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Plates

C.V. of Personnel

ABBREVIATIONS

o	degree
‘	minute
“	second
%	Percentage
AMSL	Above Mean Sea Level
CAPA	Current Available Production Area
dbh	diameter breast height
DOE	Department of Environment Malaysia
EPD	Environment Protection Department Sabah
EIA	Environmental Impact Assessment
FMU	Forest Management Unit
F.R.	Forest Reserve
ha	hectare
ITP	Industrial Tree Plantation
JAS	Jabatan Alam Sekitar Malaysia
JPAS	Jabatan Perlindungan Alam Sekitar Sabah
Kg.	Kampong
km	kilometre
m	metre
m^3	cubic metre
MBCA	Maliau Basin Conservation Area
NFM	Natural Forest Management
RIL	Reduced Impact Logging
SEIA	Special Environmental Impact Assessment
SFD	Sapulut Forest Development Sdn Bhd
SFMLA	Sustainable Forest Management Licence Agreement
Sg.	Sungai
V.J.R.	Virgin Jungle Reserve
WWF	World Wide Fund for Nature

1 INTRODUCTION

1.1 Project Initiator

1.1.1 License Holder & Project Proponent

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1.1.2 EIA Consultant

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EPD Reg. No: *F 002*

1.3 EIA Legal Requirement

Environmental Impact Assessment, or more often referred to as EIA, is a process to predict the environmental consequences of a project. The process is a mandatory requirement under Section 5 (1) of the *Conservation of Environment Enactment 1996* for activities prescribed in the *Conservation of Environment (Prescribed Activities) Order 1999*. Any person intending to carry out any prescribed activity shall submit a report on environmental impacts to the Director of *Environment Protection Department* Sabah for examination.

The above project is classified as Prescribed Activity under Sections 2(i) and 2(iii) of the *Conservation of Environment (Prescribed Activities) Order 1999*.

Section 2: Forestry

(i) Extraction or felling of timber covering an area 500 hectares or more.

(iii) Development of forest plantation having an area exceeding 500 hectares.

2 PROJECT DESCRIPTION

2.1 The Project

2.1.1 Concession Information

Licensee: ***Sapulut Forest Development Sdn Bhd***

Size of Area: ***95,300 Hectares***

Status of Area: ***Sapulut Forest Reserve (Class II)***

Concession: ***Forest Management Unit FMU 14***

Agreement: ***Sustainable Forest Management Licence Agreement SFMLA: 04/97***

2.1.2 Scope of Project

Introduction

Sapulut Forest Development Sdn Bhd proposed to carry out forest logging and plantation activities within Forest Management Unit, FMU 14. The project site is located within Sapulut Forest Reserve, a Class II Commercial Forest Reserve for logging purposes (Attachment 2.1).

Felled round logs will be transported by logging trucks via the existing Jalan Tekala, Jalan Sapulut – Kalabakan and Jalan Kalabakan – Tawau. Logs will either be processed at sawmills near the project site (to be set-up and operated by logging contractors) or sold to local sawmills in other parts of Sabah.

Project Area

Total project area or current available production area (CAPA) is 95,300 hectares (ha) and zoned according to the guideline of sustainable forest management policy, to include conservation, production (Natural Forest Management, NFM) and production (Industrial Tree Plantation, ITP) as shown in Table 2.1 and Attachment 2.2.

Table 2.1: Land Use Categories within FMU 14

Zone	***No of Compartment***	***Gross Area (original)***		***Nett Area (final)***	
		(ha)	***(%)***	***(ha)***	***(%)***
Conservation Area	12	3,685	4	16,316[a]	17
Natural Forest Management (NFM)	178	58,634	61	51,248[b]	54
Industrial Tree Plantation (ITP)	83	32,981	35	27,736[c]	29
TOTAL	***273***	***95,300***	***100***	***95,300***	***100***

Notes: a – include 3,778 ha slope > 25^{o} and 12,538 ha riverine reserve
b – exclude 93 ha slope > 25^{o} and 7,293 ha riverine reserve
c – exclude 5,245 ha riverine reserve

For efficient forest management, the project area is subdivided into compartments as the smallest management unit. Demarcation of compartments was done based on natural features such as rivers, streams, roads, and ridge tops.

Land Use Plan

The heavily logged area of 27,736 ha is to be made productive through forest restoration development or Industrial Tree Plantation (ITP). The average annual rate of forest restoration works will be approximately 3,000 ha per year.

There would be 16,316 ha to be managed primarily for conservation (area with slope greater than 25^{o}) and protection (riverine reserve).

The total net area designated for NFM is 51,248 ha. However, in view of low growing stock in most of the area, logging will only be carried out within an area of 11,594 ha. Logging within this area has been approved by Jabatan Perhutanan for period 2004 and 2005.

Silvicultural treatment will also be carried out within NFM area to improve the growing stocks of natural forest. It is estimated that between the year 2005 to 2013, silvicultural treatment will be carried out on approximately 9,771 ha of the area, with an annual rate of 1,000 ha per year.

Enrichment planting will also be carried out within NFM area. However, due to practicality and expensive operation, it will only be carried out within 300 m of access roads and when absolutely necessary.

Forest Resources

Based on forest inventory in 1999, the volume of trees above 20 cm diameter breast height (dbh) for ITP area and above 60 cm dbh for NFM area is estimated as 89.03 cubic metre per hectare (m^3/ha) or 124 trees per ha, and 13.64 m^3/ha or 2 trees per ha, respectively. The composition of growing stock by species includes Dipterocarps of approximately 42 %, Non-Dipterocarps 17 %, Non-Commercial Timbers 38 % and Commercial Pioneers 3 %. *Red Seraya* takes up to 46 % of the Dipterocarps group followed by *White Seraya* at 20 %.

Forest inventory carried out in 1999 is no longer considered applicable since new short-term logging licences were issued to third parties to log within FMU 14 from 1999 to 2003. Within the harvested area, there would have no commercial trees above 60 cm diameter breast height (dbh) to be cut. The forest resources in the FMU 14 area are very poor indicating that the logging operations in the area are not properly controlled and monitored.

The residual conditions are very much degraded, mostly devoid of commercial trees above 39 cm dbh. The remaining volume of trees between 20 cm to 39 cm dbh for ITP area is estimated as 53.46 cubic metre per hectare (m^3/ha) or 109 trees per ha. The volume of trees above 60 cm dbh for NFM area remain at 13.64 m^3/ha or 2 trees per ha.

Operational Capacity

In accordance to the Forest Management Plan (FMP) of FMU 14 for period 2004 to 2013, the ITP area designated for forest restoration is approximately 30,103 ha and the NFM area designated for logging is approximately 11,594 ha. The harvesting operational capacity for ITP area is between 13,000 to 14,000 cubic metres (m^3) per month, with logging activity to last in 10 years; and for NFM area is between 6,000 to 7,000 m^3 per month with logging activity to last in 2 years.

2.2 Project Main Activities

The project main activities include the following:

- Investigation and Development;
- Operational; and
- Abandonment.

2.2.1 Forest Logging

Forest logging shall be carried out on area designated as Natural Forest Management (NFM), normally areas under 25^o slopes, which have not been designated as Conservation Area or Industrial Tree Plantation (ITP) area.

Investigation & Development Phase

The investigation stage would involve the following:

- Boundary demarcation – cutting 2-metres wide rentices.
- Stand inventory – timber cruising to determine number and type of commercial trees per hectare.
- Harvest planning – physiography determination, road and skid trail alignment, selection of logging equipment, and log/yard determination.
- EIA Study – environmental site survey and assessment.

Operational Phase

The operational stage of the logging activities would involve the following:

- Road construction – construction of access roads, and stream/river crossings.
- Base camp establishment – clearing of land and construction of base camp for workers.
- Logging – felling of timber by means of ground-based tractor system or chainsaw, limited to trees between 60 cm to 120 cm dbh.
- Landing construction – clearing of land and construction of log yard.
- Skidding – trail clearing and log skidding which involves primary movement of logs from felling site to stumping points or pre-selected loading area. It requires ground-based tractors, which is fitted with winches, skidders or cables or combination of all, depending on terrain, road/track condition and distance.
- Bucking/debarking – cutting of felled trees to lengths using chainsaws, crowbars and other simple tools.
- Log loading – use of wheeled or track-type loaders fitted with log forks / hydraulic boom loaders / cranes for loading logs onto logging trucks.
- Hauling/trucking – transportation of logs from loading area to sawmills using logging trucks via Jalan Tekala and Jalan Sapulut - Kalabakan.

There will be no tree plantation activities upon the cessation of logging operation within NFM area.

Abandonment Phase

Project abandonment can occur at any stage of the project, which may due to the down turn of the nation's economy, social acceptability of the project in the community, or unforeseen management and technical problems. The project will also be abandoned upon the expiration of Timber Licence Agreement (due in the year 2097). The abandonment stage would involve the following:

- Camp demolition – pulling down of buildings.
- Restoration – removal of stream crossing, and rehabilitation of landing and campsite.

2.2.2 Forest Plantation

Industrial Tree Plantation (ITP) shall be carried out on areas identified as highly degraded forests where the possibility of these forests to regenerate into its original condition naturally is difficult or is not possible at all. Majority of these areas are those located below the 15^{o} slopes.

In view of total change of landscape under industrial tree plantation, the project proponent would manage the area under forest restoration approach. The objective of forest restoration is to improve and enhance the productivity of the severely degraded forests by planting indigenous species (*Laran, Binuang, Jelutong, Hopea, Kapur* and *Seraya*) and other species (*Rubber*, *Teak, Acacia, Albizia* and others).

The initial works is to salvage (if any) all the remaining commercial species with diameter breast height greater than 20 cm. This would involve clear felling. However, patches of areas with reasonable indigenous saplings shall be maintained.

Investigation & Development Phase

The investigation stage for plantation activities would involve the following:

- Investigation plan – to determine soil type, soil suitability, species suitability.
- Road planning – route identification, track and road construction.
- Preparation of planting site – preparation of planting block of 40 to 50 ha per block, and demarcation of boundaries.
- Harvest and planting planning – selection of good seedling, planting method, harvesting method and cost.
- Feasibility study and development plan – formulate strategy of management and operation, evaluate overall profitability and financial viability of the project.

Operational Phase

The operational stage for plantation activities would involve the following:

- Planting site preparation – consist of under-brushing, lining, clear felling of trees to remove excessive overhead, and preparing planting lines.
- Planting – preparation of good seedling and planting holes, positioning of seedling.
- Harvesting and transportation – harvesting and transportation to end users in Tawau and surrounding area.
- Maintenance – provision of extra seedling, weeding and planting path maintenance, thinning, fertiliser application, pest and diseases control, road and drain maintenance.

There will be continuous tree plantation activities within ITP area upon the cessation of harvesting operation.

Abandonment Phase

Project abandonment can occur at any stage of the project, which may due to the down turn of the nation's economy, social acceptability of the project in the community, or unforeseen management and technical problems. The project will also be abandoned upon the expiration of Timber Licence Agreement (due in the year 2097).

The abandonment stage would involve the following:

- Camp demolition – pulling down of buildings.

2.3 Project Site

2.3.1 Locality

The project site is located within Sapulut Forest Reserve, District of Nabawan. It is situated immediately east of Sapulut Township, 35 km south-southeast of Nabawan Township and 85 km west-northwest of Kalabakan Township. Logging area is under the jurisdiction of Jabatan Perhutanan Daerah Tibow.

The logging area has the following end co-ordinates:

Lot	*Latitude*	*Longitude*
Top Left	04° 48' 05" North	116° 31' 32" East
Top Right	04° 48' 39" North	116° 45' 58" East
Middle Left	04° 40' 23" North	116° 29' 14" East
Middle Right	04° 40' 23" North	116° 52' 19" East
Bottom Left	04° 32' 42" North	116° 27' 07" East
Bottom Right	04° 33' 28" North	116° 53' 05" East

The project site is accessible from Tawau via Kalabakan Township using a combination of gravel and logging roads, off Jalan Tekala and Jalan Kalabakan - Tawau. The site is also accessible from Keningau via Nabawan Township using a combination of sealed and gravel roads, off Jalan Keningau – Sapulut and Jalan Sapulut - Kalabakan.

2.3.2 Existing Land Use

Major land use patterns in the area include jungle / secondary forest, agricultural plantation and human settlements (Attachment 2.3). Within the project site, the main vegetation types include montane forest, highland mix dipterocarp forest, lowland dipterocarp forest and permanent cultivation.

Other facilities in the vicinity include:

- Jabatan Perhutanan Tibow (within site).
- Sawmill: Atlantic (within site); Siliwantoh (8 km south).
- Campsite: SFD (5 camps within site); Ritai (5 km south).
- Cemetery: Kg Salong (0.6 km west); Kg Sinikalaun (1.0 km west); Kg Sosogoh (1.5 km west); Kg Sandukon (2.0 km west).
- School: SK Simatuoh (0.3 km north); SK Salong (0.5 km west); SK Sepulot (1.0 km southwest); SK Labang (3 km north).

Topography

Ground elevations within the project site vary between 200 to 1,200 metres (m) Above Mean Sea Level (AMSL). Approximately 3,787 ha or 4 percent of the project area have slope exceeding 25 degree.

Geology

The project site is formed of Sapulut, Tanjong, Labang and Kapilit Formations. Sapulut Formation is an Upper Cretaceous to Upper Eocene Strata, which consists of sandstone, siltstone, mudstone, conglomerate and limestone. Tanjong Formation is an Upper Cretaceous to Upper Eocene strata, which consists of mudstone, sandstone, siltstone, conglomerate, minor limestone and lignite. Labang Formation comprises of sandstone, siltstone, mudstone and limestone, which form of small synclinal basin in the Sapulut Valley. Kapilit Formation consists of sandstone and mudstone, with rare beds of coal, conglomerate and limestone, folded into a series of gentle synclines and steep anticlines in the south-eastern part of Pensiangan and upper Kinabatangan area.

Soils

The main soil associations found within the project site are Lokan (43 %) and Crocker (35 %). Some pockets of soil associations of Maliau, Labau, Kalabakan, Serudong and Gomantong are also found. These associations are generally associated with the geological landform of the area. The main soil units recorded within Sapulut Forest Reserve include Orthic Acrisol, Gambisol, Podzol, Gleysol and Lithosol. The dominant and major soil unit is Orthic Acrisol, which is sandy and low in fertility. It is derived mainly from the parent materials of sandstone, siltstone and mudstone. Generally, these soils are well drained and usually with soil texture ranging from sandy to clayey foam.

Archaeology

There are three archaeological sensitive areas within and in the vicinity of the project area including Batu Saap, Batu Punggul and Batu Tinahas Cave.

Batu Saap is located within the project site. Batu Punggul and Batu Tinahas Cave are located approximately 0.3 km west and 0.5 km west, respectively. Based on information from Jabatan Muzium Negeri Sabah, these sites are gazetted as archaeological site except for Batu Saap. In addition, four burial sites of local Murut community are known to exist in the vicinity of the project area, particularly near human settlements.

Hydrology

The project area consists of two main rivers, which dissect the area from east to west (Sg Saburan) and from northeast to southwest (Sg Sansiang) directions following the landform and mountain ridges of the area. Sg Saburan and Sg Sansiang together with their tributaries are running from the highlands of Malian Basin Conservation Area on the east and cuts across the project area towards the lowland region in the west (Sapulut Township) and joining Sg Sapulut and finally to Sg Pensiangan.

Main riverine systems that could be affected by the project include Sg Siliawan, Sg Pinangah, Sg Lombunaan, Sg Saburan, Sg Sansiang, Sg Tibow, Sg Palangan, Sg Sakikilan, Sg Sabunutan, Sg Beliar, Sg Sablangan, Sg Simatuoh, Sg Salung, Sg Lalobou, Sg Sinikalaun, Sg Sapulut, Sg Pampangon and Sg Logongon. Other major riverine systems in the vicinity include Sg Penawan, Sg Sumatalun and Sg Pensiangan.

Water/Land Use

There is no known or gazetted Government potable water supply scheme in operation within the project area. Local population are known to rely on gravity and well water for their water supply. Their water intake points are located outside the project area. However part of their water catchments may be affected by the project, particularly along Sg Sapulut and Sg Tibow. In addition, during dry period, majority of the local population obtain water directly from Sg Salung, Sg Sinikalaun, Sg Logongon and Sg Sapulut for daily water supply.

Within the project site, there is one proposed water catchment area, known as Tibow Water Catchment (TWC) with an area of approximately 690 ha. TWC is based on tributaries of Sg Sansiang and identified to serve the proposed Tibow Township. However, to-date there is no approved or gazetted water catchment plan.

As for navigation, local rivers including Sg Saburan, Sg Salung, Sg Sinikalaun, Sg Logongon, Sg Pampangon and Sg Sapulut are used for access, particularly between areas not served by road network. In addition, these rivers are also used for fishing activity.

There is no known forest fire incident recorded within Sapulut Forest Reserve or in the nearby areas.

Biological

Biological environment in the project area comprises of (i) terrestrial habitat of primary/secondary forest, dipterocarp forest, montane forest, riverine vegetation, and mixed agriculture; and (ii) aquatic habitat of local rivers.

In view of close proximity to Maliau Basin Conservation Area (MBCA), protected floral and faunal species are known to be present in the area. Protected floral species such as Polod and Botu are known to exist within the project site. In addition, protected faunal species are also known to exist within the project site including reptile species of Python and Lizard; bird species of Goshawk, Kite, Hornbill, Eagle, Darter, Plover, Dove, Wagtail, Argus, Pheasant, Woodpecker, Shama and Magpie Robin; mammal species of Macaque, Deer, Flying Lemur, Gibbon, Porcupine, Squirrel, Bearded Pig, Mouse-Deer and Musang. Large animals of Elephant (*Elephas maximus*) and Rhino (*Dicerorhinus sumatrensis*) are known to exist in the area, as confirmed by local authorities/population and as indicated by the presence of salt licks.

However, the biological habitats of the project area have been disturbed by previous logging operations. The area was logged several times by not less than 26 logging operators between 1980 to 2003.

Aquatic habitat known to exist in the area includes Ikan Toruh, Botuon, Belanak Sungai, Dumpis, Terbol, Turongou, Salab, Pelian, Patin, Ketam Sungai, Udang Sungai, Siput Sungai and Alga. None of these species are identified as endangered or protected species. Based on information from local population, high number of fishes is noted along Sg Saburan, Sg Salung, Sg Sinikalaun, Sg Logongon, Sg Pampangon Sg Sapulut, Sg Sansiang and Sg Tibow. Typical fishing activity is based on fishing hook and hand lines, and “jala” or “pukat”.

Sensitive Area

Biologically sensitive areas within and in the vicinity of the project area include:

- *Conservation Area* – Maliau Basin Conservation Area (MBCA); and Phenology Area.
- *Biological Habitat* – Salt licks.
- *Virgin Jungle Reserve (V.J.R.)* – Sg Siliawan V.J.R.; Sg Sansiang V.J.R.; and Nurod Urod V.J.R.
- *Commercial Forest Reserve (F.R.)* – Sg Pinangah F.R.; Gunung Rara F.R.; and Kalabakan F.R.

MBCA is located immediately northeast of the project site. Maliau Basin is a saucer-like basin as it is surrounded by rim escarpment with heights ranging from 1500 m to 1900 m AMSL. MBCA is a unique and pristine rainforest area dominated by lower montane and heath forest, as well as lowland dipterocarp forest. It is reported that, significant numbers of plant species have been recorded in the Maliau Basin, with many are poorly known and could only be identified by biological specialists. Apart from sensitive flora and fauna, it is home to Lake Linumunsut, which is Sabah's only true freshwater lake, as well as some 20 spectacular waterfalls including the magnificent seven-tier Maliau Falls, which have been left virtually untouched.

The Phenology Area of 120 ha is located within the project site (near Sg Saburan). This area is conserved for observation to study the timing of natural events or annual cycles of plants and animals along with their relationship to the weather and climate, and how they respond to seasonal changes in their environment because of many contributing factors such as latitude, altitude and buffering effects of large bodies of water.

Based on WWF study, there are four known salt licks within and in the immediate vicinity of the project site. Two salt licks are known to exist within the project site (near Sg Salung). In the vicinity, one salt lick is located approximately 500 m to the east (within Gunung Rara F.R.) and the other at approximately 6 km south. These salt licks are known to attract mammals such as elephants and bearded pig, and used by these animals as their sources of mineral-rich water and normally as their animal home range.

Sg Siliawan V.J.R. (2,136 ha) and Sg Sansiang V.J.R. (34 ha) share common boundaries with the project site. Nurod Urod V.J.R. (1,705 ha) is located approximately 200 m east of the project site. These forest reserves are classified as Class VI Virgin Jungle Reserve for the purpose of forest research.

Sg Pinangah F.R. (237,872 ha), Gunung Rara F.R. (219,794 ha) and Kalabakan F.R. (224,488 ha) are located north, east and southeast of the project site, respectively. These forest reserves are classified as Class II Forest Reserve for the purpose of commercial logging.

Socio-Economic

There are no villages or human settlements within the project site. Major human settlements are located within the State land (along Sg Sapulut, Sg Pampangon and Sg Logongon) including Sapulut Township, Kg Tataluan, Kg Sandukon, Kg Sanuank, Kg Samuran, Kg Labang, Kg Liningkar, Kg Simatuoh, Kg Siliawan, Kg Ampulos, Kg Tonomon, Kg Bigor, Kg Agis, Kg Tapuluon, Kg Balait, Kg Salong, Kg Sinikalaun, Kg Sosogoh, Kg Kuyoh, Kg Sikait, Kg Kuala Sabenait, Kg Sumolopop, Kg Binatik, Kg Pagalungan, Kg Kuala Sumatalun, Kg Sapilian and Kg Sasandukon.

The local communities are mainly from Murut Tagol ethnic group. These communities are sedentary agriculturists, who do not have to use the resources in the project area because State land forest resources are sufficient to meet the local needs. Their main economic activities are agriculture, forestry and hunting.

In the eastern area of the project site, human settlement is limited to Jabatan Perhutanan Tibow, which is provided with main office and staff quarters.

There are five logging camps located at various sites within the project site, all are owned by the project proponent for operation of existing logging coupes. The size of each logging camps depends largely on the period of the license, the size of the logging coupes and the number of workers. Most of the buildings are temporary or semi-permanent in nature, normally not more than one or two units of long *kongsi*. The temporary camps are usually built by sub-contractors who operate for a short periods and abandoned them thereafter.

2.3.3 Gazetted Land Use

The project site is located within the gazetted area of Sapulut Forest Reserve, a Class II Commercial Forest Reserve for logging purposes. Based on information from *Jabatan Perhutanan*, the future land use of the project site shall remain as forestry purposes. The area is a Forest Management Unit (FMU 14), a long-term sustainable forest management programme.

2.4 Project Status

2.4.1 FMU

Sustainable Forest Management Licence Agreement, SFMLA 04/97 for the project site was signed on 10 September 1997 between the *State Government of Sabah* and *Sapulut Forest Development Sdn Bhd* (SFD). The agreement allows for SFD to undertake managing, planting and sivicultural treatments of natural and plantation forests or timber trees, and further to undertake felling, cutting, collecting, removing and converting trees and other forest produce, logs and timbers, within Forest Management Unit, FMU 14 of 95,300 ha.

2.4.2 History

Logging

Prior to the area being gazetted as a forest management unit, the work plan for these forest areas was based on area control. The area was divided into working blocks of various sized and shapes and issued short-term licences to many timber companies. Each working area is subdivided into annual coupes. The felling diameter for all commercial timber species is 60 cm dbh and above. Upon completion of logging, the coupe area was closed after preparation and submission of closing inspection report. Logging licensees within FMU 14 are shown in Attachment 2.4.

A small portion of the forest area of Sapulut Forest Reserve was logged as early as 1956, but a larger part of the project area was harvested in the early 80s. By early 1990s, most of the areas are extensively logged. Some are being relogged for at least three times on a very short rotation period. Approximately half of the areas that are supposed to have some reasonably stockings have been extensively logged by third parties from 1999 until 2003 using the conventional method of harvesting. Many of the short-term logging holders have harvested trees far below the allowed diameter-cutting limit of 60 cm dbh. Consequently, the stand stocking in the area have been drastically reduced. Fortunately, many of the short-term licenses have expired in 2003.

Silviculture

On record, the only silvicultural treatment carried out within Sapulut Forest Reserve between 1972 and 1986 is creeper cutting. There is no other form of pre- and post-harvesting silvicultural activities in the area, even for those areas where logging operation had ceased sometime ago.

2.4.3 Present Condition

Sapulut Forest Development Sdn Bhd is currently carrying out logging activity within FMU 14, based on *Jabatan Perhutanan* approval ref: JPHTN: P&O/100-24/01/15-04/2/2 dated 10 March 2003. The original approved logging areas were 11,800 ha from three coupes “A”, “B” and “C”. However, in view of some of the approved logging areas are located within Maliau Basin Conservation Area (MBCA) Buffer Zone 1, the concession areas were ‘adjusted’ for protection of MBCA. The final logging areas are 11,594 ha from four coupes “A”, “B”, “C” and “D”, with logging licences under SFMLA 04/97 due to expire on 07 July 2006, 09 December 2006, 18 February 2007 and 29 March 2007, respectively. The original and final concession areas are shown in Attachment 2.2.

2.4.4 Forest Management

Sapulut Forest Development Sdn Bhd (SFD) is practising Sustainable Forest Management and in line with *Jabatan Perhutanan* requirement, SFD has completed its “Forest Management Plan” (FMP) document for the year 2004 to 2013. The FMP has been approved in principle by Jabatan Perhutanan on 02 December 2003. In addition, “Annual Work Plan” for period of 01 January 2004 to 31 December 2004 has been approved by *Jabatan Perhutanan* on 18 February 2004.

2.4.5 EIA

EIA Scoping Note for the project was approved by Jabatan Perlindungan Alam Sekitar on 12 August 2004 vide letter ref: JPAS/PP/12/600-1/01/3/10(3) (Attachment 2.6). In view of large operational area of 95,300 ha and due to close proximity to sensitive areas of Maliau Basin Conservation Area and Virgin Jungle Reserves of Sg Siliawan and Sg Sansiang, a Special EIA study is required.

3 RESULTS OF SCOPING

3.1 Identified Environmental Issues

Environmental issues for this project include the following:

- Soil erosion and water pollution;
- Impact on water use of local rivers;
- Ecological impact due to close proximity to biologically sensitive areas including Maliau Basin Conservation Area;
- Forest fire hazard;
- Archaeological impact;
- Socio-economic impact from transportation activity;
- Hydrological impact from siltation and flooding;
- Pollution from waste disposal;
- Impact from abandonment.

3.2 Special EIA Matrix

Environmental Issues	*Issues of Concern*	*Assessment*	*Score*
Investigation & Development Phase			
Physical Issues:	N/A		
Ecological Issues:	N/A		
Socio-economic Issues:	N/A		
Operational Phase			
Physical Issues:	• Soil Erosion / Water Quality • Hydrology • Fire Hazard • Waste Disposal	2,3,3,3 2,3,2,3 2,3,3,1 2,2,1,1	• ***Major*** • Minor • Minor • Minor
Ecological Issues:	• Natural Habitats	2,3,3,3	• ***Major***
Socio-economic Issues:	• Water Use • Traffic • Archaeology	2,2,1,1 2,2,1,1 2,3,1,1	• ***Major*** • Minor • Minor
Abandonment Phase			
Physical Issues:	• Safety	1,2,1,1	• Minor
Ecological Issues:	N/A		
Socio-economic Issues:	N/A		

** Assessment based on:*
Magnitude of change/effect: 1: within project site; 2: local condition; 3: regional/national/international
Permanence: 1: no change/not applicable; 2: temporary; 3: permanent
Reversibility: 1: no change/not applicable; 2: reversible; 3: irreversible
Cumulative: 1: no change/not applicable; 2:non-cumulative/single; 3: cumulative/synergistic

3.3 Initial Assessment

Main potential environmental issues are expected from soil erosion, water pollution and ecological impacts. In addition, impacts from forest fire, archaeology, transportation, hydrology, waste disposal and abandonment could also be expected.

Water Quality

High-suspended solid concentrations downstream of the project site could be expected during logging operation mainly from soil erosion due to the high topography and steep slopes. In addition, the use of herbicide, pesticide and fertiliser in plantation activity may produce chemical pollution. This may impact water quality of local rivers, particularly Sg Sapulut, Sg Saburan and Sg Sansiang.

Water Use

There are several human settlements located east of the project site, particularly along Sg Sapulut that relies on local rivers for daily water supply. Their water intake points are located outside the project area. However, parts of their water catchments are located within the project site and may be affected by the project. In addition, Jabatan Perhutanan Tibow is also dependent on Sg Sansiang for water supply. Their water intake point and water catchment are located within the project site. This may induce significant socio-economic problems if no alternative water supply or water storage facility is provided to the affected local population.

Ecology

Impacts on natural habitats could be significant, as protected floral and faunal species are known to exist in the area. In addition, the project site is located close to sensitive areas of Maliau Basin Conservation Area, and Virgin Jungle Reserves of Sg Siliawan, Sg Sansiang and Nurod Urod. The project area is also known for the existence of large protected animals such as Elephant (*Elephas maximus*) and Rhino (*Dicerorhinus sumatrensis*), and sensitive habitats of salt licks. However, most of the biological habitats have been disturbed by previous logging operations where some 26 operators have logged the area between the year 1980 to 2003.

Forest Fire

There is potential for increase of fire hazards from logging and plantation activities. The risk of fire in plantation forests is higher than in natural forests but the later are not immune because of their heterogeneous sand conditions. The potential for this to occur is predicted to be small, as no burning activity will be carried out on-site. However, appropriate control should be implemented to minimise forest fire due to the presence of human settlements in the immediate vicinity that could lead to forest fire from unattended open burning of shifting cultivation activity.

Archaeology

Impact on archaeology could be expected as the area is known for archaeological sites such as Batu Saap, Batu Punggul and Batu Tinahas Cave. Batu Saap which is located within the project area should be protected. In addition, all archaeological sites shall be provided with sufficient buffer and access to maintain their archeological and tourism values.

Transportation

Impact on safety to road users along the main logging road to Kalabakan might also be increased from trucking activities, particularly near populated settlements. However, the expected number of transportation trips from the project is relatively low and would not significantly impact the existing conditions along the transportation route.

Hydrology

The clearing of land for logging and plantation activities may result in less interception of rainwater. This in turn would give rise to shorter time for the rainwater to reach open channels and thus increases the peak runoff in the channels, which may cause severe flooding downstream. In addition, significant siltation problem and inappropriate biomass disposal may reduce channel capacity, thus increasing potential for stream overflow. However, as the project area has been extensively logged previously, most of the residual soils have been eroded. The resultant rate of siltation is expected to be lower and consequently minimise the hydrological impact.

Waste

The project is expected to generate oily wastes, solid wastes, biomass and sewage. In this respect, handling and disposal of fuel/oily wastes from logging machinery and transportation vehicles, garbage/sewage from campsite, biomass from logging and plantation activities, and sewage from campsites require specific considerations to avoid soil contamination and water pollution.

Abandonment

The project may be abandoned at any stage that could affect safety and water quality from abandoned logging and plantation area and facilities. However, as logging facilities are normally constructed of temporary structures, abandonment impact is expected to be minimal.

4 SPECIAL EIA SCOPE OF WORKS

4.1 Key Environmental Issues

Major adverse environmental impacts are:

1. *Soil erosion and water pollution* – soil erosion and chemical pollution from logging and plantation activities that could affect water quality of existing rivers / streams.
2. *Impact on water use* – potential contamination of gravity water system that could affect local community daily activity.
3. *Ecology* – impacts to local flora, fauna and aquatic habitat within and in the immediate vicinity of the project site.

Other adverse environmental impacts include:

- *Fire hazards* – potential of forest fire that could lead to natural resources destruction and air pollution.
- *Archaeology* – impacts to archaeological sites that could affect local community heritage.
- *Hydrology* – siltation of waterways that could lead to downstream flooding.
- *Traffic and transportation safety* – increase in vehicular traffic from transportation activity that could induce socio-economic problems to local community.
- *Waste disposal* – disposal of oily waste, garbage, sewage and biomass that could affect soil and water quality and drainage pattern of the area.
- *Impacts from abandonment* – impacts on safety from abandoned structures and water quality from exposed logging and plantation area.

4.2 Key Mitigation Measures

4.2.1 Major Mitigation Measures

Zoning of Logging Area

- Exclude logging and plantation activities on high risk area, conservation area, water catchment area or any protection area;
- Application of exact techniques for boundary demarcation both on-site and on map.

Riverine Reserve

- Provide adequate riverine reserve based on river width, wildlife corridor and water catchment protection;
- Application of exact techniques for boundary demarcation both on-site and on map.

Soil Engineering Control Practices

- Application of appropriate soil erosion control measures including phase or staggered logging;
- Construct and maintain drainage and sedimentation ponds at main campsites and stumping points / landings.

Modifying Operational Practices

- Proper construction and maintenance of infrastructures such as logging roads, skid trails, stumping points / landings, campsite and stream crossing;
- For NFM area, trees allowed for harvesting should be between 60 cm to 120 cm dbh only. All trees below 60 cm shall be retained for future stocks and trees above 120 cm shall be retained as "seed trees";
- Application of tree marking rules within NFM area;
- Application of directional felling to avoid tree crowns falling into river or buffer area;
- Provide proper stream crossings to minimise impact to local rivers and to avoid flooding.

Socio-Economic Considerations

- Protect sources of local water supply;
- Protect local water catchment through designation as Conservation Area;
- Effective consultations with the affected local population in association with Pejabat Daerah, JKKK and Ketua Kampong;
- Provide alternative water storage facility to the affected local population, if necessary.

Flora and Fauna Protection

- Prohibit logging or plantation activity within Buffer Zone 1 of Maliau Basin Conservation Area (approximately 8,495 ha);
- Prohibit plantation activity within Buffer Zone 2 of Maliau Basin Conservation Area (approximately 20,641 ha). Only NFM logging activity is allowed within this area;
- Provide sufficient buffer zone to sensitive areas of Phenology Area, salt licks, and Virgin Jungle Reserves of Sg Siliawan, Sg Sansiang and Nurod Urod;

- Provide adequate opportunity for wildlife to escape by implementing phase logging and plantation;
- Provide wildlife corridor along major rivers such as Sg Saburan and Sg Sansiang;
- Prohibit hunting within the project area;
- Provide adequate signage to highlight banning of hunting and fishing;
- Appoint an Ecologist or Environmental Consultant to advise on biological protection;
- Provide adequate notifications to relevant local authorities particularly Jabatan Hidupan Liar.

4.2.2 Additional Mitigation Measures

Forest Fire Control

- Formulate and implement "Forest Fire Prevention and Control Plan";
- Conduct regular fire drills, training and awareness programme on forest fire;
- Prohibit open burning on-site;
- Provide early warning system including fire lookout towers; construct and maintain of fire breaks;
- Provide water storage and delivery facilities, and identify water resources for fire fighting.

Archaeological Protection

- Provide sufficient buffer zone for archaeological site of Batu Saap;
- Provide adequate access to archaeological sites of Batu Saap, Batu Punggul and Batu Tinahas Cave;
- Provide adequate notifications to relevant local authorities, particularly Jabatan Muzium and local community leaders.

Traffic and Transportation Control

- Provide adequate traffic signs at strategic locations particularly at project site, main road junctions, and near human settlements / township;
- Proper scheduling of transportation activity to avoid peak hours and rest period.

Plantation Management

- Proper siting and operation of nursery and chemical storage facility;
- Formulate and implement Integrated Plantation Management System particularly for pests and disease control;
- Proper application, storage and handling of herbicide, pesticide and fertiliser.

Waste Management

- Proper handling, storage and disposal of wastes including oily waste, garbage, sewage and biomass;
- Provide basic sewage treatment facility on-site.

Abandonment Plan

- Institute site clean-up by removing building structures, contaminated areas, stream crossings; and rehabilitate large exposed area;
- Control access to site and provide appropriate signage;
- Provide adequate notifications to relevant local authorities, particularly Jabatan Perhutanan and Jabatan Perlindungan Alam Sekitar.

4.3 Key Monitoring Programme

Recommended environmental monitoring programme include submission of half yearly Environmental Compliance Report (ECR) to include the following:

1. *Zoning of logging area* – Layout plan and photographs of steep area, high risk area, conservation area, water catchment area, or any other protection area including boundary marking and signage along boundary.
2. *Riverine reserve* - Layout plan and photographs of riverine reserve including boundary marking and signage; and actual width measurements.
3. *Soil engineering control practices* – Layout plan and photographs of logging and plantation area (including phase logging, main logging roads, secondary roads, haul roads, skid trails, nursery, campsite, stumping points, landings, stream crossings, etc.); actual logging and plantation operation schedules indicating locality, period and area; layout plan, photographs and maintenance of sedimentation ponds and drainageways.
4. *Modifying operational practices* – Percentage of logging and plantation area with respect to logging roads, skid trails and landings; monthly volume of logs felled and trees planted; and number and dimensions of each campsite and landing.
5. *Socio-economics consideration* – Layout and photographs of local water gravity system, catchment area and water storage facility within the project site; copy of letter on contribution to the affected local population on water supply protection; and regular water quality monitoring of rivers/streams affected by the project.
6. *Flora and fauna protection* – Layout plan and photographs of biologically protected area including boundary marking and signage; incidents of discovery of protected species; copy of notification letter to Jabatan Hidupan Liar; and copy of letter of appointment of an Ecologist or Environmental Consultant.
7. *Forest fire control* – Copy of "Forest Fire Prevention and Control Plan"; layout plan and photographs of fire tower, fire break, water storage and fire fighting facilities; schedule of forest fire drills and training; and incidents of forest fire within and in the immediate vicinity of the project site.
8. *Archaeological protection* – Layout plan and photographs of archaeological protected area including boundary marking and signage; and incidents of discovery of archaeological artefacts.
9. *Traffic and transportation control* – Layout plan and photographs of traffic signage; and actual transportation activity indicating quantity, truck-trips, route, period and destination.
10. *Plantation management* – Copy of Integrated Plantation Management Programme; layout plan and photographs of chemical storage (herbicide, pesticide and fertiliser) and disposal area; and incidents of pests and disease affecting plantation.

11. *Waste management* – Layout plan and photographs of oily waste storage facility, garbage dumping site, biomass disposal area and sewage facility; and monthly volume and type of wastes and biomass generated, handled, stored and disposed of.
12. *Abandonment plan* – Layout plan and photographs of abandoned area; and copy of notification letter to local authorities.

5 SPECIAL EIA METHODOLOGY

5.1 Approach

Soil Erosion

The study should focus on the assessment and mapping of the high risk areas based on layers of slope, drainage and water intake points.

Ecology

The study should focus on the assessment of site location in terms of outer protected areas and on the assessment of previous use of the site and forecast on the future land use for the area (to establish if the area has any potential for future protection of bio-diversity). Recommendation to protect ecological system such as the provisions of buffer zones, ecology-protected area, and wildlife management will be made.

Water Use

Focus on potable water related issues, and shall be made, including on how many settlements could be affected and their opinions. Details on which settlements have been included in the survey shall be given. Mitigation such as controlling runoffs or identification of new water sources will be recommended.

Water Catchment

Catchments shall be clearly mapped and assessed against logging operations, soil erosion, water intake, etc. A detail map of the catchments within the concession shall be given together with a less detailed map of the continuation of the catchment areas outside the project area.

Archaeological

The functions and uniqueness of the nearby archaeological/historical/cultural sites will be investigated. Comparative assessment situation with “normal” situation (without project) will be made. Mitigation such as protection of sensitive areas and provision of access will be recommended.

Fire Hazards

Investigate fire history of the area including frequency of draught, local burning practices and attitudes toward plantations.

Safety

Route of transportation activities along public road will be determined. Prediction on number of trips, and road capacity to accommodate changes will be made.

Waste

Source and type of wastes generated will be identified. Handling, storage and disposal methods shall be assessed and proper disposal procedures highlighted.

Socio-economics

JKKK, Ketua Kampong and local villagers affected by the project will be identified. Interviews will be carried out of selected population and their response documented.

Water Quality Sampling

Fourteen water quality samples shall be taken downstream of project site along Sg Salut (W1), Sg Siliawan (W2), Sg Pinangah (W3), downstream of Sg Saburan (W4), upstream of Sg Saburan (W5), upstream of Sg Sansiang (W6), middle of Sg Sansiang (W7), Sg Tibow (W8), downstream of Sg Sansiang (W9), Sg Simatuoh (W10), Sg Beliar (W11), Sg Salung (W12), Sg Sinikalaun (W13) and Sg Logongon (W14) to analyse for suspended solids, turbidity, and oil & grease. The proposed water sampling locations are shown in Attachment 2.3.

5.2 Authorities to be Consulted

The following authorities will be consulted in conducting the Special EIA Study:

- Infrastructure and utilities: Jabatan Kerja Raya, Jabatan Air, Pengairan dan Saliran, Majlis Daerah Nabawan & Tongod.
- Socio-economic: Jabatan Perangkaan, Kementerian Pembangunan Luar Bandar, Bahagian Hal Ehwal Anak Negeri, JKKK, Ketua Kampung.
- Landuse: Jabatan Perancang Bandar & Wilayah, Jabatan Tanah dan Ukur, Majlis Daerah Nabawan & Tongod, Jabatan Perhutanan Tongod, Jabatan Perikanan, Jabatan Pertanian, Jabatan Hidupan Liar, Jabatan Muzium Negeri Sabah, Jabatan Perkhidmatan Kajicuaca, Kementerian Pelancongan, Kebudayaan dan Alam Sekitar, WWF, Yayasan Sabah.

6 ACTIVITIES INVOLVING STAKEHOLDERS

6.1 Activities Undertaken

The following activities have been undertaken in preparing this Special EIA - ToR:

- Site visits on 11 to 13 May 2004. Different parts of the project site were also visited during preparation of EIA studies for other projects, namely in 2004 (13 to 14 Jan); 2003 (26 to 28 Mar, 01 to 04 Apr, 25 to 27 Sep); 2002 (01 to 07 Jul, 02 Aug); 2001 (07 to 08 Mar, 04 to 06 Dec); 2000 (23 to 24 Oct, 20 to 21 Nov).
- Discussions with Sapulut Forest Development Sdn Bhd and Jabatan Perhutanan Tibow.
- Discussions with Jabatan Air, Jabatan Hidupan Liar, Jabatan Muzium, Jabatan Pengairan dan Saliran, Jabatan Perancang Bandar dan Wilayah, Jabatan Perhutanan, Jabatan Perikanan, Jabatan Pertanian, Jabatan Tanah dan Ukur, Kementerian Pembangunan dan Luar Bandar, Pejabat Daerah Nabawan and WWF (from previous EIA studies).

6.2 Data

The following data has been collected / used in preparing this Special EIA - ToR:

6.2.1 Maps

Locality

- *Peta Daerah Pensiangan.* Scale 1:213,000. 1975. Kota Kinabalu.

Topography

- *Restricted Map 4/116/1 Lumiri, 4/116/2 Pendawan, 4/116/3 Matiku, 4/116/4 Gunung Lutong, 4/116/5 Silom, 4/116/6 Pensiangan, 4/116/7 Bandakao, 4/116/8 Tambulanan, 4/116/9 Kabu, 4/116/10 Kuala Temalasak, 4/116/11 Sinua.* Scale 1:50,000. 1970, 1979, 1978 & 1980. Kota Kinabalu.

Land Use

- *Sabah Land Cover Classification Map* Scale 1:500,000. 2000. Kota Kinabalu.

Geology

- *Geological Map of Sabah*. Geological Survey of Malaysia. Scale 1:500,000. 1985 Kota Kinabalu.

Soil

- *The Soil of Sabah – Pensiangan NB 50-14*. Scale 1:250,000. 1974. United Kingdom.

6.2.2 Documents

EIA Guidelines

- *Handbook for Environmental Impact Assessment (EIA) in Sabah.* Environment Protection Department. Kota Kinabalu. 2001;
- *EIA Guidelines for Logging and Forest Clearance Activities*. Environment Protection Department. Kota Kinabalu. 2001.

EIA Reports

- *EIA Report Forest Logging of 11,800 Hectares by Sapulut Forest Development Sdn Bhd within Sapulut Forest Reserve, Sapulut. Sabah.* Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2003;
- *EIA Report Forest Logging of 4,790 Hectares by Sapulut Forest Development Sdn Bhd within Sapulut Forest Reserve, Sapulut. Sabah.* Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2003;
- *EIA Report Projek Membina Jalan Sapulut - Kalabakan. Sabah.* Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2002;
- *EIA Report Forest Logging of 3,000 Hectares* by Sanforco Sdn Bhd on behalf of Sohon Singh & 2 Peserta, Layak Maju Enterprise and Saliko Sdn Bhd within Sapulut Forest Reserve, Kalabakan. Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2002;

- *EIA Report Forest Logging of 2,000 Hectares by Sanforco Sdn Bhd on behalf of Jennie Sinin & 2 Peserta, and Seng Ah Loi & 2 Peserta within Sapulut Forest Reserve, Kalabakan. Sabah*. Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2002;
- *EIA Report Forest Logging of 1,000 Hectares by Nadi Harta Berhad within Sapulut Forest Reserve, Sapulut. Sabah.* Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2001;
- *EIA Report Forest Logging of 1,000 Hectares by Usahawan Prihatin (S) Sdn Bhd within Sapulut Forest Reserve, Sapulut. Sabah.* Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2001;
- *EIA Report Forest Logging of 1,000 Hectares by Hasil Berlian Sdn Bhd within Sapulut Forest Reserve, Sapulut. Sabah.* Sinoh Environmental Sdn Bhd. Kota Kinabalu. 2000.

Forestry

- Forestry: *Medium-Term Forest Management Plan (Jan 01, 2004 – Dec 31, 2013) of FMU 14.* Sapulut Forest Development Sdn Bhd. Sandakan. 2003;
- *Annual Work Plan (Jan 01, 2004 – Dec 31, 2004) of FMU 14.* Sapulut Forest Development Sdn Bhd. Sandakan. 2004.
- *Sustainable Forest Management Licence Agreement of FMU 14.* The State Government of Sabah & Sapulut Forest Development Sdn Bhd. Sabah. 1997.

Geology

- *The Geology and Mineral Resources of Pensiangan and Upper Kinabatangan Area, Sabah.* Geological Survey of Malaysia. Memoir 12. 1965.

Soil

- *The Soil of Sabah – South-Western Districts (Land Resources Study 20, Vol. 1).* Ministry of Overseas Development: England. 1975.

7 SPECIAL EIA STUDY TEAM

7.1 Environmental Consultant

The EIA consultant for the project is *Sinoh Environmental Sdn Bhd*.

Consultant:	SINOH ENVIRONMENTAL SDN BHD
EPD Registration No:	F 002
Date of Issue:	01 October 2003
Date of Expiry:	30 September 2004

Sinoh Environmental Sdn Bhd is a Sabah-owned environmental consultancy firm specialising in Environmental Impact Assessment (EIA), environmental management, environmental audit, environmental monitoring, environmental training, waste management, and pollution control. To-date the firm has completed more than 150 EIA studies for various projects in Sabah including industrial projects, power plants, housing, agriculture, port development, resort & recreational development, infrastructure, quarries, sand/stone mining, and forestry.

7.2 Individual Consultants

The study team shall comprise of 6 professionals in the field of environmental management and forest logging and plantation. Depending on the scope, additional expertise will be sought from time to time, to provide professional inputs to the project.

Expertise	***Specialist***	***Qualifications***
Environmental	Ir. Sinoh Mohamad	M Sc Eng (Env), B Sc Eng (Hons) (Civil)
Biology / Hydrology	Dr. Tony Grear	Ph D (Hydrology & Biological Science), B Sc (Hons) (Geological & Zoological Science)
Land Use	Ibnil bin Ab Wahid	B Sc (Hons) (Development Science)
Forestry	Dydimus @ Day Joos J	B Sc (Hons) (Forestry)
Forestry	Betsy Sylvester	B Sc (Hons) (Forestry)
Socio-economic	Mohd Ariffin Mat Kassim	B A (Hons) Geography

Ir. Sinoh Mohamad will lead and co-ordinate the Special EIA study. He has more than 20 years experience in the field of Environmental Management.

Consultant:	Ir. Sinoh Mohamad
EPD Regn No:	S 0010
Date of Issue:	01 October 2003
Date of Expiry:	30 September 2004
I.C. No:	600316-12-5643

Other Special EIA team members include the following:

Consultant:	Ibnil bin Ab Wahid	Dydimus @ Day Joos J.	Betsy Sylvester
EPD Regn No:	S 0014	S 0013	S 0012
Date of Issue:	01 October 2003	01 October 2003	01 October 2003
Date of Expiry:	30 September 2004	30 September 2004	30 September 2004
I.C. No:	710607-12-5413	790930-12-5221	800624-12-5174

Consultant:	Dr. Tony Greer	Mohd Ariffin Mat Kassim
EPD Regn No:	S 0079	S 0015
Date of Issue:	24 July 2004	01 October 2003
Date of Expiry:	23 July 2005	30 September 2004
I.C. No:	740154261 (British Passport)	780709-12-5397

8 WORK SCHEDULE

The Special EIA Study is scheduled for completion within a period of five months. Proposed study schedule is shown in Attachment 8.1.

Main Activity	***Tentative Date***
Site visit	11 to 13 May 2004*
Submission of EIA Scoping Note	29 July 2004*
Submission of ToR SEIA to EPD	23 August 2004*
ToR SEIA Public Display (end)	06 September 2004
Site sampling	06 to 10 September 2004
Submission of SEIA Report to EPD	01 November 2004
SEIA Report Public Display (end)	01 December 2004

*Note: * Actual date(s)*