# Pyrolysis Plant at EcoPark

## Project Profile

January 2013

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Signature</th>
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<tbody>
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**Version:** Final **Date:** 23 Jan 2013

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1 BASIC INFORMATION

1.1 Project Title
1.1.1 Pyrolysis Plant at EcoPark (hereinafter referred to as the “Project”).

1.2 Purpose and Nature of the Project
1.2.1 The Project is to install and operate a pyrolysis oil production plant which converts the waste plastics into useful fuel oil through the pyrolysis process within the EcoPark in Tuen Mun. Currently, the waste plastics in Hong Kong is mainly disposed of at the landfill sites in Hong Kong or collected for export to other countries for recycling process. The Project is expected to have positive effects for the waste reduction strategy initiated by the Government of the Hong Kong Special Administrative Region in recent years, and also encourages the development of waste plastics recycling industry in Hong Kong.

1.3 Name of the Project Proponent
1.3.1 Hong Kong Telford Envirotech Group Ltd. (hereinafter referred to as the “Project Proponent”).

1.4 Location and Scale of the Project
1.4.1 The Project site is located at the EcoPark in Tuen Mun (133, Lung Mun Road, Tuen Mun Area 38, N.T. Hong Kong). EcoPark is one of the waste management facilities of the Environmental Protection Department of Hong Kong which aims to promote the local recycling industry by providing long term land for the environmental and recycling industry, as well as to alleviate the heavy reliance on the export of recyclable materials recovered in Hong Kong. EcoPark is situated on the newly reclaimed land, which has never been developed prior to the development of EcoPark. The park has a site area of 20 hectares which is developed in 2 phases and provides a total of 14 hectares of rentable land to the environmental and recycling industry at affordable costs, and has begun operation since 2007. EcoPark is currently designated as “Other Specified Uses (Resource Recovery Park (R.R.P.))” in the Tuen Mun Outline Zoning Plan (OZP) number S/TM/29.

1.4.2 The Project Proponent is one of the tenants for Phase I of the EcoPark under the Tenancy Number EP08-01, which has commenced operation since 2008. The land rented by the Project Proponent is around 5,000 square metres, which is situated at the North of the EcoPark, just beneath the EcoPark Administration Building, to the east of the Permanent Aviation Fuel Facility for Hong Kong International Airport (PAFF) and to the west of the Yan Oi Tong EcoPark Plastics Resources Recycling Centre inside the EcoPark. Currently, the Project Proponent used the rented site for processing the collected waste plastics, which include the plastic bottles, plastic bags, etc. to some plastics chips through shredding for further recycling use.

1.4.3 To enhance the recycling capability and revenues of the waste plastics, the Project Proponent proposes to install a total of 4 pyrolysis furnaces of 5-tonne capacity each at the rented site inside EcoPark. The Project is expected to handle approximately 20 tonnes of waste plastics per day for a daily production of approximately 12 tonnes of useful fuel oil products. The location of the subject site is illustrated in Figure 1.1.

1.5 Number and Type of Designated Project
1.5.1 An Environmental Impact Assessment Study (EIA Study) has been approved for the “Development of an EcoPark in Tuen Mun Area 38” in April 2005 (EIA Application Number EIA-104/2005). However, the EIA Study in 2005 has not covered the operation of fuel oil production plant(s) from the recovered waste plastics inside the EcoPark. Hence, a separate EIA Study is required for the future application of Environmental Permit for the legal operation of a fuel oil production plant inside the EcoPark in Hong Kong.
1.5.2 Considering the nature of the Project, it covers the designated project (DP) element as specified under Schedule 2 Part 1 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), Category K.7 – “An oil refinery”, in which the breakdown of waste plastics into pyrolytic oil and into useful fuel oil products at the proposed site fall into that category.

1.6 Name and Telephone Number of Contact Person(s)

1.6.1 Name: Ms. Joanne Lee
Company: Hong Kong Telford Envirotech Group Ltd.
Telephone No.: 2345 4388
2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Planning and Implementation

2.1.1 The Project will be planned and implemented by the in-house experts of Hong Kong Telford Envirotech Group Ltd. together with the external consultants and contractors.

2.2 Project Implementation Programme

2.2.1 The construction/installation of the Project is tentatively scheduled to commence in 2014 and complete by 2015.

2.3 Potential Interfacing Projects

2.3.1 The Project will be implemented within the established EcoPark and there might be interaction between the Project and other potential construction works at land lots within EcoPark Phase 2. However, the schedule of the construction works at the land lots of EcoPark Phase 2 is highly influenced the tendering process in the future, and so far, there are no solid tendering schedules for the remaining land lots in EcoPark Phase 2. Hence, no concrete list of interface projects within the EcoPark could be provided.

2.3.2 Based on the best available information from Waste Reduction and EcoPark Group (WRG) of EPD, there is no known interaction between the Project and other projects outside EcoPark which would give rise to cumulative environmental impacts in the vicinity of the Project site.
3 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1 Existing and Planned Sensitive Receivers

3.1.1 The major representative sensitive receivers (SRs) have been identified in accordance with the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). And the nearest noise sensitive receiver is more than 2km away from the Project site. The list of major environmental sensitive receivers is tabulated in Table 3.1 below and is illustrated in Figure 3.1. The list of sensitive receivers is not exhaustive and will be reviewed during the EIA stage.

<table>
<thead>
<tr>
<th>Description</th>
<th>Nature</th>
<th>Type of Sensitivity</th>
<th>Distance from Project Site (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration Building of EcoPark</td>
<td>Office</td>
<td>Air Quality</td>
<td>60</td>
</tr>
<tr>
<td>Offices of tenants within EcoPark (Nearest tenant: YOT EcoPark Plastic Resources Recycling Centre)</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>30</td>
</tr>
<tr>
<td>Permanent Aviation Fuel Facility (PAFF)</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>10</td>
</tr>
<tr>
<td>Shiu Wing Steel Mill</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>240</td>
</tr>
<tr>
<td>Green Island Cement Plant</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>430</td>
</tr>
<tr>
<td>Tuen Mun Area 38 Fill Bank</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>200</td>
</tr>
<tr>
<td>Tuen Mun Area 38 Temporary Construction Waste Sorting Facility</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>200</td>
</tr>
<tr>
<td>River Trade Terminal</td>
<td>Office / Factory</td>
<td>Air Quality</td>
<td>570</td>
</tr>
<tr>
<td>Office and work places in the restored Siu Lang Shui Landfill Site</td>
<td>Office</td>
<td>Air Quality</td>
<td>300</td>
</tr>
</tbody>
</table>

3.2 Existing Environment

3.2.1 The Project is located within the EcoPark in Tuen Mun Area 38. The project site is located next to the west boundary of the EcoPark. To the east of the site is the St. James’ Settlement “WEEE GO GREEN” EcoPark, YOT EcoPark Plastic Resources Recycling Centre. To the south is the Shiu Wing Steel Limited, On Fat Lung Electrical & Metal Co., Ltd., SSK Metal Limited, and other recycling industries of different types of waste materials including waste cooking oil, waste wood, waste metal, waste electronic and computer equipment, and waste car batteries. The recycling process could cause environmental impact in the vicinity.

3.2.2 Outside the EcoPark is the Lung Mun Road at the north, the road is the major access road between Lung Kwu Tan and Tuen Mun Town. Further north is the restored Siu Lang Shui Landfill site. At the west of the Project site are the PAFF for the Hong Kong International Airport, Shiu Wing Steel Mill, Green Island Cement Plant and Castle Peak Power Station, while at the east of the site are the Civil Engineering and Development Department’s public fill bank and the temporary construction waste sorting facility. Further west is the River Trade Terminal. To the south is the seaward side without any sensitive uses and effluent discharges.

3.2.3 The mentioned facilities could be the environmental polluting sources in the vicinity, while on the other hand is the sensitive receivers itself, for their offices and other respective working environment inside the facilities.
4 POSSIBLE IMPACTS ON THE ENVIRONMENT

4.1 Brief Description of the Project

4.1.1 The proposed pyrolysis plant for the EcoPark consists of four 5-tonne pyrolysis furnace systems. Each system has a handling capacity of 5 tonnes of waste plastics per day. The main reactor operates at the temperature range of 350°C to 450°C. Waste gases of the main reactor are mainly made up of \((CH_4 + C_2H_4 + C_2H_6 + C_3H_6 + C_2H_8 + C_3H_8 + C_4H_{10})\), depending on the composition of waste plastics input fed into the main reactor. After pyrolysis in the main reactor, a catalyst and a second combustion chamber is used to handle and treat the waste gases under designated temperature and pressure. The waste gases are fully burned in the second chamber, whereby the temperature is controlled at 850-1000°C. This is to thermally decompose the potentially aromatic substances as well as odour and gaseous dioxins. The heat generated then re-enters the main reactor, contributing to the heating of the main reactor which is required to maintain designated temperature. This heat reclamation is environmentally beneficial and reduces the cost of fuel used by the system.

4.1.2 The by-products from the system are mainly waste gases and ash. A waste gas cleaning system will be installed for each pyrolysis plant system to reduce the emission of waste gases. This waste gas cleaning system consists of a cyclone, a dosing device for the additive to bind the pollutants, a reactor with a ball rotor to improve the efficiency of the additive, and a bag filter to separate dust from the waste gases. The waste gases are finally exhausted from the 20-metre high chimney installed for each of the pyrolysis furnace system. A Continuous Emission Monitoring System (CEMS) will also be installed to continuously monitor the emission concentrations of waste gases.

4.1.3 Ash generated from the main reactor is mainly dry black carbon charcoal. The ash settles at the bottom of the reactor, where it is discharged out of the reactor via an automated screw pump, and brought to the ash bin. The ash collected in the ash bin will be disposed of every morning.

4.1.4 In term of the usage of water, a cooling water system will be developed for the pyrolysis plant system. The cooling water for the waste gas-oil separator is a closed circuit system. The cooling water would not contact with the waste gases. Hence, the cooling water will be re-used continuously and only discharged to a sedimentation tank every 3 months.

4.1.5 Each of the pyrolysis furnace system has a temporary storage tank of capacity of 1,000 Litres for storing the useful fuel oil extracted from the pyrolysis process. The useful fuel oil products will be collected 3 times every day. The process flow chart of one of pyrolysis plant is presented in Figure 4.1.

4.2 Environmental Scoping

4.2.1 In respect to the nature and scope of the Project as discussed in Section 1 and Section 4.1, potential impacts arising from the construction and operation of the Project have been identified and summarised in Table 4.1.

Table 4.1 Potential Impacts associated with the Construction and Operation of the Project

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Construction Phase</th>
<th>Operation Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality (including gaseous, dust and odour emissions)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Noise</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>Water Quality</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Waste Management</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Land Contamination</td>
<td>√</td>
<td>X</td>
</tr>
<tr>
<td>Landfill Gas Hazard</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Ecology</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Landscape and visual</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hazard to Life</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

Note: √ - Possible impact  
X – Impact not expected
4.3 **Construction Phase**

**Air Quality**

4.3.1 Dust emission may arise from the construction/installation of the pyrolysis plant. Construction works would include site formation, piling and foundation work, and concreting work. There is no extensive site formation works and the scale of construction site is limited. With the implementation of dust suppression measures stipulated under the Air Pollution Control (Construction Dust) Regulation and adoption of good site practice, no adverse construction dust impact would be expected.

4.3.2 Exhaust emissions may also arise from the operation of diesel-powered construction equipment. However, considering the small scale of the Project and limited area of the construction works, the number of diesel-powered plants would be less. Hence, no adverse air quality impact would be expected from the construction equipment.

**Noise**

4.3.3 The potential source of noise impact during the construction phase would mainly be the use of powered mechanical equipment (PME) for various construction activities. Considering the small scale of the Project, the number of PME would be limited, also the nearest noise sensitive receivers are the residents in villages at Lung Kwu Tan more than 2km away from the Project Site. Adverse noise impact during construction phase of the Project would not be expected.

**Water Quality**

4.3.4 The Project is to be built on a paved ground with adequate drainage connection to the site which is currently in use. With the limited area of excavation works at the Project site, no adverse water quality impact would be expected from the surface run-off. Domestic sewage would be generated from the workforce during the construction phase of the Project. However, the sewage could be drained to the current sewage drains within the site, no water quality impacts from the construction works of the Project would be expected.

**Waste Management**

4.3.5 No major earthworks will be required for the Project site, as the site has already been formed at the rented land of the Project Proponent which is currently in use. General refuse, including food waste from the workforce on site and the packaging from the construction materials will be generated. Chemical waste, like the batteries and lubricating oils from the maintenance of construction equipment and installation of the pyrolysis plant system will also be generated. However, the quantities of the general refuse and chemical waste generated would not be significant during the construction phase of the Project and no adverse impact would be expected.

**Land Contamination**

4.3.6 The Project site is currently used for processing the collected waste plastics (for example plastic bottles and plastic bags) to plastics chips through shredding for further recycling use and the activities had been carried out for approximately 5 years. Given the general nature of waste recycling facility, there could be potential land contamination issues within the Project site. Land contamination assessment will be conducted in the EIA study to identify the possible land contaminative activities and contaminants within the Project site.

**Landfill Gas Hazard**

4.3.7 The Project site is within the 250-metre Consultation Zone of the restored Siu Lang Shui Landfill, potential landfill gas hazard from the restored landfill would need to be considered.

**Ecology**

4.3.8 The Project site is on a reclaimed land with concrete pavement and no ecological value is found. Since the proposed plant will be constructed within the built ground of the EcoPark, no potential ecological impacts would be expected.
Landscape and Visual

4.3.9 Only temporary landscape and visual impacts will arise from the construction works and plant and from the presence of temporary structures, such as false work for structural elements.

Hazard to Life

4.3.10 With reference to the EIA Report of the Permanent Aviation Fuel Facility (PAFF), the Project site encroaches into individual risk contours for PAFF. Effects of construction phase, arising from increase in population and activities at the Project site, on the risk outcome would need to be evaluated.

4.3.11 There is a bio-diesel plant (Champway) in the EcoPark which is located at more than 200m away from the Project site in the southwest direction. Moreover, the Project site is separated from Champway by the PAFF, a waste metal yard and waste wood recycle plant. Referencing to the EIA for Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate with similar production capacity of Champway, the individual risk contours extend to 100m from the centre of the production plant. Based on the available information, Champway would not impose hazard to personnel at the Project site.

4.4 Operation Phase

Air Quality

4.4.1 Potential air quality impacts may arise from the combustion of fuels to supply the required heat energy for main reactors of the pyrolysis furnace system. Major air pollutants emitted from the exhausts of fuel combustion will include nitrogen oxides, sulphur dioxide and particulates.

4.4.2 The exhaust gases from the pyrolysis reactors are also a cause of concern of potential air quality impacts from the Project. The exhaust gases are mainly hydrocarbons. Harmful substances will be collected by the waste gas cleaning system before emitting out to the atmosphere.

4.4.3 Since each pyrolysis furnace system is connected to a storage tank, fugitive emission of volatile organic carbons may arise from the storage tanks, pumps and valves connected to the tanks.

4.4.4 Odour emission is also a potential issue due to the shredding of the waste plastics within the Project site.

Noise

4.4.5 The existing noise environment of the Project site is dominated by noise generated from activities within the EcoPark, as well as from other industrial facilities in the vicinity. Potential noise sources from the Project include shredding of waste plastics, valves and pumps of the pyrolysis furnace system. As mentioned in Section 4.3.3, the nearest noise sensitive receivers are the residents in villages at Lung Kwu Tan which is more than 2km away from the Project Site, and therefore, noise impact due to the Project will be insignificant.

Water Quality

4.4.6 As mentioned in Section 4.1.4, water in the cooling water system of the pyrolysis plant will be reused. Also, the Project site has already been connected to the nearest public sewer, and no adverse water quality impact would be expected during the operation of the Project.

Waste Management

4.4.7 As mentioned in Section 4.1.3, ash which is mostly dry black carbon charcoal, would be generated during the operation phase of the Project. The ash will be collected from the pyrolysis furnace system daily for potential reuse and recovery.

4.4.8 Chemical waste such as the spent lubricating oil, paint and oil filters from equipment maintenance will be properly collected and disposed of in accordance with Waste Disposal
(Chemical Waste) (General) Regulation. Considering the small quantities of equipment on site, the amount of chemical wastes that would be generated is small.

4.4.9 General refuse is expected to arise from the workforce during the operation of the Project. However, since the Project is not expected to generate a large amount of general refuse and the site has already been in use with proper waste management, adverse impact from general refuse is not expected.

**Land Contamination**

4.4.10 Land contamination (if any) within the Project site will be identified and possible remediation options will be addressed in the EIA study. As any not entirely contaminated soil / groundwater will be properly assessed and remediated, no land contamination issues are expected during the operation of the Project.

**Landfill Gas Hazard**

4.4.11 The Project site is within the 250-metre Consultation Zone of the restored Siu Lang Shui Landfill. It may have potential landfill gas hazard from the restored landfill.

**Ecology**

4.4.12 The project site is located at the existing industrial estate founded on reclaimed land, No ecological value is found on this land lot and potential ecological impacts would not be expected from the operation of the Project.

**Landscape and Visual**

4.4.13 The highest structure for the Project is the chimney for each of the pyrolysis furnace system, which is 20 metres high in the preliminary design. With reference to the Tuen Mun OZP (S/TM/29), structure of maximum height of 35 metres will be allowed for the whole EcoPark site. Also, with due consideration of the landscape and visual impacts from the EcoPark EIA Study, no adverse landscape and visual impact would be expected from the Project.

**Hazard to Life**

4.4.14 Potential hazard to life issue may arise from the four temporary fuel oil storage tanks which are used to store the useful fuel oil products for each of the pyrolysis furnace system. However, considering the small storage capacity for each tank (1,000 Litres fuel oil of diesel, 4,000 Litres total at the Project site) and the regular collection of the fuel oil products 3 times daily, no adverse hazard to life impact arising from the Project is expected.

4.4.15 On the other hand, pyrolysis gas is generated as an intermediate product in the production process. Pyrolysis gas is a flammable substance. Accidental release would lead to fire or explosion hazard. The potential risk to the surrounding population will need to be addressed. By the same as mentioned in Sections 4.3.9 and 4.3.10, potential cumulative hazard to life issue from the PAFF and the bio-diesel plant as well as escalation impact of the pyrolysis plant would need to be assessed should the operation of the Project site affect those neighbouring DG processing and storage facilities and vice versa.
5 ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 Construction Phase

Air Quality

5.1.1 Dust generation during construction is expected to be insignificant with the implementation of dust suppression measures stipulated in the APCO. These measures should be incorporated into the specifications of the works contracts.

Noise

5.1.2 The potential source of noise impact during the construction phase would mainly be the use of powered mechanical equipment (PME) for various construction activities. The nearest noise sensitive receivers are the residents in villages at Lung Kwu Tan more than 2km away from the Project Site. Adverse noise impacts are not anticipated due to great distance between the Project Site and the sensitive receiver. However, the construction activities would be planned and controlled in accordance with the Noise Control Ordinance (Chapter 400) published by EPD. If construction activities require the use of powered mechanical equipment during the restricted hours, particularly at night, the contractors would be required to obtain a Construction Noise Permit (CNP) and would need to achieve the applicable Acceptable Noise Level (ANL) with the necessary mitigation measures.

Water Quality

5.1.3 To avoid potential water quality impact during construction phase, guidelines stipulated in ProPECC PN 1/94 Construction Site Drainage should be properly followed to minimise site runoff, control erosion, and retain and reduce any suspended solids prior to discharge. Silt removal facilities should be provided and soil excavation work should be minimised on rainy days as far as practicable. Apart from these, earthworks final surfaces should be well compacted and the subsequent permanent works or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. The above measures would be incorporated into the specifications of the works contracts.

Waste Management

5.1.4 Waste management practices including the following control/mitigation measures are recommended during the construction phase. These measures should be incorporated into the specifications of the works contracts.

- Provision of sufficient waste disposal points and regular collection for disposal;
- Different types of waste should be sorted and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Provision of appropriate measures to minimise wind-blown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre;
- Any unused chemicals or those with remaining functional capacity shall be recycled; and
- Maximising the use of reusable steel formwork to reduce the amount of C&D materials.

The excavated fill material shall be used on-site as backfill material as far as possible.

Land Contamination

5.1.5 Further to the land contamination issue findings during the EIA stage, appropriate mitigation measures will be recommended during the construction phase.

Landfill Gas Hazard

5.1.6 As the Project site falls within the 250-metre Consultation Zone of the restored Siu Lang Shui Landfill, a landfill gas hazard assessment in accordance with the ProPECC Paper No. PN 3/96 and Landfill Gas Hazard Assessment Guidance Note is required.
5.1.7 Impact of construction activities for the pyrolysis plant on adjacent dangerous goods storage and processing facilities will be addressed. Hazard to life impact of the adjacent dangerous good storage and processing facilities on workers at the construction site of the plant will be assessed quantitatively.

5.2 Operation Phase

Air Quality

5.2.1 Detailed air quality assessment will be conducted during the detailed design of the plant process and components of the Project to determine the impacts of the exhaust gas emissions from the pyrolysis plant. Appropriate emission control systems will be recommended and incorporated in the project design to minimize the potential air quality impact on the nearby air sensitive receivers in the vicinity.

Noise

5.2.2 Noise generated from the fixed plants would be the potential noise sources of the Project. As the nearest sensitive receivers are residents in the villages at Lung Kwu Tan more than 2km away from the Project, the noise impact due to the Project would be insignificant.

Water Quality

5.2.3 The current design and process of the pyrolysis plant does not involve the production of large amount of waste effluents. Nevertheless, collection and appropriate treatment of waste effluent will be provided if necessary, to ensure the effluent discharge to the public sewer will meet the relevant water quality standards.

Waste Management

5.2.4 During the operation of the Project, any chemical waste will be properly stored in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste before collection for disposal by a licensed Chemical Waste Collector. General refuse will be stored in enclosed bins and relevant waste management will be adopted based on existing practice of the Project Proponent.

5.2.5 Appropriate arrangement will be made for the uptakers or recyclers any by-products, like the ash collected from the pyrolysis process to ensure maximum reuse and recycling of the recovered waste plastics.

Landfill Gas Hazard

5.2.6 As the Project site falls within the 250-metre Consultation Zone of the restored Siu Lang Shui Landfill, a landfill gas hazard assessment in accordance with the ProPECC Paper No. PN 3/96 and Landfill Gas Hazard Assessment Guidance Note is required.

Hazard to Life

5.2.7 The pyrolysis plant involves flammable gas in production process and storage of dangerous goods onsite. Impact of the pyrolysis plant on the surrounding population will be assessed quantitatively by taking into account escalation effects when detailed design and operation parameters of the plant are available.
6 USE OF PREVIOUSLY APPROVED EIA REPORTS

6.1.1 No previously approved report exists for the Project. However, reference may be made within the study area and for similar project from the following reports:

- Development of an EcoPark in Tuen Mun Area 38 (EIA-104/2005)
- Permanent Aviation Fuel Facility for Hong Kong International Airport (EIA-127/2006)
- Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate (EIA-156/2008)
FIGURES
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Administration Building of EcoPark</td>
<td>Office</td>
</tr>
<tr>
<td>2</td>
<td>Offices of tenants within EcoPark</td>
<td>Office / Factory</td>
</tr>
<tr>
<td>3</td>
<td>Permanent Aviation Fuel Facility (PAFF)</td>
<td>Office / Factory</td>
</tr>
<tr>
<td>4</td>
<td>SHIU WING STEEL MILL</td>
<td>Office / Factory</td>
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<tr>
<td>5</td>
<td>Green Island Cement Plant</td>
<td>Office / Factory</td>
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<td>6</td>
<td>Tuen Mun Area 38 Fill Bank</td>
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</tr>
<tr>
<td>7</td>
<td>Tuen Mun Area 38 Temporary Construction Waste Sorting Facility</td>
<td>Office / Factory</td>
</tr>
<tr>
<td>8</td>
<td>River Trade Terminal</td>
<td>Office / Factory</td>
</tr>
<tr>
<td>9</td>
<td>Office and work places in the restored Siu Lang Shui Landfill Site</td>
<td>Office</td>
</tr>
</tbody>
</table>
Figure 4.1 Process Flow Chart of the Pyrolysis Plant

1. Shredding of Waste Plastics
   - Collected Waste Plastics
   - Shredded Waste Plastics

2. Feeder
   - Conveyer

3. Waste Gas Cleaning System
   - Ash
   - Exhaust Gas to Chimney
   - The Exhaust Gas to the Atmosphere
   - The Ash for Further Reuse and Recycling

4. Main Reactor (Cracking Furnace)
   - Flue Gas Furnace

5. Second Combustion Chamber (Catalytic Tank)

6. Cooling Water System

7. Temporary Useful Fuel Oil Storage Tanks
   - Collection of Useful Fuel Oil

8. Waste Gas Management

9. Fuel Oil Market

10. Combustion Fuel