

**Project Profile for the Provision of
a Temporary Helipad at Tea Garden,
Ngong Ping for the Tung Chung
Cable Car Project**

Revised Draft

February 2005

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Issue and Revision Record

Rev	Date	Originator	Checker	Approver	Description
A	31/12/04	Env Team	AFK	-	Draft
B	26/01/05	Env Team	AFK	-	Revised Draft

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E. EXECUTIVE SUMMARY

E.1 Background

The Project comprises the provision of temporary helipad in the tea garden area at Ngong Ping for the Tung Chung Cable Car. The main purpose of this project is to provide a helicopter landing pad and refuelling stop at Ngong Ping in lieu of the temporary landing pad near Tower 2 as the Airport Authority (AA) will not permit the latter to be used. AA permits only helicopter lifting at the worksites close to Tower 2B.

The proposal is made to use a temporary helicopter landing pad at the tea garden at Ngong Ping to facilitate the transportation of materials to and from the work sites in the Lantau North Country Park for the Tung Chung Cable Car and to avoid extending the duration of the works within the Country Park. Another key function of the helipad is to allow refuelling of the helicopters to maximise the rate of work and therefore minimise the duration of their use, and to minimise time lost between lifts.

E.2 Scale of the Project

It is proposed that the temporary helipad at the tea garden at Ngong Ping will be confined to an area of 20m by 20m. Construction activities will involve minor vegetation clearance including cutting of tall grasses and a few bushes to form the helipad. Helicopter and construction materials to be delivered will just sit on the ground. It is anticipated that the construction period will be in a very short term.

E.3 Implementation Strategy

The helicopter will be operated to and from the helipad at Ngong Ping over an eight-month period (maximum duration). The works will keep the construction period to the minimum. With this implementation put in place, the cumulative and overall environmental impacts would be minimised.

E.4 Conclusions of the Assessments

Air Quality : Air quality impacts resulting from the temporary helipad are predicted not to exceed air quality criteria or impact on sensitive receivers (residences) with mitigation measures.

Noise : During the operation of the proposed helipad, helicopter noise impact is anticipated to be acceptable as the proposed helipad is distant from the nearby NSRs. The predicted noise level at all NSRs is compliant to the noise limit without mitigation measures. Therefore, no noise mitigation measures are required.

Water : No significant water quality impact is anticipated due to provision of the temporary helipad. However, in the event of an accidental fuel spillage, it is recommended to implement the measures given in the Emergency Response Plan.

Ecology : No significant impact is anticipated in terms of ecology due to provision of the temporary helipad with the implementation of mitigation against fuel spillage and increased risk of hill fires.

Landscape and Visual : No significant landscape and visual impact is expected due to the fact that there would be no permanent structure for the helipad and no lighting at during non-operation hours.

Hazard to Life : The potential risks to people arising from the construction and operation of temporary helipad at Ngong Ping are acceptable as long as the Method Statement and Emergency Response Plan are in place to ensure the proper fuel handling and storage, refuelling process, spill cleaning and disposal, safety precautions, emergency responses governed by the Dangerous Goods Ordinance Chapter 295, as well as safe delivery of construction material at all times.

Environmental Monitoring and Audit : This section is complimentary to the “Code of Practice for the Works of Tung Chung Cable Car Project” (March 2003), and the EM&A Manual prepared for the Tung Chung Cable Car Project. With regard to the proposed temporary helipad particular attention is drawn to the noise and risks for the proposed helipad for the purposes of refuelling at Ngong Ping. Mitigation measures for all environmental impacts will follow those given in **Section 14** of the Approved EIA for the Tung Cable Car EIA (Study Brief No. ESB-068/2001).

Summary : The impacts associated with the construction and operation of the temporary helipad site at Ngong Ping are acceptable.

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1. BASIC INFORMATION

1.1 Project Title

Provision of a Temporary Helipad at Tea Garden, Ngong Ping for the Tung Chung Cable Car Project

1.2 Purpose and Nature of the Project

The Project comprises the provision of temporary helipad in the tea garden area at Ngong Ping for the Tung Chung Cable Car. The main purpose of this project is to provide a helicopter landing pad and refuelling stop at Ngong Ping in lieu of the temporary landing pad near Tower 2 as the Airport Authority (AA) will not permit the latter to be used. AA permits only helicopter lifting at the worksites close to Tower 2B.

The proposal is made to use a temporary helicopter landing pad at the tea garden at Ngong Ping to facilitate the transportation of materials to and from the work sites in the Lantau North Country Park for the Tung Chung Cable Car and to avoid extending the duration of the works within the Country Park. Another key function of the helipad is to allow refuelling of the helicopters to maximise the rate of work and therefore minimise the duration of their use, and to minimise time lost between lifts.

Serious consideration has been given to searching for alternatives to the use of a helipad including the use of mules, labourers etc. However as a large lifting capacity of about 5 tons is needed, the basic tenet is to minimise the duration of work in the Country Park. It appears that a temporary helipad at Ngong Ping is an essential component to achieving successful completion of the project while minimising environmental/ecological impacts on the Country Park.

1.3 Name of Project Proponent

MTR Corporation Limited

1.4 Contact Persons

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1.5 Location of the Project

The works are located to the east of the proposed Theme Village and Ngong Ping Cable Car Terminal in the tea garden area at Ngong Ping. The area will be used for the landing and refueling of 1 or 2 helicopters. The location of the proposed temporary helipad and tentative flight path are shown on **Figures 1.1** and **4.1** respectively for reference.

The Cable Car Terminal site has previously been subject to an Environmental Impact Assessment (EIA) under Section 5(7) of the Environmental Impact Assessment Ordinance (EIAO) (Study Brief No. ESB-068/2001) while an Environmental Assessment has been prepared for the Theme Village under Section 16 of the Town Planning Ordinance (cap. 131).

1.6 Scale of the Project

It is proposed that the temporary helipad at the tea garden in Ngong Ping will be confined to an area of 20m by 20m. Construction activities will involve minor vegetation clearance including cutting of tall grasses and a few bushes to form the helipad. Helicopter and construction materials to be delivered will just sit on the ground. It is anticipated that the construction period will be in a short term.

1.7 Site History and Existing Condition

The temporary helipad at the tea garden in Ngong Ping is proposed by the Contractor. The tea garden is privately owned. The site is situated in the east of Statue of Buddha and is bounded by Access Road to the south. The cable car development is currently under construction immediately west of the site. A general overview of the site is shown on **Plate 1**.

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

The proposed temporary helipad is a designated project (DP) under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) under Schedule 2 Part I Item B.2 of the EIAO by virtue of: "A helipad within 300m of existing or planned residential development."

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Planning

The provision of a temporary helicopter landing pad and refuelling stop at the tea garden at Ngong Ping is proposed by MTR's appointed Contractors. The helicopter operations are anticipated to commence early in 2005 and to be completed by the end of August 2005.

2.2 Implementation Strategy

The helicopter will be operated to and from the helipad at Ngong Ping over an eight-month period (maximum duration). The works will keep the construction period to the minimum. With this implementation put in place, the cumulative and overall environmental impacts would be minimised.

2.3 Project Interfaces

The construction works of the temporary helipad at the tea garden will interface with the following project:

Provision of Water Supply to Ngong Ping by WSD : The proposed watermains works are now under construction and are anticipated to be completed in August 2005. The cumulative and overall environmental impact would be minimised as the helipad works will keep the construction period to the minimum.

3. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1 Air

3.1.1 Existing Environment

No industrial uses are located within the area. The local traffic using the Ngong Ping Road and other local access roads are the dominant sources of emissions to affect ambient air quality in Ngong Ping and its environs. The construction dust generated by the adjacent construction site for a water supply work by Water Supplies Department may possibly be the source of air pollution.

3.1.2 Sensitive Receivers

Representative Air Sensitive Receivers (SRs) within 500m of the Project limit have been identified according to the criteria set out in the Technical Memorandum on Environmental Impact Assessment Process (TMEIA) and through site inspections and a review of land use plans. At this site the Sensitive Receivers are the same for noise and air and their horizontal distances to the site boundary have been identified and are summarized in the **Table 3.1** below. Locations of the SRs are shown in **Figure 3.1**.

Table 3.1: Locations of Air and Noise Sensitive Receivers

SRs	Receiver Description	Usage	No. of Storey(s)	Shortest Horizontal Distance to the Proposed Helipad
SR 1	The S.G. Davis Hostel	Other-hostel	2	263m
SR 2	Village House at Tea Garden	Residential	1	335m

3.2 Noise

3.2.1 Existing Environment

The proposed temporary helipad site is within the tea garden at Ngong Ping. The major noise source is the traffic noise from adjacent private roads other than the construction noise arising from WSD project - Provision of Water Supply to Ngong Ping.

3.2.2 Sensitive Receivers

Representative Noise Sensitive Receivers (NSRs) surrounding the proposed helipad have been identified according to the criteria set out in the TMEIA and Noise Control Ordinance (NCO), as well as made reference to the approved Tung Chung Cable Car EIA. At this site the Sensitive Receivers are the same for noise and air and their shortest horizontal distances to the proposed helipad have been identified and are summarised in **Table 3.1** above. Locations of the SRs are shown in **Figure 3.1**.

3.3 Water

3.3.1 Existing Environment

The Ngong Ping Stream flows through the boundary of the sites for the Cable Car Terminal and Theme Village Complex but does not directly connect with the proposed helipad at the tea garden. While there are no records of the water quality in this stream, observations between 2002 and 2003 (Mott Connell) indicate that the water course downstream is stressed through the effects of pollution primarily from domestic sources. Existing pollution sources generally related to the domestic effluents generated by the Ngong Ping community.

Plans to construct the Ngong Ping Sewage Treatment Plant and sewerage scheme will remove this source of pollution away from this stream in 2007 when all village houses are connected to the STP and water quality is expected to improve greatly. Although some water quality improvement will occur after 2005, it is anticipated to remain poor in the diverted stream until full connection of the Ngong Ping Village sewerage by 2007. This stream now has been re-aligned and diverted which in overall terms will provide benefits to the area.

3.3.2 Sensitive Receivers

The streamcourse of tea garden is a sensitive receiver. The stream is located in the Water Gathering Ground (WGG). The closest distance between the stream and the site boundary of the temporary helipad is some 30m.

3.4 Ecology

3.4.1 Existing Environment

Ngong Ping Site of Special Scientific Interest

Ngong Ping SSSI was designated in May 1999 as its seasonal wooded streams provided habitat for the endemic and rare Romer's Tree Frog *Philautus romeri*. This SSSI is in an area located outside the Country Park. It was a former tea plantation area and is of special scientific interest due to the presence and the confirmed breeding of the locally rare Romer's Tree Frog (*Philautus romeri*). The Ngong Ping valley was confirmed to support the largest population of the endemic Romer's Tree Frog.

Ngong Ping Conservation Area

The Conservation Area (CA) is intended to protect and retain the existing natural landscape, ecological or topographical features of the area for conservation, educational and research purposes and to separate sensitive natural environment such as SSSI or Country Park from the adverse effects of development. This CA is also to conserve its natural state in safeguarding the integrity of the natural system of the wider area, and to safeguard against contamination the upstream areas of the streamcourses and the water gathering ground. The proposed helipad is located in this CA and is generally dominated by grassland habitat. Species that are locally abundant include *Miscanthus*.

Vegetation/ Habitat

The habitat type surrounding Ngong Ping is a mixture of village houses (developed area), plantation woodland, shrub habitat, active/abandoned agricultural land.

Stream Habitat

Ngong Ping Stream varies in quality, for example the stream supports Romer's Tree Frogs in the SSSI upstream and also has a poor water (evidence by visible hydrocarbon sheen in December 2002) and evidence of the discharge of wastes from Ngong Ping village. The area of stream at the nullah location is considered to be of a lower value because of this contamination.

3.4.2 Sensitive Receivers

The streamcourse of tea garden is potentially a sensitive receiver and has been considered in the assessment as well as the Water Gathering Grounds.

3.5 Landscape and Visual

3.5.1 Existing Resources

Ngong Ping area consists of distinct landscape character units (LCU) and can be readily differentiated from neighbouring areas. The landscape units identified at Ngong Ping are:

- Monastery and Village Settlement;
- Buddha Statue;
- Ngong Ping Road; and
- Transport Terminus and Burial Areas.

3.5.2 Sensitive Receivers

The main Visual Sensitive Receiver (VSR) group affected by the temporary helipad will be village residents and to some extent visitors exploring the local lanes and paths. This group of VSRs will be closest to the helipad. The number of VSRs in this group is difficult to estimate but will include a relatively small number of residents and visitors to the adjacent village houses.

3.6 Hazard to Life

Passengers are the sensitive receivers directly exposed to the potential hazards arising from the temporary helipad.

4. POTENTIAL ENVIRONMENTAL IMPACTS

4.1 Introduction

The impacts associated with the temporary helipad are assessed according to the criteria listed in Annexes of the Technical Memorandum on Environmental Impact Assessment Process (TMEIA). The major potential impacts during operation of the helipad are show below in **Table 4.1**. Construction period will be in a very short term and construction activities involving minor vegetation clearance will only be taken place.

Table 4.1: Major Potential Impacts during the Operation of the Helipad

Potential Impacts		Operation
Air quality	Dust pollution	✓
	Odour pollution	✗
	Exhaust emissions	✓
Noise	Helicopter Motors	✓
Waste generation	Disposal of spoil	✗
Water quality	Effluents	✗
	Erosion and sedimentation	✗
Ecology	Impacts on fauna	✗
	Impacts to flora	✗
Landscape and visual amenity	Unightly visual amenity	✗
	Landscape amenity	✗
Hazard to life	Loss of life or injury	✓

Notes: ✓ = Possible; ✗ = Not anticipated

It should be noted that the potential impacts during the construction phase are minimal. For all other environmental aspects the focus of attention shall be concentrated on the operation phase.

4.2 Air Quality

Fugitive dust arising from the helicopter take-off and touchdown could cause a localised nuisance but this is unlikely to be significant. It is also a situation which can be easily mitigated using water sprays if the problem occurs.

4.3 Noise

4.3.1 Introduction

This section outlines the potential noise impacts arising from provision of the proposed temporary helicopter landing pad and refuelling stop at the tea garden, Ngong Ping. A noise impact assessment has been undertaken to define the nature and scale of potential environmental impacts, specifically in terms of the effects in the vicinity of sensitive receivers. Operational phase impacts have been assessed and mitigation measures have been identified to determine whether residual impacts can be reduced to acceptable levels.

Noise sources during construction of the temporary helipad are primarily from the use of Powered Mechanical Equipment (PME) on site. Construction activities involving the use of PME include only minor vegetation clearance. These construction activities are considered to be minor in a short period of time and only limited number of plant will be used. Also, the proposed site is located in a remote area away from surrounding NSRs, so the construction noise impacts on the NSRs will be insignificant.

4.3.2 *Potential Sources of Impact*

The potential noise impacts of the project during operation are due to the use of helicopters to transport construction materials and plants for the Cable Car Project. The noise levels generated by helicopters vary in different operating modes including take-off, approach, flyover and idling. Two types of helicopter, LAMA and KAMOV KA-32A12 are proposed by the Contractors.

4.3.3 *Prediction of Potential Impacts*

According to Table 1A in Annex 5 of EIA-TM, the noise criteria for evaluating helicopter noise are in terms of L_{max} in dB(A) between 0700 and 1900, and the criteria for different uses are listed in **Table 4.2** below.

Table 4.2: Noise Standards for Helicopter Noise

Uses	Helicopter Noise Standards L _{max} in dB(A), 0700 to 1900
All domestic premises including temporary housing accommodation	85
Hotels and hostels	85
Offices	90
Education institutions including kindergartens, nurseries and all others where unaided voice communication is required	85
Places of public worship and courts of law	85
Hospitals, clinics, convalescences and homes for the aged, diagnostic rooms, wards	85

Notes:

- The above standards apply to uses which rely on opened windows for ventilation.
- The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

The noise impact from helicopters can be evaluated as a point source, since the proposed helipad and the helicopter flight path are far from noise sensitive receivers.

For the take-off, approach and idling modes, the noise source point is assumed in mid south-eastern edge of the helipad and 6m above helipad ground. This is because the noisiest components of helicopter are the rotor / motor which are at the top of helicopter at about 3.5m above ground plus 1.5m hovering height, and in accordance with the information from Civil Aviation Department (CAD), the slope of the take-off climb is about 8%. This implies the climb up/drop down height for take-off/approach to/from a higher point at the helipad edge is about 1m. Therefore, the noise source at 6m (3.5m + 1.5m + 1m) above ground at the edge is assumed.

For the flyover mode, the nearest point to the identified NSRs along the flight path is considered as the noise source point. This point is also assumed in mid south-eastern edge of the helipad and 152m (500ft) above ground. The assumed noise source point is shown in **Figure 3.1**.

Since the location of the proposed helipad is screened by surrounding topography (i.e. the proposed helipad cannot be viewed from the identified NSRs), a negative topographical correction of 5dB(A) is applied to the helicopter noise impact assessment. With reference to the survey maps, the assessment height of NSRs is identified and listed in **Table 4.3**.

Table 4.3 Assumed Assessment Height of NSRs

NSR ID	Ground Level ¹ , mPD	Assessment Floor ²	Assessment Height above Helipad Ground ³ , m
SR1	458	First Floor	10
SR2	446	Ground Floor	-4.8 ⁴

Notes:

- 1 The ground level of the proposed helipad is about 452mPD.
- 2 The floor height is assumed to be 2.8m.
- 3 The assessment points are located at 1.2m above the assessment floor.
- 4 Negative value means the assessment height of the NSR is below the ground level of the proposed helipad.

For the assessment purpose, the noise levels for LAMA (in L_{max} dB(A)) and KAMOV KA-32A12 (in EPNdB) in different operating modes were provided by CAD and MTRC's appointed Contractor respectively. These noise data are tabulated in **Table 4.4** below.

Table 4.4: Noise Data for Helicopters in Different Operating Modes

		Noise Data in dB(A)
LAMA ¹	<i>Take-off</i>	94.7
	<i>Flyover</i>	85.9
	<i>Approach</i>	89.1
	<i>Idling</i>	88.3
KAMOV KA -32A12 ²	<i>Take-off</i>	93.5
	<i>Flyover</i>	99.4
	<i>Approach</i>	96.8

Notes:

- 1 Noise data of LAMA (L_{max} normalised at 120m) were provided by Civil Aviation Department.
- 2 Noise data of KAMOV KA-32A12 (in EPNdB) were measured in accordance with the norms of International Civil Aviation Organisation (ICAO) Annex 16, Chapter 8 provided by the Contractor, Leitner.

In practice, the noise levels in EPNdB can be converted to L_{max} by deducting 13, i.e. $L_{max} = EPNdB - 13$. Based on this approximate relationship, the noise levels of KAMOV KA-32A12 in EPNdB are converted to L_{max} in dB(A). The L_{max} and the respective reference distance are summarised in **Table 4.5** below.

Table 4.5: L_{max} for KAMOV KA – 32A12 in Different Operating Modes

		Reference Distance* in m	L_{max} in dB(A)
KAMOV KA -32A12 ²	<i>Take-off</i>	156	80.5
	<i>Flyover</i>	150	86.4
	<i>Approach</i>	120	83.8

Note:

- * The reference distances are based on the measurement procedures stated in ICAO Annex 16, Chapter 8.

It should be noted that only one helicopter will be hovering at or using the helipad at any give time. Therefore, no cumulative noise impact arising from two or more helicopters is anticipated.

The helicopter noise impact assessment is based on standard acoustic principles. Reference is made to the *Technical Assessment Report for the Development of a Domestic Heliport at Sheung Wan*. The L_{max} (in dB(A)) at NSRs is predicted from the noise data shown in **Table 4.4** by applying the distance correction, façade correction and topographical correction (not applied to flyover mode). The following equation is adopted in the assessment.

$$(1) L_{max}[at\ NSR] = L_{max}[reference] - 20 \log (D[NSR-source] / D[reference]) + 3 - 5$$

where

- $L_{max}[at\ NSR]$ = L_{max} in “dB(A)” predicted at NSR
- $L_{max}[reference]$ = L_{max} reference in “dB(A)” provided by manufacturer or by noise measurements
- $D[NSR-source]$ = the shortest slant distance in “m” between NSR and the noise source
- $D[reference]$ = the reference distance between the measurement location and the noise source in “m” for the $L_{max}[reference]$
- + 3 is the façade correction
- - 5 is the negative topographical correction (not applied to flyover mode)

In accordance with the above equation (1), the L_{max} at the representative NSRs is predicted and summarised in **Table 4.6**.

Table 4.6: Predicted Noise Levels in L_{max} at NSRs

NSR ID	Predicted L_{max} at NSRs in dB(A)						
	LAMA				KAMOV KA -32A12		
	<i>Take-off</i>	<i>Flyover</i>	<i>Approach</i>	<i>Idling</i>	<i>Take-off</i>	<i>Approach</i>	<i>Flyover</i>
SR1	85	80	80	79	73	74	83
SR2	83	79	78	77	71	72	81

Note:

Shaded figures donate noise exceedance, i.e. exceed L_{max} of 85dB(A) as stipulated in EIA-TM.

4.3.4 Evaluation of Impacts

The prediction results show that the helicopter noise levels in different operating modes are in compliance with the noise criterion of 85dB(A) as stated in EIA-TM. LAMA type helicopter would generate higher noise than KAMOV type in the take-off and approach modes, especially during helicopter take-off, but KAMOV gives a higher noise level than LAMA during flyover.

Since no noise exceedances are predicted at all NSRs, noise mitigation measure is not required. However, a flight envelope is proposed to avoid exceeding of helicopter noise at any time. **Figure 4.1** shows the proposed flight envelope and the tentative flight path for flyover at 500-600ft (152-183m) above ground.

4.4 Waste

The wastes generated due to the operation of the proposed temporary helipad is anticipated to be minimal. The potential waste impact arising from the helipad is therefore considered not an issue.

4.5 Water

4.5.1 Introduction

This section outlines the potential water quality impacts arising from the operation of the proposed temporary helipad. A water quality review has been undertaken to define the nature and scale of potential environmental impacts, specifically in terms of the effects in the vicinity of sensitive receivers. Operational phase impacts have been evaluated and mitigation measures have been identified to determine whether residual impacts can be reduced to acceptable levels.

4.5.2 Potential Sources of Impact

Accidental spillage of fuel during operation which would potentially affect the water quality and impact on the stream at some 30m away and the Water Gathering Ground (WGG) in which the stream is located.

4.5.3 Evaluation of Impacts

In an event of accidental fuel spillage, the potential water quality impact could be mitigated to acceptable levels with implementation of the mitigation measures. Developed Emergency Responses Plan to spillages will continue to be followed in case of accidental fuel leakage and spillage on site. Drills will also be conducted at regular intervals to ensure that workers are trained in emergency spill response. In addition to this, proposed fuel storage on site will avoid to be located close to the streamcourse. Regular environmental monitoring, audit and reporting in particular during the wet season will ensure effective implementation of the mitigation measures during operation.

4.6 Ecology

4.6.1 Introduction

This section outlines the potential ecological impacts arising from operation of the proposed temporary helipad. An ecological review has been undertaken to define the nature and scale of potential environmental impacts, specifically in terms of the effects on sensitive receivers. Operational phase impacts have been evaluated and mitigation measures have been identified to determine whether residual impacts can be reduced to acceptable levels.

4.6.2 Potential Sources of Impact

The potential terrestrial ecological impacts arising from the operational activities may include indirect impacts due to noise nuisance from helicopter operations, accidental spillage of fuel and increased risk of hill fires etc. Potential operation phase impacts may arise from:

- disturbance of flora and fauna from noise nuisance, blown dust, etc.
- accidental spillage of fuel may cause impacts on stream habitats by pollution.
- contamination the streamcourses of tea garden in CA and the water gathering ground in which the stream is located.

4.6.3 Evaluation of Impacts

The potential ecological impact could be mitigated to acceptable level with implementation of the mitigation against spillage of fuel and increased risk of hill fires. Disturbance impacts during the operational phase are associated with increased noise nuisance. These impacts however are considered acceptable considering the operation period on a short term basis. In addition to this, proposed fuel storage on site will avoid placement close to the streamcourse.

4.7 Landscape and Visual

4.7.1 Introduction

This section outlines the potential landscape and visual impacts arising from the operation of the proposed temporary helipad. A review has been undertaken to define the nature and scale of potential environmental impacts, specifically in terms of the effects on sensitive receivers. Operational phase impacts have been evaluated and mitigation measures have been identified

to determine whether residual impacts can be reduced to acceptable levels.

4.7.2 Potential Sources of Impact

The particular landscape impacts arising from the helipad are predicted to include temporary landscape impacts during construction of helipad.

Landscape impacts during construction for minor vegetation clearance will temporarily disturb an area of 20m by 20m.

4.7.3 Evaluation of Impacts

Since the temporary helipad would have no permanent structure and no lighting during non-operation hours (peak operating hours: 8:00 a.m. to 6:00 p.m.), it is not anticipated there would be any landscape or visual impact.

4.8 Hazard to Life

4.8.1 Introduction

This section outlines the potential safety impacts to people arising from the operation of the proposed temporary helipad. A hazard review has been undertaken to define the nature and scale of potential impacts, specifically in terms of the effects in the vicinity of sensitive receivers. Operational phase impacts have been evaluated and mitigation measures have been identified to determine whether residual impacts can be reduced to acceptable levels.

4.8.2 Potential Sources of Impact

Potential safety impacts to people arising from the operation of temporary helipad may come from the followings:

- Aviation fuel delivery in barrel to refuelling area at Ngong Ping;
- Fuel handling and storage of 4000 L at helipad refuelling area;
- Refuelling process at the helipad refuelling area;
- Construction material delivery by helicopter; and
- Fuel spillage.

With regard to the ways to deliver fuel to Ngong Ping using bowser, proposed by the Contractor is subject to Transport Department's permission to use the Tung Chung and South Lantau closed road.

4.8.3 Prediction of Potential Impacts

Potential safety impacts are mainly fire arising from the fuel delivery, handling and storage, refuelling process and fuel spillage as well as the falling of objects during the delivery of construction materials. The proposal by the Contractor to install four tailor-made containers on site for fuel storage would likely increase the risks significantly. The volume is in excess by 100-200% of the Dangerous Goods Licence exemption for aviation fuel (classified as Category 5, Class 2) of 20-40L storage limit.

4.8.4 Evaluation of Impacts

With necessary control measures in place, the likely occurrence of impacts arising from the above sources should be very low. Since the fuel to be delivered, handled and stored will be followed in accordance with the requirement of Dangerous Goods Ordinance and Regulation,

the consequence of fire should be minimal taking into account the emergency response plan.

The Contractor shall follow **Table 4.7** below detailing the storage requirements in Regulation 99 for dangerous Goods in Category 5, Class 2 (Flash point of or exceeding 23 degrees but not exceeding 66 degrees).

Table 4.7: Requirements for Storage of Aviation Fuel

Details of main or inner packing	Minimum air space or ullage	Maximum quantity of substance in inner container or net weight of contents	Details of protective or outer packing	Maximum quantity for which no licence is required
(1) Glass, earthenware or plastic containers of suitable make, hermetically sealed	2.5%	5L	(1) For transport only - Packed in wooden case, or strong fibreboard cases with suitable protective material such as sawdust or thick corrugated paper. Not more than 75L in each case.	20L of any substance but not more than 40L in the aggregate. In the case of Polishes, 250L if liquid or 250kg if solid.
(2) Tins or tubes of suitable make, hermetically sealed	2.5%	5L	(2) For transport only – Packed in wooden cases, or strong fibreboard cases approved by the Authority. Not more than 75L in each case.	
(3) Suitable metal containers, hermetically sealed	2.5%	500L	(3) -	

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 Air

The placement of concrete paving would significantly reduce fugitive dust from helicopter take off and touch down. However this could be controlled with a water spray if needed. Additionally, placement and removal of concrete would impact re-vegetation on site. For the temporary helipad, it is recommended that no concrete paving be placed. Any fuel spill could be dealt with on a localized basis as well.

5.2 Noise

Noise exceedances are not predicted during the helipad operation, thus no noise mitigation measure is required. However, a flight envelope for flyover is recommended as a precautionary measure (please refer to **Figure 4.1**) to ensure the helicopter noise levels are always acceptable.

5.3 Water

The Contractor should construct, remove and reinstate, as necessary, temporary helipad works and take all other precautions necessary for the avoidance of aviation fuel washed down from the works. The Contractor should also provide adequate precautions to ensure that no silt or fuel is allowed to be washed down into the streamcourses adjacent to the helipad site.

Emergency Responses to Spillages

An Emergency Response Plan has been developed specifically to prevent spillage of any contaminated water from entering the drainage system and thereby the receiving waters of adjacent stream courses.

Developed emergency plans and clean up procedures provided by the Contractor, recognising his specific working methods and construction programme, activities and sequences, will be followed. The emergency plan includes the procedures for:

- spill prevention and precaution;
- response actions; and
- spill clean up and disposal.

Spill prevention and precaution embraces good site practice and covers:

- good housekeeping practices;
- oil-absorbent material readily available in case of spillage during refuelling operation;
- no discharge of aviation fuel into drainage system;
- chemical storage requirements; and
- chemical transfer and transport.

Detailed response actions have been clearly stated in the developed emergency plan and training to implement the responses will continue to be provided to all staff. Emergency response plan has contained procedures, telephone numbers and actions/responses to “prevent an accident becoming an emergency”. The Emergency Response Plan and clean up procedure outlined the Tung Chung Cable Car EIA will continue to be adopted.

Chemical Wastes Disposal

Disposal of chemical wastes should be carried out in the compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements include:

- suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; and
- chemical waste containers should be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents.

Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.

5.4 Ecology

Disturbance to Habitats (Waste/ Air Pollution/ Water Pollution)

- Workers shall not leave any litter on site. Litter shall not be burned on site but shall be removed off site. All surplus construction materials brought onto site shall be removed from site and daily clearance of general litter shall be undertaken. Particular care shall be taken with bottles, wire, polystyrene lunch boxes, plastic wrapping, cans and non-degradable materials.
- Animals shall not be fed and no food shall be left for any animals and no pets of any type shall be allowed on any site. Workers shall not disturb birds and other animals.
- Watercourses shall not be polluted with soaps, detergents or excretion.

5.5 Hazard to Life

5.5.1 Recommended Mitigation Measures during Construction / Operation

- Permits or licences should be obtained, if required, from government department concerned for fuel delivery, handling and storage prior to the commencement of this project by the Commercial Helicopter Services Operators.
- As per Chapter 295B Dangerous Goods (General) Regulation 99, storage of volume in excess of the Dangerous Goods Licence exemption, a licence hence would be required from Fire Services Department.
- All precautions and control measures as stipulated in DG Regulations shall be strictly followed in Packing, Conveyance and Storage of fuel.
- Refuelling operation should only be conducted by competent person at the designated refuelling area at Ngong Ping.
- A Method Statement for using helicopter during construction and erection of cable car, e.g. load lifting and delivery, passenger carriage and refuelling operation at Ngong Ping, etc. should be developed for approval by the Engineers.

- The developed Emergency Response Plan which documents the measures for preventing fire during helicopter refuelling and spillage of any contaminated water, response actions as well as procedures for spill cleaning up and disposal should be followed.

5.5.2 Conclusions

With the above mentioned mitigation measures implemented, the potential risks to people arising from the construction and operation of temporary helipad at the tea garden at Ngong Ping would be minimised to an acceptable level.

6. ENVIRONMENTAL MONITORING AND AUDIT

6.1 Introduction

This section is complimentary to the “Code of Practice for the Works of Tung Chung Cable Car Project” (March 2003), and the EM&A Manual prepared for the Tung Chung Cable Car Project. With regard to the proposed temporary helipad particular attention is drawn to the noise and risks for the proposed helipad for the purposes of refuelling at Ngong Ping. Mitigation measures for all environmental impacts will follow those given in **Section 14** of the Approved EIA for the Tung Cable Car EIA (Study Brief No. ESB-068/2001).

6.2 Noise

Although there are no statutory requirements for noise monitoring in operational phase, noise measurements for helicopter noise are proposed to ensure the noise levels L_{max} comply with the EIA-TM criterion of 85dB(A).

Regular noise measurements are recommended to be conducted at the nearest NSR, i.e. SR 1, the S.G. Davis Hostel. The monitoring frequency shall depend on the scale of the helicopter operation activities. The helicopter noise levels shall be measured in terms of L_{max} in dB(A).

With reference to the Technical Memorandum issued under the NCO, sound level metres in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise measurements. The calibration of the sound level meters and their respective calibrators shall be carried out in accordance with the manufacturer’s requirements. No noise measurements shall be made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s.

In case of non-compliance is found, noise measurements shall be conducted again to verify the measurement results. If noise exceedances are still found, further noise mitigation measures shall be proposed, such as using alternative flight path and changing helicopter types.

6.3 Water Quality

Regular site inspections shall be carried out. In the event of spillages, the emergency response plan that includes monitoring (during and following the event) would need to be effected. The effectiveness of such measures will be audited as described in the Environmental Monitoring and Audit Manual for the Tung Chung Cable Car Project.

6.4 Hazard to Life

Safety inspections should be conducted to evaluate the implementation of the risks mitigating measures and their effectiveness during the construction and operation of helipad at the tea garden.

7. PREVIOUSLY APPROVED EIA REPORTS

This Project Profile utilised information from the following approved EIAs.

EIA-090/2003 Tung Chung Cable Car EIA Report (extracted from EPD/EIAO website)

Applicant (MTR) was informed on 27 March 2003 of the suitability of the report for public inspection.

The Report is exhibited for public to comment from 29 March 2003 to 27 April 2003. Approved with conditions on 9 June 2003.

The Tung Chung Cable Car EIA Report provides key information on the existing environment at Ngong Ping including the identification of sensitive receivers and the assessment and evaluation of potential impacts.

The Ngong Ping stream is within the Study Area boundary of an Government approved Ecological Baseline Study (BMT, 2002) which provided the basis for the approved Tung Chung Cable Car EIA (Mott Connell, 2003). The ecology baseline study was undertaken for 9 months for both wet and dry season in 2002-2003.

This Project Profile utilises information from the approved EIA to provide baseline data and determine ecological impacts. Acceptable impacts on ecology were predicted from the construction of the Cable Car terminal at Ngong Ping.

EIA-075/2002 Ngong Ping Sewage Treatment Works and Sewerage EIA (extracted from EPD/EIAO website)

Applicant was informed on 7 May 2002 of the suitability of the report for public inspection.

Report was exhibited for the public to comment from 14 May 2002 to 12 June 2002. Approved with conditions on 4 July 2002

The Ngong Ping Sewage Treatment Works and Sewerage EIA was undertaken with an overlapping Study Area boundary which is located adjacent to the proposed Cable Car Terminal and Theme Village. The report investigated the potential environmental impacts for the construction and operation of the Sewage Treatment Plant (STP). Environmental aspects including air quality noise, waste, water, landscape and visual, ecology, fisheries and cultural heritage were assessed in detail. In particular the existing environment at Ngong Ping (within the Study Area boundary) is the same and sensitive receivers are comparable.

Terrestrial ecological surveys were carried out from July 2001 to mid-April 2002, covering both dry and wet seasons, in accordance with the EIA Study Brief ESB-074/2001. Limited impacts on ecology were predicted from the construction of the sewage treatment works. Provided that good practice for controlling surface runoff is employed and enforced, and earthworks can be suspended for the section of sewer close the stream where the Romer's Tree Frog was found during the breeding season of the frog (March to September), no residual impacts were anticipated.

8. CONCLUSIONS

8.1 Air

Air quality impacts resulting from the temporary helipad are predicted not to exceed air quality criteria or impact on sensitive receivers (residences) with mitigation measures.

8.2 Noise

During the operation of the proposed helipad, helicopter noise impact is anticipated to be acceptable as the proposed helipad is distant from the nearby NSRs. The predicted noise level at all NSRs is complied with the noise limit without mitigation measure. Therefore, no noise mitigation measure is required.

8.3 Water

No significant water quality impact is anticipated due to provision of the temporary helipad. However, in the event of accidental fuel spillage, it is recommended to implement the measures given in the Emergency Response Plan for the Tung Chung Cable Car Project.

8.4 Ecology

No significant impact is anticipated in terms of ecology due to provision of the temporary helipad with the implementation of mitigation against fuel spillage and increased risk of hill fires.

8.5 Landscape and Visual

No significant landscape and visual impact is expected due to the fact that there would be no permanent structure for the helipad and no lighting at during non-operation hours.

8.6 Hazard to Life

The potential risks to people arising from the construction and operation of temporary helipad at Ngong Ping are acceptable as long as the Method Statement and Emergency Response Plan are in place to ensure the proper fuel handling and storage, refuelling process, spill cleaning and disposal, safety precautions, emergency responses governed by the Dangerous Goods Ordinance Chapter 295, as well as safe delivery of construction material at all times.