



***ENVIRONMENT IMPACT ASSESSMENT REPORT
FOR TRUSAN SUGUT SFM PROJECT, BELURAN
SABAH***



**Beluran FORESTRY DISTRICT
AUGUST 2016**

TABLE OF CONTENT

CONTENT	PAGE
TABLE OF CONTENT	2
CHAPTER ONE - EXECUTIVE SUMMARY	
1.1 INTRODUCTION	3
CHAPTER TWO - IMPACT PREDICTION AND EVALUATION	
2.1 SOIL EROSION	6
2.2 WATER QUALITY	6
2.3 FOREST ECOSYSTEM (FLORA PROTECTION)	7
2.4 TRAFFIC AND TRANSPORTATION SAFETY	7
2.5 FOREST FIRE	7
2.6 WASTE DISPOSAL	8
2.6.1 SOLID WASTE DISPOSAL	8
2.6.2 DISPOSAL OF SCHEDULED WASTE	8
2.7 WILDLIFE PROTECTION	8
2.8 ABANDONMENT	8
CHAPTER THREE - RECOMMENDED MITIGATION MEASURES	
3.1 SOIL EROSION	10
3.2 WATER QUALITY	10
3.3 FOREST ECOSYSTEM (FLORA PROTECTION)	10
3.4 TRAFFIC AND TRANSPORTATION SAFETY	10
3.5 FOREST FIRE	10
3.6 WASTE DISPOSAL	11
3.6.1 SOLID WASTE DISPOSAL	11
3.6.2 DISPOSAL OF SCHEDULED WASTE	11
3.7 WILDLIFE PROTECTION	11
3.8 MANAGEMENT OF AGROCHEMICAL	11
3.9 ABANDONMENT	12
CHAPTER FOUR - RECOMMENDED MONITORING PROGRAMME	
4.1 OBJECTIVES	13
4.2 SOIL EROSION CONTROL	13
4.3 WATER QUALITY CONTROL	13
4.4 FOREST ECOSYSTEM (FLORA PROTECTION)	13
4.5 TRAFFIC AND TRNSPORTATION SAFETY	14
4.6 FOREST FIRE	14
4.7 WASTE DISPOSAL	14
4.7.1 SOLID WASTE DISPOSAL	14
4.7.2 DISPOSAL OF SCHEDULED WASTE	14
4.8 WILDLIFE PROTECTION	14
4.9 ABANDONMENT	15
4.10 ROAD IMPROVEMENT	15
4.11 OTHERS	15
CHAPTER FIVE - SUMMARY	16
PHOTOS AND MAPS	17-20

CHAPTER ONE

EXECUTIVE SUMMARY

1.1 Introduction

Sabah Forestry Department (SFD) is now directly managing Trusan Sugut Sustainable Forest Management Project Area – herewith known as the Project Area, which covered area of 8,680 ha. The Project Area is located in between longitude E 117° 58' until 117° 73' and latitude 6°28' until 6° 41' for about 48 km to Pitas and 270 km to Sandakan. Sabah. The Project Area is one fascinating forest area consisting of Mangrove Forest, Peatswamp Forest, Kerangas Forest and lowland mixed dipterocarp forest.

Management Actions:

a) Restoration Programme

Two different approaches will be taken to maintain and enhance the forest health and diversity in the project area. These are:

- i) Silvicultural treatment; Liberation and Refinement Treatments – including climbers cutting. Removal of non-commercial pioneer species to enhance growth of other indigenous tree species.
- ii) Restoration planting – in areas that was used for highly degraded forest which planted with fruits tree for wildlife foods in the future.

Silvicultural Treatment; Liberation and Refinement Treatment

In general, refinement and liberation refer to stand tending treatments carried out to remove unwanted vegetation that inhibit the regeneration and growth of preferred trees. It is an operations involving simple silvicultural practice such as climbers cutting.



Figure 1.2 Picture showing the silvicultures activities

The Project Area is under tenure of FMP for 10 years that is from September, 2016 – 31st August 2026. However it is change to normal course for ecological systems.

Since the importance of Project Area are significant, Sabah Forest Department (SFD) adopted vision and policy statement where SFD is committed to manage the Project Area by using the principles of ecosystem management. The objectives are:

- i. To conserve and protect the biodiversity, watershed (quality, quantity and ecological integrity of Sungai Parai River and their associates flora and fauna) and other environmentally sensitive areas in the Project Area.
- ii. Maintain stability, enhance and restore biodiversity, ecological and environmental conditions of Project Area.
- iii. To promote education and awareness related to conservation and towards locals also decision making on roles and importance of Project Area.
- iv. Obtain “Green Certification” for conservation based on Forest Stewardship Council (FSC) Principles and Criteria for Sustainable Forest Management (SFM).

Environmental impacts that may arise during implementation of SFM in Trusan Sugut project area are on soil erosion, water quality, ecology, traffic & transportation safety, forest fire, waste disposal, and abandonment.



Figure 1.3 Picture showing the Sugut River located in eastern part of project area

IMPACT PREDICTION AND EVALUATION

2.1 Soil Erosion

The forest reserve specific area is heavily degraded due to human activities previously. Its reduce soil fertility because of the top soil removal which contains N, P, and any nutrient stored mostly in organic matter. Thus, forest conservation was done by using silviculture treatment to reduce soil erosion. It is effective and was proven by the result of Assessment of Water Quality Report in Trusan Sugut SFM Project where impact of soil erosion on water quality is on minimal level.

2.2 Water Quality

Based on the Assessment of Water Quality Report in Trusan Sugut SFM Project by Hydrology University Malaysia Sabah (UMS), it is found that water quality collected from rivers within project area is classified as clean water which is suitable for aquatic wildlife habitat. It is because level in pH, BOD and COD which found in the water is within acceptable limit. Bacterial contamination level is low but for consumption, it is require conventional treatment before being use.

2.3 Forest Ecosystem (Flora Protection)

Trusan Sugut forest consisting of Mangroves Forest, Peatswamp Forest, Kerangas Forest and lowland mixed dipterocarp forest are very rich in Biodiversity. The restoration programme is planned and developed for area which are highly degraded in the project area.

2.4 Traffic & Transportation Safety

Impact on traffic volume from transportation is expected to be not significant because of vehicle traffic is low along the main road. However, it is significant for traffic safety as the main road not only used by vehicle but also become passing area for wildlife.

2.5 Forest Fires

Based on previous records, there was no major forest fire incident within the project area. However, precautions should be made to the unattended open burning for agricultural plantation and shifting cultivation activity in the surrounding areas that could lead to forest fires.



Figure 1.4 Picture showing the forest condition after silviculture treatment

2.6 Waste Disposal

2.6.1 Solid waste disposal – Impact of solid waste disposal is expected to be not significant as proper waste collection will be carried out within the project site then carted to outside of the forest reserve area.

Sewage – Impact from sewage disposal is expected to be significant if it is not treated properly especially within project site.

2.6.2 Disposal of scheduled waste – Impact of oily waste is expected to be significant within project area because of the oil usage. However, oil trap facility is already built to collect and store used oil to prevent it from entering the soil and stream before remove to disposal area. Precautions and implementation of the provided “Standard of Procedures” (SOP) for oil shall be applied to avoid any oil pollution.

2.7 Wildlife Protection

Impact of poaching or illegal hunting is expected to be significant due to encroachment activities after logging. Thus wildlife survey and assessment already establish to identify the presence of threatened species remain within project area such as Banteng and Orang Utan. Protection such as patrolling also has been made to control since it will affect the wildlife population within project area.

2.8 Abandonment

As campsite and any facilities will be made of permanent structures, abandonment impact is expected to be at minimal.



Figure 1.5 Picture Showing the fire tower in Puncak Fidelis

CHAPTER THREE

RECOMMENDED MITIGATION MEASURES

3.1 Soil Erosion

- i. Land clearing and Earthwork activities (if any) should be confined for reduce soil erosion.
- ii. Slope area that has high risk of soil erosion should be demarcate (if any) with red or yellow paint and sign post. Road grades for the area should not exceed 8° (15%).
- iii. Buffer zones or riparian reserve should be demarcated along the major rivers at least 30m each bank for river and 15-20m for width within project area.
- iv. Marking area and put sign post on-site.

3.2 Water Quality

- i. Maintain water quality by control human activities especially industrial and residential area near rivers that within project area.
- ii. Minimize disturbance to rivers by limit the number and width of crossings (if any) within project area.
- iii. Construction of river crossing also can minimize disturbance such as culvert or bridge since transportation that need to access is not directly in contact with the rivers. Number of crossing also should be minimized.

3.3 Forest Ecosystem (Flora Protection)

- i. Identify specific location or route that used by protected wildlife species and provide appropriate signage or notices for information.
- ii. Protected forest plant species within project area also need to be identified and marked by painting with red color so that easily recognized during monitoring.
- iii. Information sign is important as it is to inform passerby especially when there is human activities within forest reserve.

3.4 Traffic and Transportation Safety

- i. Provide appropriate traffic signage near entrances to project site, main road junctions and near populated areas to warn other roads users of transportation activity.
- ii. Vehicle speed should be not more than 40km/h
- iii. Prominently light transportation vehicles for night and poor weather visibility.
- iv. Transportation must fully comply with requirements by local authorities.

3.5 Forest Fire

- i. No open burning allowed on-site, either for land clearing or waste/garbage/biomass disposal.
- ii. Identify nearest water resources and provide water facilities near potential area for forest fire.
- iii. Conduct regular training and awareness programs.
- iv. Arrange with local authorities for assistance in case of fire within project area.
- v. Prepare fire prevention plan.

3.6 Waste Disposal

3.6.1 Solid Waste Disposal

Sewage

- i. Shall be handled and disposed of in accordance to Jabatan Kesihatan requirements.
- ii. Discharge sewage direct to on-site basic treatment facility.
- iii. Awareness programs for better understanding on sewage management especially for on-site worker.

Garbage

- i. Collect garbage regularly and bring it to waste dumpsite in Beluran.
- ii. Disposal of garbage should be done outside of forest reserve area.
- iii. Disposal of garbage to river, stream and lower ground or by burning is prohibited.
- iv. Awareness programme for better understanding on garbage management especially for on-site worker.

3.6.2 Disposal of scheduled waste

- i. Handling of used oil, oily waste or hazardous waste must be and dispose in accordance of Malaysia Environmental Legislative requirements.
- ii. Collect and store oily waste preferably in high density polyethylene drums to avoid corrosion and leakage. Provide label on the container and store in temporary storage.
- iii. Storage site must be more than 30m from river or stream and must be fenced, covered that provided with impervious floor and drainage.
- iv. Dispose oily waste at least once for every six months.
- v. Provide oil or water separator to trap and treat oily wastewater on-site. Drainage from waste storage should be directed to oil trap before discharge to water bodies.

3.7 Wildlife Protection

- i. Identify specific location or route that used by protected wildlife species and provide appropriate signage or notices for information.
- ii. Awareness – conduct awareness programme: i.e. talk and distribute poster
- iii. Documentation – record and investigate any incidents of illegal hunting within project area.
- iv. Signboard – prepare signboard or warning signage on prohibiting hunting activities within project area.
- v. Patrolling – conduct aerial and road patrolling
- vi. Road block – conduct road block at specific area to check suspicious vehicles.
- vii. Enforcement – conduct enforcement: i.e. arrest and prosecutions.

3.8 Management of Agrochemical

- i. Stored properly and handle with care
- ii. Minimized use of pesticides; priority must be given to biological control; pesticides selection
- iii. Application technique, spraying volume and timing of the application must be carefully and strictly followed (as prescribed by the manufactures)

- iv. Usage of agro-chemical shall strictly adhere to the rules and regulations as stipulated under the Pesticides Act 1974.

3.9 Abandonment

- i. All structure that unsure to be safe or cannot be assured to remain safe with time should be demolished and all of the material shall be removed.
- ii. Any land contaminated with oily wastes should be cleaned / remedied.
- iii. All stream crossing should be removed and the crossing site restored to near original condition.
- iv. Access to the site should be closely monitored by establishing a well guarded gate, and displaying appropriate warning signs.
- v. Inform related authorities such as Jabatan Perhutanan Sabah, Jabatan Hidupan Liar, EPD, Pejabat Ketua Daerah(DOE), Jabatan Tanah & Ukur, JKKK and police should be informed of the site closure.

CHAPTER FOUR

RECOMMENDED MONITORING PROGRAMME

4.1 Objectives

The aims of this monitoring are:

1. To carry out regular/periodic monitoring programs for
 - a. Identify changes in the diversity and health of the forest ecosystems.
 - b. Monitor water quality of streams and re-deploying management resources to improve plan implementation.
2. To design or develop monitoring programs/systems such as, to develop a monitoring system for Banteng, Orang Utan, Clouded Leopard and Probocis Monkey within the Project Area in order to determine their existing populations, their movements and distribution to ensure compliance with the FSC principles and criteria.

The following should be presented to ECD on half-yearly basis:

4.2 Soil Erosion Control

- i. Preparation and proposed nursery, restoration and silviculture activity operation schedule indicating date, locality period and area in map with description.
- ii. Maintenance schedule of drainage where necessary.
- iii. Restoration and silviculture activity for riverine reserve and water catchment (showing paint marking and signs/notices).

4.3 Water Quality Control

- i. Record number of existing and new stream crossing (if any).
- ii. Record material used for preparation of any stream crossing (if any).
- iii. Documentation on any new stream crossing preparation (if any).
- iv. Existing and new stream crossing maintenance or preparation (if any).
- v. Stream crossing show marking and signage (if any).

4.4 Forest Ecosystem (Flora Protection)

- i. Identify protected trees (including protected fruit tree sp.), “mother or seed” trees, and ecological or architectural features of high value within project site for preservation purposes.
- ii. Mark the area on map and also put signage on site.
- iii. Record of road patrolling and aerial surveillance.
- iv. Arrest records: i.e. number of individual, fine and captured items.
- v. Records any vehicle coming in or out of the project area.
- vi. Records of road block activity.
- vii. Signboard or warning signage of no illegal logging activities.
- viii. Identify illegal activities within project area especially hotspot area.

4.5 Traffic and Transportation Safety

- i. Minutes of meeting or consultation letter with company or authorities involving transport that being used for activities within project area.
- ii. Layout plan and photographs of traffic signs including near project site (campsite, jetty, road junction and populated areas).

4.6 Forest Fire

- i. Layout plan and documented forest fire incident for both within and near project site
- ii. Schedule and report on fire drills, training and awareness programme.
- iii. Fire prevention and control facilities including water storage facility, fire prevention signage and fire fighting facilities.
- iv. Identify area that is high potential for fire within or near project site area.

4.7 Waste Disposal

4.7.1 Solid Waste Disposal

- i. Layout plan and photographs of waste storage area, garbage dumping site, biomass disposal area and sewage facility including storage area, floor system, drainage and signage.
- ii. Awareness or training program especially to on-site workers.

4.7.2 Disposal of scheduled waste

- i. Identify and measure volume of waste generated, handle properly and store or dispose. If dispose to outside of project area, record the destination, quantity and type of disposal.
- ii. Awareness or training program especially to on-site workers.

4.8 Wildlife Protection

- i. Identify specific location or route taken especially involving endangered species within project site. Provide appropriate signage and notice to warn others.
- ii. Wildlife corridor boundaries or area should be mark on map and signage on site.
- iii. Record of road patrolling and aerial surveillance.
- iv. Arrest records: i.e. number of individual, fine and captured items.
- v. Records any vehicle coming in or out of the project area.
- vi. Records of road block activity.
- vii. Records of camera trap install at checking station.
- viii. Signboard or warning signage of no hunting activities.
- ix. Identify illegal hunting incident within project area.
- x. Identify hotspot area of illegal hunting activities.

4.9 Abandonment

- i. Layout plan and photographs of the abandoned area including clean-up site, slope rehabilitation, re-vegetated area, removal of stream crossing, sign or notices where necessary.

4.10 Road Improvement

- i. The steep road must be put the gravel stone
- ii. The use of herbicides to clean both sides of the road are not allowed
- iii. The ungravelled road not allowed to use during the rainy seasons
- iv. Drain flow should be channeled to the forest and not directly into the river to avoid the rivers sedimentation.

4.11 Others

- i. Incident of discovery of protected floral or faunal species within project site.
- ii. Contributions to local community on road maintenance, wildlife protection or socio-economics either monetary or other assistance.

CHAPTER FIVE

SUMMARY

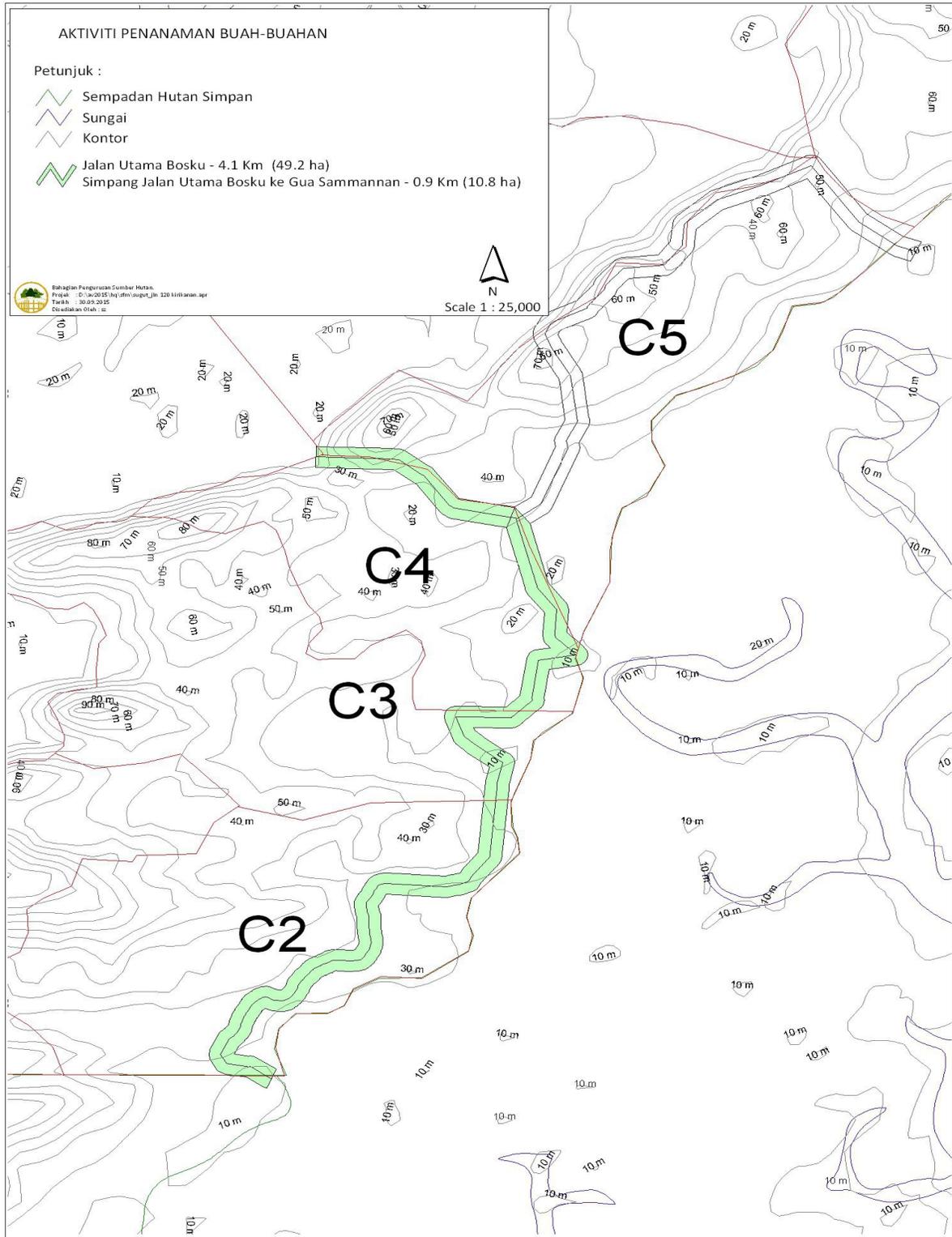
Based on the condition and activities within the project area, it can be concluded that there is no major land clearance activity. Restoration and silviculture activities that were carried out within project area and these activities do not show any sign of significant impact to the soil erosion. The impact on water quality also expected to be not significant because no construction of bridge or culvert currently. As there are no major activities such as logging, the impact on ecology also will not be significant towards forest diversity especially on plant and wildlife. However, illegal hunters may give significant impact on wildlife if not controlled.

Impact of traffic volume and safety within project area also expected to be minimal since there are no major activities. Forest fire also will be no significant impact but always in precautions if any incidents that may ignite fire within project area. Solid waste disposal impact is expected to be not significant because it will be collected and carried outside project area. However, the impact of sewage disposal will be significant if no proper sewage treatment facility provided within project area. Oily waste and hazardous materials shall be collected and stored temporary before carried outside of project area and may be significant if not handle properly. Restoration activity that associated with chemical should be apply and handle properly. As for now the impact is expected to be not significant.

Signboards for Prohibition of hunting in the project area main entrance



The map showing the restoration area planted by fruits tree



The seedling of fruits tree in the project area



The Road improvement activities in the projek area



