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ENVIRONMENTAL MONITORING AND COMPLIANCE AUDIT REPORT

FOR

FOREST MANAGEMENT OF BENGKOKA AND TAMBALUGU FOREST RESERVES (6,467 HA), PITAS, SABAH

2nd REPORT OF YEAR 2020

APRIL	AUGUST	DECEMBER
		✓

AEC Ref. No. : JPAS/PP/15/600-1/01/3/60(36)
Report Reference : CK/MO411/1197-2/20
Date of Report : 30th December 2020
Report No. : 6



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GERAK SAGA SDN BHD

ENVIRONMENTAL MONITORING AND COMPLIANCE AUDIT REPORT

1.0 Introduction

The Project site covers an area of approximately 6,467 Ha comprising the 6,270 Ha Bengkoka Forest Reserve and the 197 Ha Tambalugu Forest Reserve. For operational purposes, the two forest reserves are managed as a single Forest Management Unit (FMU) and divided into 4 coupes. Coupes 1-3 (Bengkoka) and Coupe 4 (Tambalugu). The Project Proponent holds the license for management operation in both forest for Industrial Tree Plantation (TPP).

1.1 Monitoring Information

Project Title : Forest Management of Bengkoka and Tambalugu Forest Reserves (6,467 Ha), Pitas, Sabah
Monitoring Period : September - December 2020
Date of Monitoring : Compliance Audit : 15th December 2020
Water Sampling : 15th December 2020
EIA Consultant : Chemsain Konsultants Sdn. Bhd.

1.2 Project Proponent Information

Project Proponent : Gerak Saga Sdn. Bhd.
Contact Person : Mr. Guy Thornton
Tel. No. : 088 – 663492
Fax No. : 088 - 662494
Environmental Officer : Ms. Wilvia Olivia William
Contact No. : 019-8226958
E-mail : w.william@forestsolutions.com.my

1.3 Post-EIA Consultant Information

Post-EIA Consultant : Chemsain Konsultant Sdn. Bhd.
Tel. No. : Office : 088 – 381 277 / 278
Mobile : 019 – 812 0808
Fax No. : 088 – 381 280
Contact Person : Agatha Francis / Valentine Abbie
Email : valentine.abbie@chemsain.com

1.4 Project Status

Percentage Completion :

Activities	Percentage (%)
Clearing	Coupe 1
Planting	Block 67 & 72

Planted: 1,251.7 ha / Harvested: 1,527.1 ha
(Project development update as 21/12/20)

Chronology of Events :

Table 1.0: Chronology of Events

No.	Event	Date
1.0	Signing of AEC Ref.: JPAS/PP/15/600-1/01/3/18	23 rd October 2007

2.0 OBJECTIVE

The Environmental Monitoring and Compliance Audit (EMCA) is a requirement by the Environmental Protection Department (EPD) and to be carried out on quarterly basis, and reported in accordance to the Approval Conditions as specified in the **Syarat-Syarat Alam Sekitar [Seksyen 12(1) dan 20, Enakmen Perlindungan Alam Sekitar 2002]** of the EPD ref: JPAS/PP/15/600-1/01/3/60 (36) dated 1st November 2017

3.0 CHANGES IN PROJECT CONCEPT/ ENVIRONMENT

3.1 Project Concept

No.	Item	Changes
1.	Project Component	Nil
2.	Changes to Land Lot	Nil
3.	Land Area	Nil

3.2 Surrounding Environment

No.	Item	Changes
1.	Land Use	Nil
2.	River / Costal Morphology	Nil

4.0 MONITORING LOCATIONS

Designated monitoring and sampling location are shown in **Figure 1.0** with details tabulated in **Table 2.0**.

Table 2.0: Environmental Monitoring Locations

Monitoring Component	Key	GPS Coordinates (Datum: WGS 84)	Location Description
Water Quality	W1	N 06° 51' 18.9" E 117° 06' 41.1"	Unnamed stream downstream of Bengkoka Forest Reserve at Kg. Gumpa
	W2	N 06° 50' 40.6" E 117° 09' 18.6"	Sg. Bongkol of Safoda dam within Bengkoka Forest Reserve
	W3	N 06° 50' 40.1" E 117° 10' 38.2"	Sg. Kakarangan downstream of Bengkoka Forest Reserve
	W4	N 06° 51' 10.4" E 117° 08' 52.6"	Sg. Kisorong within Bengkoka Forest Reserve
	W5	N 06° 52' 39.3" E 117° 09' 49.8"	Sg. Malubang within Bengkoka Forest Reserve

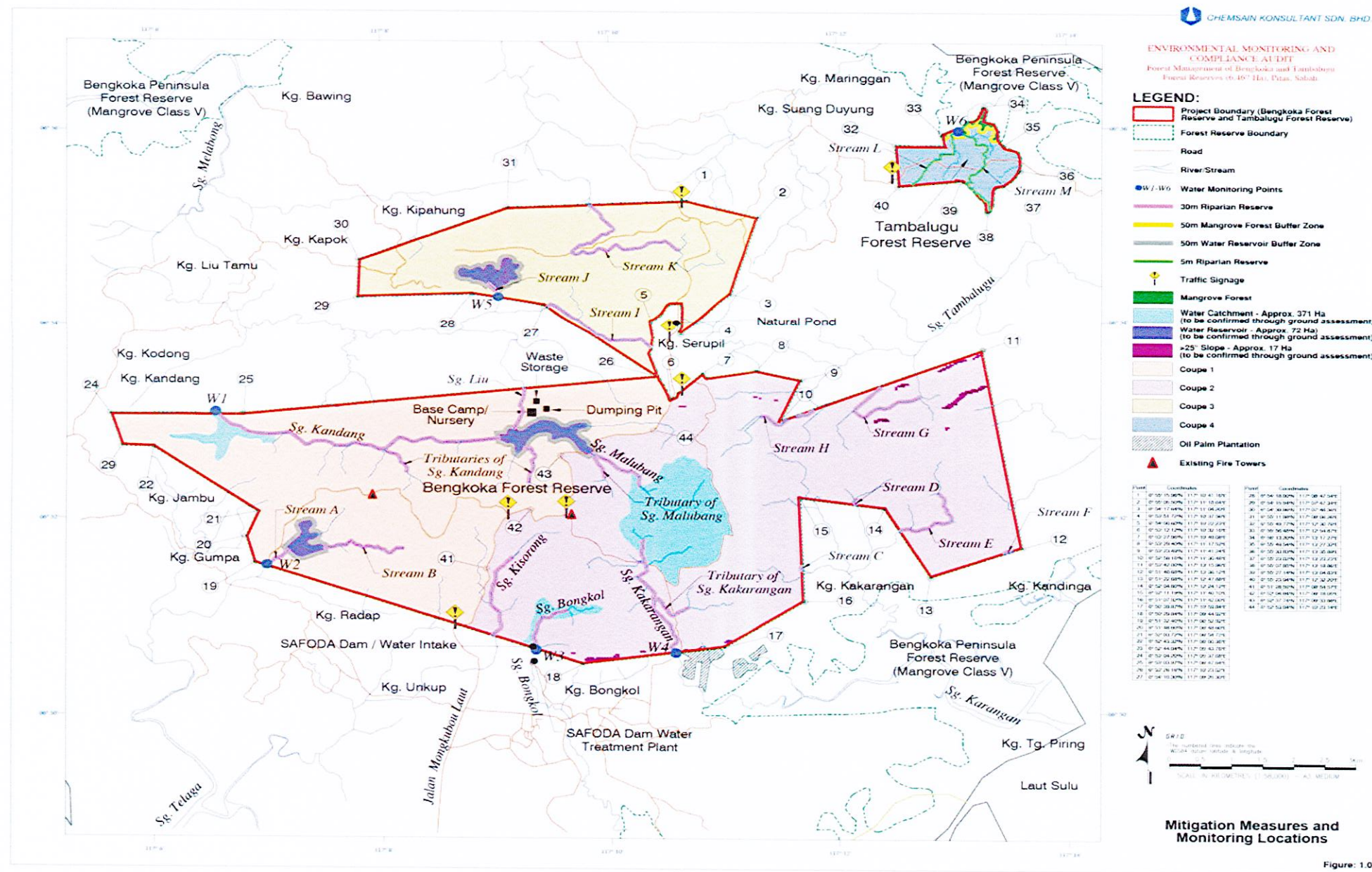


Figure 1.0: Monitoring Locations Map.

5.0 COMPLIANCE STATUS, COMMENTS, CORRECTIVE ACTION & DATE OF COMPLETION

Nama Projek	: Forest Management of Bengkoka and Tambalugu Forest Reserves (6,467 Ha), Pitas, Sabah
Nama Pemaju	: Gerak Saga Sdn Bhd
Rujukan fail jabatan ini	: JPAS/PP/15/600-1/01/3/60 (36)
Tarikh Akujanji	: 1 st November 2017
Penyedia laporan pemuatan ini	: Chemsain Konsultant Sdn. Bhd.
Tempoh diliputi oleh laporan ini	: September - December 2020

AEC No.	Approved Environmental Conditions	Status	Observations / Comments	Photo No.	Corrective Action & Date of Completion
5.1	<u>Hakisan Tanah dan Pemendapan Kelodak</u>				
5.1.1	<u>Kawalan Kawasan Perladangan Hutan</u>				
i	Satu (1) salinan pelan penyukatan sempadan kawasan projek seluas 6,467 hektar dalam kawasan Hutan Simpan Bengkoka dan Tambalugu, Daerah Pitas sebagaimana ditunjukkan pada "Figure 6.2.1" dalam Perjanjian Syarat-syarat Alam Sekitar ini hendaklah dikemukakan ke JPAS sebelum aktiviti perladangan hutan dimulakan.	Comply	Project Demarcation Plan had been submitted via the 1st EMCAR of 2019 as Appendix D.	-	-
ii	Sempadan kawasan projek yang telah diukur hendaklah ditanda di lapangan serta dipasang dengan papan tanda di lokasi-lokasi yang mudah dilihat sebelum aktiviti perladangan hutan dimulakan.	Comply	- Signboard, entrance gate and coloured pegs were erected to demarcate the Project boundary on-site. - Signboard between coupes / block was erected for demarcation purposes.	-	-

iii	Semua tanda sempadan tapak projek hendaklah tidak ditimbus, dihalang, dirosakkan atau diganggu daripada kedudukan asal.	Comply	Signboard and pegs were in good condition as observed during the site visit.	-	-
iv	Aktiviti perladangan hutan adalah <u>tidak dibenarkan</u> di dalam kawasan tadahan air, takungan air dan "water intake point" sebagaimana dinyatakan dan masing-masing ditandakan sebagai "Water Catchment", "Water Reservoir" dan "Water Intake" dalam maklumat tambahan rujukan CK/EV403-4278/0199/17 bertarikh 13 April 2017 dan ditunjukkan pada "Figure 6.2.1" dalam Perjanjian Syarat-syarat Alam Sekitar ini.	Comply	There is no development activity carried out within the water catchment areas, water reservoir and water intake as observed during the site visit.	-	-
v	Zon penampian dengan kelebaran tidak kurang 50 meter hendaklah disediakan di sempadan kawasan projek yang bersempadan dengan Hutan Simpan Bengkoka dan ditunjukkan pada "Figure 6.2.1" dalam Perjanjian Syarat-syarat Alam Sekitar ini.	Comply	The Project Proponent had provided 50-meter width buffer zone adjacent to the Bengkoka Forest Reserves prior to Project development on-site.	-	-
vi	Sebarang aktiviti perladangan hutan <u>tidak dibenarkan</u> dalam kawasan zon penampian.	Comply	The 50-meter width buffer zone was excluded from any Project development.	Plates 1 & 2	-
vii	Sebarang aktiviti perladangan hutan <u>tidak dibenarkan</u> dalam kawasan berkecurunan 25 darjah atau lebih sebagaimana ditunjukkan pada "Figure 6.2.1" dalam Perjanjian Syarat-syarat Alam Sekitar ini.	Comply	There are no signs of any activities conducted within the steep protection area ($\geq 25^\circ$ slope area) as observed during the site visit.	-	-

viii	Sempadan kawasan tadahan air, takungan air dan "water intake point", zon penampungan dan kawasan berkecurunan 25 darjah atau lebih yang dilindungi hendaklah ditanda di lapangan dan dipasang dengan papan tanda di lokasi-lokasi yang mudah dilihat sebelum aktiviti perladangan hutan dimulakan.	Comply	The water catchment areas, water reservoir area, water intake area and steep protection area ($\geq 25^\circ$ slope area), was demarcated with a signboard and colored pegs as observed during the site visit.	Plate 3	-
5.1.2	<u>Kawalan Pembinaan Jalan</u>				
i	Jalan sedia ada hendaklah digunakan bagi mengurangkan gangguan terhadap tanah.	Comply	The existing access road was fully utilized as observed during the site visit.	-	-
ii	Sistem perparitan hendaklah disediakan bagi mengalirkan air keluar dari struktur jalan dan dilencongkan ke kawasan yang mempunyai tumbuhan.	Comply	The existing access road on-site was equipped with earth drainages which was diverted towards the nearest vegetated area.	-	-
iii	Aktiviti pelupusan atau pembuangan bahan tanah berlebihan <u>tidak dibenarkan</u> dalam parit, sungai atau alur air.	Comply	There are no signs of any overburden being disposed into the nearest natural waterways as observed during the site visit.	-	-

5.1.3	<u>Pembinaan Rumah Pekerja, Kem Pekerja Atau Bengkel</u>				
i	Sebarang aktiviti kerja tanah dan pembersihan kawasan bagi pembinaan rumah pekerja, kem pekerja atau bengkel hendaklah diminimalkan.	Comply	- The staffs' quarters and workers' quarters at the base camp were fully utilised on-site. - There is no workshop facility constructed within the Project site. - According to the Project Proponent, maintenance of vehicle on-site will be carried out in an external workshop.	Plates 4 & 5	-
ii	Sistem perparitan yang berkesan hendaklah disediakan bagi mengawal larian air permukaan dan air buangan dari kawasan rumah pekerja, kem pekerja atau bengkel dan hendaklah dilencongkan ke kawasan yang mempunyai tumbuhan dan <u>tidak dibenarkan</u> dialir terus ke dalam sungai atau alur air.	Comply	The staff's quarters, workers' quarters and nursery were equipped with perimeter earth drainage which was diverted towards the nearest vegetated area.	Plate 6	-
iii	Kedudukan rumah pekerja atau kem pekerja hendaklah terletak pada jarak mendatar tidak kurang 30 meter dari tebing sungai atau alur air.	Comply	The staffs' quarters, worker's quarters and nursery were located at 30 meters away from any nearest natural waterways.	Plates 4 & 6	-
iv	Kedudukan bengkel hendaklah terletak pada jarak mendatar tidak kurang 50 meter dari tebing sungai atau alur air.	Not Applicable	Refer to the comments in AEC 5.1.3 (i).	-	-

v	Semua rumah pekerja, kem pekerja atau bengkel sedia ada yang tidak mematuhi peraturan-peraturan yang dinyatakan dalam Perjanjian Syarat-syarat Alam Sekitar ini hendaklah dipindahkan dan dikawal sebagaimana ditetapkan.	Comply	The location for the facilities were in compliance with the AEC requirement.	Plates 4 & 6	-
5.1.4	<u>Rehabilitasi Tanah Yang Terdedah</u>				
i	Semua kawasan tanah dan cerun yang terdedah hendaklah distabilkan dan direhabilitasi dengan menanam spesies tumbuhan yang diluluskan oleh Jabatan Perhutanan Negeri Sabah.	Comply	- The Project Proponent assured that cover crops will be planted at the exposed area of the Project site to reduce the risk of soil erosion. - Existing vegetation on the inactive and idle area on-site were retained and remained undisturbed.	-	-
5.2	<u>Perlindungan Sungai</u>				
i	Sebarang aktiviti pembersihan dan perladangan hutan adalah <u>tidak dibenarkan</u> dalam simpanan sungai sebagaimana ditunjukkan pada "Figure 6.2.1" dalam Perjanjian Syarat-syarat Alam Sekitar ini.	Comply	There are no development activities carried out within the Riparian Reserve area as observed during the site visit.	-	-

ii	Sempadan simpanan sungai hendaklah ditanda di lapangan dengan cat merah serta dipasang dengan papan tanda di lokasi-lokasi yang mudah dilihat sebelum aktiviti pembersihan dan perladangan hutan dimulakan.	Comply	- Trees along the Riparian Reserves belt was painted with blue colour to demarcate the Riparian Reserves belt on-site. - Signboard and coloured pegs were erected to demarcate the Riparian Reserves on-site.	-	-
iii	Sebarang pembinaan rumah pekerja, kem pekerja, bengkel, tandas atau struktur bangunan lain <u>tidak dibenarkan</u> dalam simpanan sungai.	Comply	There were no structures constructed within the Riparian Reserves area.	-	-
iv	Sebarang penyimpanan bahan minyak atau bahan toksik <u>tidak dibenarkan</u> dalam simpanan sungai.	Comply	There was no sign of any oily or toxic materials stored within the Riparian Reserves on-site.	-	-
v	Sebarang bahan tanah lebihan, sisa pepejal, sisa biomas, kumbahan, bahan minyak, kimia atau bahan-bahan toksik <u>tidak dibenarkan</u> dilupuskan dalam simpanan sungai.	Comply	There were no signs of any overburden, biomass or any types of wastes (i.e. sewage, oil, chemical, toxic, etc) being disposed within the Riparian Reserves area as observed during the site visit.	-	-

5.3	<u>Bahan Minyak Dan Sisa Toksik</u>				
i	Bahan minyak dan sisa toksik adalah <u>tidak dibenarkan</u> dilupuskan atau dibiarkan mengalir ke dalam parit, sungai atau alur air.	Comply	There are no signs of any oily and toxic materials being disposed into any nearest natural waterways as observed during the site visit.	-	-
ii	Bahan minyak dan sisa toksik hendaklah dikumpul dan disimpan dalam bekas yang kukuh dan tidak mudah bocor. Bekas-bekas penyimpanan tersebut hendaklah dilabel.	Comply	- Oily materials were stored in HDPE container. - Diesel was stored inside metal skid tank.	Plates 7 to 11	-
iii	Kawasan penyimpanan bahan minyak dan sisa toksik tersebut hendaklah terlindung dari hujan dan terletak pada jarak mendatar tidak kurang 50 meter dari tebing sungai atau alur air.	Comply	- Refer to the comments in AEC 5.3 (i). - The oil storage area and diesel skid tank on-site were located at more than 50 meters away from any nearest natural waterways. - The oil storage area was equipped with concretized floor, bunded and sheltered from weather exposure. - The diesel skid tank storage area on-site was equipped with concretized floor, bunded and shelter from weather exposure.	Plates 7 to 11	-

iv	Kawasan penyimpanan bahan minyak dan sisa toksik hendaklah disediakan dengan sistem saliran serta perangkat minyak.	Comply	- The diesel skid tank and oil storage area were equipped with oil trap. - The nozzle storage area of the skid tank was equipped with perimeter concrete containment bund filled with sand to prevent oil from directly seep into the ground.	Plates 7 to 11	-
v	Bahan minyak dan sisa toksik tersebut hendaklah dilupuskan mengikut keperluan Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 .	Comply	According to the Project Proponent, the Scheduled Wastes (if any) generated on-site will be brought out by the DOE licensed contractor, Petrojadi Sdn. Bhd.	-	-
5.4	<u>Kawalan Sisa Pepejal Dan Biomas</u>				
i	Sebarang aktiviti pelupusan sisa pepejal dan biomas <u>tidak dibenarkan</u> dalam parit, sungai atau alur air.	Comply	There were no signs of any solid waste and biomass being disposed into any nearest natural waterways as observed during the site visit.	-	-

ii	Kemudahan mengumpul dan mengutip sisa pepejal dan biomas hendaklah disediakan. Lokasi kawasan pengumpulan hendaklah terletak pada jarak mendatar tidak kurang 30 meter dari tebing sungai atau alur air.	Comply	- Garbage bins was provided at the staffs' quarters area and workers' quarters at the contractor base camp to facilitate solid waste collection. - Dumping pit was provided on-site. - The facilities were located at more than 30 meters away from any nearest natural waterways.	Plates 14 & 16	-
iii	Semua sisa pepejal seperti botol, tin, plastik dan besi hendaklah dikumpul secara berasingan dan dikitar semula.	Comply	Recycle bins were provided at the workers quarters area to facilitate solid waste segregation.	16	-
iv	Sekiranya tiada kawasan pelupusan yang sesuai dalam kawasan projek, sisa pepejal dan biomas hendaklah dilupuskan di kawasan yang diluluskan oleh pihak berkuasa tempatan yang berkaitan.	Comply	Refer to the comments in AEC 5.4 (ii).	-	-

5.5	<u>Kawalan Sisa Kumbahan/Sisa Cecair</u>				
i	Kemudahan sistem sanitasi dan sistem perawatan kumbahan / sisa cecair hendaklah disediakan di kawasan projek.	Comply	Toilet facilities on-site was equipped with septic tank.	Plate 15	-
ii	Sebarang pelepasan atau pelupusan terus sisa kumbahan / sisa cecair <u>tidak dibenarkan</u> dalam sungai atau alur air.	Comply	There is no sign of direct discharge of liquid waste or sewage into the nearest natural waterways.	-	-
iii	Sebarang effluen kumbahan yang dihasilkan hendaklah mematuhi sekurang-kurangnya Piawai B, Peraturan – Peraturan Kualiti Alam Sekeliling (Kumbahan) 2009 .	Comply	Refer to the comments in AEC 5.5 (i).	-	-
5.6	<u>Kawalan Kualiti Udara Dan Kebakaran</u>				
i	Pembakaran terbuka adalah <u>tidak dibenarkan</u> .	Comply	The Project Proponent assured that no open burning will be conducted during the Project development activities.	-	-
ii	Pelan pengurusan dan pencegahan kebakaran kawasan projek hendaklah disediakan dan dilaksanakan serta satu (1) salinan pelan tersebut hendaklah dikemukakan ke JPAS.	Comply	The Fire Management and Prevention Plan was attached in the previous report (3rd EMCA 2019) as Appendix C.	-	-

5.7	<u>Penghentian Atau Penamatan Projek</u>
i	Semua struktur binaan yang tidak digunakan hendaklah dibuka secara teratur apabila berlaku penghentian atau penamatan projek tersebut. Not Applicable • Not applicable at the current stage of development as the Project is still on-going. - -
ii	Semua struktur binaan yang didapati tidak selamat atau yang tidak dapat dipastikan selamat hendaklah dibuka. Not Applicable • Refer to the comments in AEC 5.7 (i) - -
iii	Satu Laporan Pemuatan Alam Sekitar dengan format dan kandungan laporan sebagaimana dinyatakan dalam Lampiran 1 hendaklah dikemukakan apabila berlaku penghentian atau penamatan projek tersebut. Not Applicable • Refer to the comments in AEC 5.7 (i) - -

6.0 CONCLUSIONS

Overall Compliance

For the Environmental Compliance period for September - December 2020, the *Forest Management of Bengkoka and Tambalugu Forest Reserves (6,467 Ha), Pitas, Sabah* generally complied with the EIA approval conditions, with **no non-compliance** recorded.

PERAKUAN PAS

Dengan ini saya mengaku telah turut serta dalam odit yang dijalankan oleh perunding alam sekitar dan telah meneliti dan bersetuju dengan isi kandungan Laporan Pematuhan Alam Sekitar bagi projek ini.

Tandatangan :



SIGN HERE 

Nama :

GUY THORNTON

Jawatan :

FACTORY DIRECTOR

Tarikh :

01 MARCH 2021

Cop Rasmi syarikat :



PERAKUAN PERUNDING ALAM SEKITAR

Dengan ini saya mengaku dan mengesahkan semua kenyataan dan butir-butir dalam Laporan Pematuhan Alam Sekitar yang dikemukakan adalah benar.

Tandatangan :



Nama :

AGATHA FRANCIS

Tarikh :

20. December. 2020

Cop Rasmi syarikat :



APPENDIX A

Plates



5.1.1-Kawalan Kawasan Perladangan Hutan



Plate 1

Aerial view of planting area Coupe 1.

All Project development were conducted within the Project boundary.

**photo from Project Proponent.*



Plate 2

Aerial view of logging area within Coupe 3.

All Project development were conducted within the Project boundary.

**photo from Project Proponent.*

5.1.1-Kawalan Kawasan Perladangan Hutan



Plate 3

View of the water reservoir dam located within the Project site.

GPS coordinates of the picture taken: N 06° 52' 53.1 E 117° 09' 07.1"

5.1.3-Pembinaan Rumah Pekerja, Kem Pekerja atau Bengkel



Plate 4

View of the workers' quarters at the contractors' base camp.

The facility is located at more than 30 meters away from any nearest natural waterways.

GPS coordinates of the picture taken: N 06° 53' 00.0 E 117° 09' 17.4"

5.1.3-Pembinaan Rumah Pekerja, Kem Pekerja atau Bengkel



Plate 5

View of the nursery on-site.

The facility is located at more than 50 m away from any nearest natural waterways.

GPS coordinates of the picture taken: N 06° 52' 34.9 E 117° 08' 25.9"



Plate 6

The nursery on-site was provided with proper drainage system.

GPS coordinates of the picture taken: N 06° 52' 34.9 E 117° 08' 25.9"

5.3-Bahan Minyak dan Sisa Toksik



Plate 7

View of the skid tank storage area situated at staff quarters area.

The facility is equipped with concretized floor, bunded and sheltered from weather exposure.

The facility was located at 50 meters away from any nearest natural waterways.

GPS coordinates of the picture taken: N 06° 50' 53.8" E 117° 08' 39.5"



Plate 8

The diesel skid tank was equipped with perimeter concrete bund filled with sand to prevent oil from directly seep into the ground.

GPS coordinates of the picture taken: N 06° 50' 53.8" E 117° 08' 39.5"

**Plate 9**

The oil storage area was equipped with oil trap to contain any oil spillage.

GPS coordinates of the picture taken: N 06° 52' 57.5" E 117° 09' 18.7"

**Plate 10**

Close up view of the oil storage area situated at the site office.

Oil was stored inside HDPE container.

The facility was equipped with concretized floor, bunded and sheltered from weather exposure.

The facility is located at more than 50 m away from any nearest natural waterways.

GPS coordinates of the picture taken: N 06° 52' 57.5" E 117° 09' 18.7"



Plate 11

The oil storage area was equipped with oil trap.

GPS coordinates of the picture taken: N 06° 52' 57.5" E 117° 09' 18.7"



Plate 12

View of the agrochemical storage area on-site.

The facility is located at more than 50 m away from any nearest natural waterways.

GPS coordinates of the picture taken: N 06° 52' 58.9" E 117° 09' 20.5"



Plate 13

Agrochemical containers on-site was labelled and stacked properly.

GPS coordinates of the picture taken: N 06° 52' 58.9" E 117° 09' 20.5"

5.4-Bahan Sisa Pepejal dan Sisa Biomass



Plate 14

Garbage bin was provided to facilitate solid wastes collection.

GPS coordinates of the picture taken: N 06° 55'41.7" E 117° 06' 45.5"

5.5-Kawalan Sisa Kumbahan/ Sisa Cecair



Plate 15

Toilet with septic tank was available at the project site to cater sewage waste.

GPS coordinates of the picture taken: N 06° 47'04.4" E 117° 06' 17.3"



Plate 16

Recycled bins were provided at the canteen area for solid waste segregation.

GPS coordinates of the picture taken: N 06° 47'04.4" E 117° 06' 17.3"

APPENDIX B

Environmental Monitoring Report



1.0 WATER QUALITY ANALYSIS

1.1 MONITORING LOCATION

Water sampling was carried out on the 15th December 2020 at five (5) monitoring locations, **W1**, **W2**, **W3**, **W4** and **W5** as shown in **Figure 1.0**. However, no sampling was carried out at locations **W3**, **W4**, **W5** as the Project has not progressed into these locations yet. No sample was obtained at **W2** due to inaccessible road condition.

The weather was fine and sunny throughout the sampling exercises.

1.2 ANALYTICAL RESULTS

Laboratory reports of the sample analyses are presented in **Appendix C**. Results of water quality analysis for monitoring stations **W1** – **W5** are summarized in **Tables 3.0** and compared to respective limit of **Class IIB of National Water Quality Standards for Malaysia (NWQSM)**.

Table 3.0: Surface Water Quality Monitoring Results

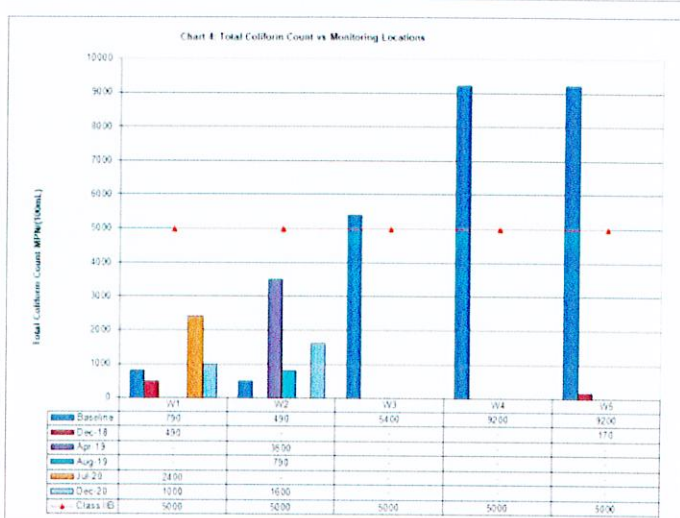
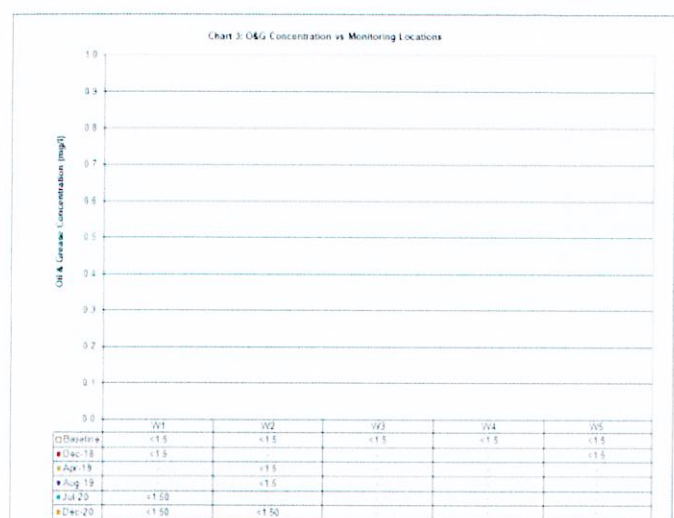
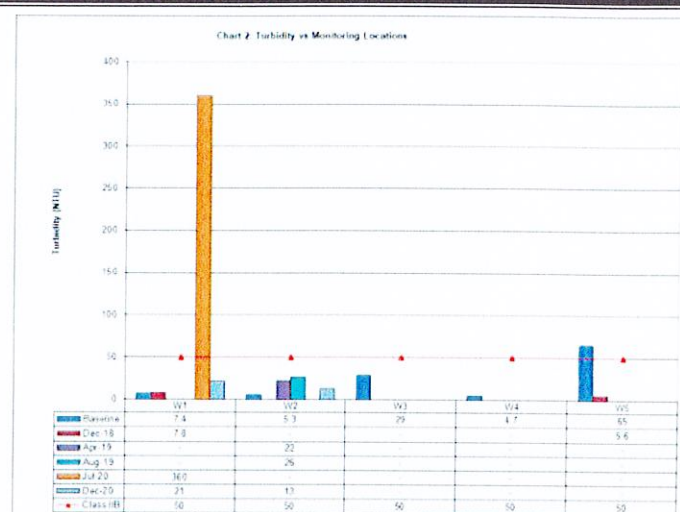
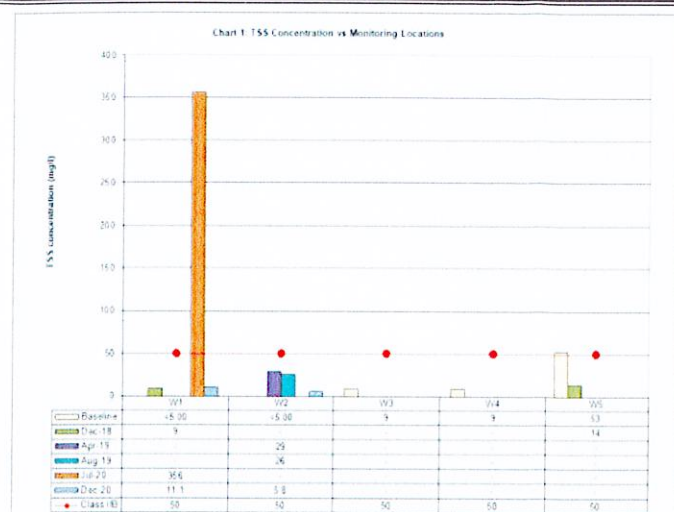
Monitoring Location	W1	W2	1LIMITS (Class III)
Monitoring Date / Time	15/12/2020 11:47AM	15/12/2020 09:47AM	
<u>Physical / Chemical Analysis</u>			
Total Suspended Solids (TSS), mg/L	11.1	5.80	50.0
Turbidity	21	13	-
Oil & Grease, mg/L	<1.50	<1.50	50.0
<u>Microbiological Analysis</u>			
Total Coliform Count (TCC), MPN/100mL	10000	1600	5000

Notes: < > Below / above detection limit

¹ National Water Quality Standards for Malaysia, Malaysia Environmental Quarry Report (DOE, 2006)



HISTORICAL SURFACE WATER QUALITY GRAPHICAL REPRESENTATION



Note: * Baseline data extracted from EIA for Forest Management of Bengkoka and Tambalugu Forest Reserves (6,467 Ha), Pitas, Sabah.

1.3 DISCUSSION

Surface water quality analysis show that all the parameters measured are **below** the recommended limit of **Class IIB** of **NWQSM** **except** for Total Coliform Count (TCC) at W1.

The high level of TCC could be contributed by the surface runoff flowed from upstream of the sampling location which brought out decayed wastes of plants and animal composition.

1.4 RECOMMENDED MITIGATION MEASURES

- Construction of sedimentation pond or drainage system within existing waterway or river reserve is strictly prohibited.
- Vegetation clearing shall be carried out in stages and confined to areas that are essential for Project development. Existing vegetation shall be retained to reduce runoff velocity and act as a natural barrier to minimize soil erosion.



- Re-vegetation or planting of cover crops shall be carried out in tandem with the field establishment works. This is to avoid prolonged and unnecessary exposure of bare ground elements such as rainfall, wind and surface runoffs.
- Usage of agro-chemical is minimized and strictly adhered to the rules and regulations as stipulated under the Pesticides Act 1974. Disposal of agro-chemicals such as pesticide and herbicide into existing stream or any waterway is strictly prohibited.

APPENDIX C

Surface Water Test Reports
National Water Quality Standards for Malaysia (NWQSM)





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Email: laboratory.kk@chemsain.com

www.chemsain.com



TEST REPORT

NOT FOR ADVERTISEMENT PURPOSES

Customer : Gerak Saga Sdn Bhd
L-70-7, KK Times Square,
Off Jalan Coastal,
88450 Kota Kinabalu, Sabah

Lab No. : CK/CL405/4175/20
Type (No.) of Sample : River Water (2)
Date Received : 17th December 2020
Date of Report : 06th January 2021
Project Code : CK/MO411/1197/20

Lab No.	4175-1	4175-2	<i>Test Method</i>	<i>* Standard Limit</i>
<u>Parameter(s)</u>	W1 Date: 15/12/2020 Time: 11.47 am	W2 Date: 15/12/2020 Time: 9.47 am		
# Turbidity, NTU	21	13	APH.1 2130 B, 2017	50
# Total Suspended Solids, mg/L	11.1	5.80	APHA 2540 D, 2017	50
# Oil & Grease, mg/L	<1.50	<1.50	APH.1 5520 B, 2017	-

* Class IIB National Water Quality Standards Malaysia.

Externally provided and Accredited

-----End-----

ChM. SHIERLY BIN
B. Sc. (Hons)
MMC (4697/6031/11/17)
SENIOR CHEMIST





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Email: laboratory.kk@chemsain.com

TEST REPORT

* NOT FOR ADVERTISEMENT PURPOSES *

Customer : Gerak Saga Sdn Bhd
L-70-7, KK Times Square,
Off Jalan Coastal,
88450 Kota Kinabalu, Sabah

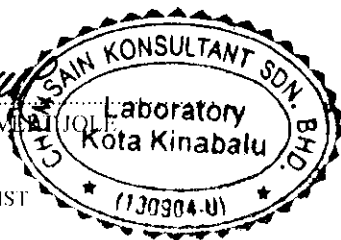
Lab No. : CK/ML405/4176/20
Type (No.) of Sample : River Water (2)
Date Received : 17th December 2020
Date of Report : 07th January 2021
Project Code : CK/MO411/1197/20

Lab No.	4176-1	4176-2	<i>Test Method</i>	<i>* Standard Limit</i>
<u>Parameter(s)</u>	W1 Date: 15/12/2020 Time: 11.47 am	W2 Date: 15/12/2020 Time: 9.47 am		
Total Coliform Count. cfu/100mL	1.0×10^4	1.6×10^3	<i>In-House Method QWI-MB 17-15 based on APHA 9222B</i>	5,000

* Class IIB National Water Quality Standards Malaysia.

----- End -----

STEPHANIE EMMETT JOLE
M. Sc.
MJMM0369
MICROBIOLOGIST



- NOTE: 1) This Test Report Shall Not be reproduced except in full without the written approval of the laboratory.
2) The above result(s) are based on sample(s) as received.
3) The result(s) relates to the sample(s) tested.

NATIONAL WATER QUALITY STANDARDS FOR MALAYSIA

Parameters	Unit	Classes					
		I	IIA	IIB	III	IV	V
Ammoniacal-N.	mg/l	0.1	0.3	0.3	0.9	2.7	>2.7
BOD	mg/l	1	3	3	6	12	>12
COD	mg/l	10	25	25	50	100	>100
DO	mg/l	7.0	5.0 – 7.0	5.0 – 7.0	3.0 – 5.0	<3.0	<1.0
pH		6.5 – 8.5	6.0 – 9.0	6.0 – 9.0	5.0 – 9.0	5.0 – 9.0	-
Colour	TCU	15	150	150	-	-	-
Elec. Cond*	µS/cm	1000	1000	-	-	6000	-
Floatables		N	N	N	-	-	-
Odour		N	N	N	-	-	-
Salinity*	%	0.5	1	-	-	2	-
Taste		N	N	N	-	-	-
Tot. Diss. Sol.*	mg/l	500	1000	-	-	4000	-
Tot. Susp. Sol.	mg/l	25	50	50	150	300	>300
Temperature	°C	-	Normal±2	-	Normal±2	-	-
Turbidity	NTU	5	50	50	-	-	-
F. Coliform**	counts/100ml	10	100	400	5000 (20000) ^a	5000 (20000) ^a	-
Total Coliform	counts/100ml	100	5000	5000	50000	50000	>50000

N = No visible floatable material / debris; or no objectionable odour; or no objectionable taste.

* = Related parameters, only one recommended for use

** = Geometric mean

± = Maximum not to be exceeded

CLASS USES

- I represent water body of excellent quality. Standards are set for the conservation of natural environment in its undisturbed state. Water bodies such as those in the national park areas, fountainheads, and in high land and undisturbed areas come under this category where strictly no discharge of any kind is permitted. Water bodies in this category meet the most stringent requirements for human health and aquatic life protection.
- IIA / IIB represents water bodies of good quality. Most existing raw water supply sources come under this category. In practice, no body contact activity is allowed in this water for prevention of probable human pathogens. There is a need to introduce another class for water bodies not used for water supply but of similar quality which may be referred to as **Class IIB**. The determination of **Class IIB** standard is based on criteria for recreational use and protection of sensitive aquatic species.
- III is defined with the primary objective of protecting common and moderately tolerant aquatic species of economic value. Water under this classification may be used for water supply with extensive / advance treatment. This class of water is also defined to suit livestock drinking needs.
- IV defines water quality required for major agricultural irrigation activities which may not cover minor applications to sensitive crops.
- V represents other waters which do not meet any of the above uses.