator.

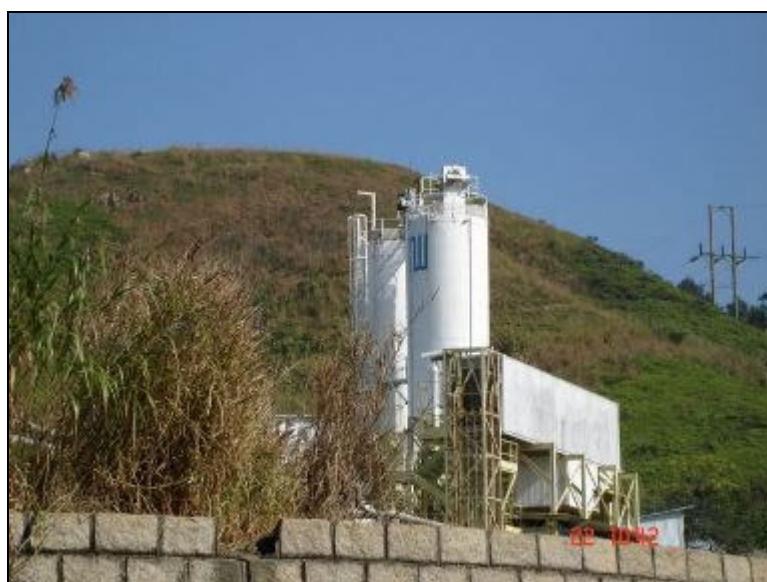
Based on the above, there is not considered to be an impact in terms of hazard to life for the project.

## 4

## Major Elements of the Surrounding Environment

The proposed Site is located on Man Kam To Road and is surrounded by hills, such that the Site is enclosed on northwest, northeast, and southeast (shown in Photograph 4-9) but is open to Man Kam To Road on the southwest (shown in Photograph 4-10). The hills surrounding the Site contain a number of electricity pylons and also a visible above-ground pipeline, shown in Photograph 4-9. At least one grave is located in the hills behind the Site, shown in Photograph 3-4.

To the northeast of the Site is a K-Wah concrete batching plant that appears to be abandoned, shown in Photograph 4-7, and to the southeast of the Site lies the semi-abandoned village of Hung Kiu San Tsuen, shown in Photograph 4-8.



**Photograph 4-7      K-Wah Concrete Batching Plant – Apparently Abandoned**



**Photograph 4-8      Small Village of Hung Kiu San Tsuen**



**Photograph 4-9 Hills Surrounding the Site (looking to the east) Providing a "Bowl" Effect**



**Photograph 4-10 Site Entrance and Man Kam To Road (and Stand of Mature Trees) to the Southwest of the Site**

## 5 Environmental Protection Measures to be Incorporated into the Design and Any Further Environmental Implications

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### 5.1 Construction Phase Measures

Although adverse environmental impacts during the construction of the Plant are not anticipated, it is still recommended that good site practice shall be implemented to further minimise any environmental impacts.

#### 5.1.1 Fugitive Dust

All debris and materials shall be covered or stored in a sheltered debris collection area. Dust control measures such as covering of lorries by impervious sheets and controlling of the falling height of fill materials, shall be implemented in accordance with Air Pollution Control Ordinance.

#### 5.1.2 Noise

It is recommended that the works contractor shall implement appropriate good practice to minimise noise impact. These practices may include:

- Only operate well-maintained plant.
- Shut down machines and plant that are not required.
- Use of quiet plant.

#### 5.1.3 Water Quality

The contractor of the project shall implement relevant good practice recommended in the *Practice Note for Professional Persons on Construction Site – Drainage*, Professional Persons Environmental Consultative Committee, EPD, 1994 (ProPECC PN 1/94).

#### 5.1.4 Waste Management

It is recommended that public fill and general refuse shall be segregated and stored separately for reuse, recycling or disposal. Waste shall be properly stored at site and windblown litter and dust shall be minimised during transportation by either covering trucks or transporting wastes in enclosed containers. The handling and disposal of chemical waste shall follow EPD's guidelines on chemical waste management.

Waste shall be disposed of at licensed sites and a disposal permit shall be obtained from appropriate authorities, if required, in accordance with the Waste Disposal Ordinance.

## 5.1.5 Landscape and Visual Impact

The existing stand of mature trees should be retained along Man Kam To Road to provide visual screening. It is further recommended that new run-in should be located at the natural break in the existing vegetation already identified so that tree removal can be minimised. Site hoarding should be decorated. The architectural treatment of the Plant should be tidy and attractive.

# 5.2 Operational Phase Measures

## 5.2.1 Air Quality

The Plant shall be maintained with a negative pressure. The ventilation system shall be installed with odour removal and disinfection equipment. To further reduce any potential odour impact, the ventilation exhaust location shall be located away from any ASRs.

## 5.2.2 Noise

The main operations of the Plant shall be enclosed, including for the unloading area. The design specification of the air conditioning unit, which will be located on the roof of the Plant building, shall comply with the noise criteria stipulated in the NCO and the EIAO-TM.

## 5.2.3 Water Quality

Wastewater from the Plant shall be treated and disinfected before being discharged into public sewer. The treated effluent discharge standards shall comply with EPD's TM-DSS and a Discharge Licence shall be obtained by the Plant operator.

## 5.2.4 Waste Management

The following measures shall be implemented during the operation of the Plant:

- Dead poultry and waste from the slaughtering process will need to be put in sealed bags and properly stored in a designated area prior to being transported to landfill for disposal to prevent potential hygiene problems.
- Avoid unnecessary packing material in order to minimise packing waste.
- Sludge from preliminary wastewater treatment plant shall be temporary stored in enclosed containers and shall be collected for disposal as soon as possible.
- The handling and disposal of chemical waste shall follow EPD's guidelines on chemical waste management.

## 6

## Reference To Previously Approved EIA Reports

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There are no previously approved EIA reports relevant to this project.