

## EXECUTIVE SUMMARY

**PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT (PEIA)  
For  
PROPOSED TIMBER LATEX CLONE (TLC) PLANTATION PROJECT (367.0 HA) AT  
HSK LEBIR (COMPARTMENT 23), MUKIM RELAI, DAERAH CHIKU,  
JAJAHAN GUA MUSANG, KELANTAN D.N.**

This **Preliminary Environmental Impact Assessment (PEIA)** report, hereinafter referred as **PEIA** report, is prepared in accordance with the requirement **Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987 Item 6(a): Conversion of hill forest land to other land use covering an area of 50 hectares or more**, made under the **Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987**. The **PEIA** report is done based on the guidelines, conditions and procedures contained in the **Handbook of Environmental Impact Assessment Guidelines (1995)** published by **Department of Environment (DOE)**. The outline of **Environmental Management Plan (EMP)**, **Erosion & Sediment Control Plan (ESCP)**, **Environmental Monitoring Report (EMR)** as well as **Environmental Auditing Exercise (EAE)** is also present in the report as brief guide in implementing the recommendations made herewith as well as to monitor proposed project from the environmental point of view. Upon approved, project proponent shall follow all guidelines, requirements, regulations and condition of approval. The report entitled "**Proposed Timber Latex Clone (TLC) Plantation Project (367.0 Ha) At HSK Lebir (Compartment 23), Mukim Relai, Daerah Chiku, Jajahan Gua Musang, Kelantan D.N.**" has been prepared for project proponent, **Sigur Ros Plantation Sdn Bhd (SRP)**. Any further clarification on above-mentioned proposed project can contact or address to person in-charge as listed below.

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**SRP** through the EIA consultant, **I.Z. EnvironMind Sdn Bhd (IZE)** had managed to obtain the **Preliminary Screening (PAT)** official clearance from **DOE Negeri Kelantan** through letter ref: AS(B)D11/121/000/122(2) dated 21<sup>st</sup> July 2015. The **Preliminary EIA** study conducted based on various guidelines on potential negative and positive impact that may arise from the overall development activity (site preparation, planting, maintenance, harvesting and replanting TLC trees). Various mitigating and control measures will then recommended and suggested to be carried out by the project proponent in order to minimize, control and if possible to resolve the respective potential impact and residual impact that might occur during the overall development of proposed TLC plantation project. **SRP** has a main objective, which is to develop and enhance the economic status from the agriculture plantation aspect for the **State Government of Kelantan**. Inquiries with respect to the report of the proposed project can addressed to the following contact person.

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**SRP** which is a company incorporated in Malaysia on 5<sup>th</sup> October 2010 and having its registered office at No. 333A, Block 5, Laman Seri Business Park, Persiaran Sukan, Seksyen 13, 40100 Shah Alam, Selangor D.E. **SRP** granted the respective land area at Compartment 23 of HSK Lebir from **Akademi Yakin Sdn Bhd (AYSB)** through letter ref:

AYSB/Proj/0.2/12/101 Jld 2 dated 15<sup>th</sup> June 2015. Whilst **AYSB** had granted the respective land area based on the usage permit issued by **Department of Forestry (DOF) Negeri Kelantan** through letter ref: PHN.KN.75/39/1 J.2(20) dated 2<sup>nd</sup> June 2015. **SRP** has a responsibility and commitment to undertake piece of **HSK Lebir** (Compartment 23), easuring approximately 906.8731 acres (367.0 ha) at Mukim Relai, Daerah Chiku, Jajahan Gua Musang, Kelantan D.N. for proposed TLC plantation project with certain term and conditions agreed with **AYSB** and **State Government of Kelantan** (refer **Figure 1.0**). Information gathered from fieldwork exercise and officer from the **Jabatan Kemajuan Orang Asli (JAKOA) Gua Musang** revealed that there are no Orang Asli community areas located surrounding the proposed project site. Information gathered from **Department of Irrigation & Drainage (DID)** and **Air Kelantan Sdn Bhd (AKSB) Jajahan Gua Musang** revealed that there is no **DID** river monitoring station and **AKSB** water intake point located within 5.0 km radius of the proposed project site. The nearest water treatment plant was **Loji Rawatan Air Manek Urai** is located some 35.9 km (actual distance) from the proposed project site.

Observation made on-site revealed that the proposed project site is generally consists of mixed terrain profile with hilly in terrain whilst flatter area at certain part of the area. The proposed project site has an altitude ranging from 80 to above 360 meter above the sea level (ASL). The highest peak is located at southwest side of the proposed project site reaching an altitude up to 372 meter ASL as well as Bukit Batu Papan as reference. The proposed project site is located within area classified as **Environmental Sensitive Area (ESA) Rank 1**. Based on the **Master Plan for Ecological Linkages** or best known as **Central Forest Spine (CFS)** produced by the **Department of Town & Country Planning**, it was noted that the proposed project site is located some 0.7 km (nearest point) from **Secondary Linkage 1 – SL 1**. This linkage will connect **Gunong Stong State Park** with **HSK Gunong Stong Selatan**, **HSK Relai**, **HSK Ulu Temiang**, **HSK Jentiang** and **HSK Serasa**. According to the **Rancangan Fizikal Negara 2010 (RFN 2010)**, **Rancangan Struktur Negeri Kelantan (RSNK 2020)** and **Rancangan Tempatan Jajahan Gua Musang 2020 (RTJGM 2020)** document, the proposed project site has been identified as forest reserve area known as **HSK Lebir** (refer **Figure 2.0**). Information obtained from **Department of Forestry (DOF) Negeri Kelantan** revealed that the proposed project site is located at area which being gazetted for proposed TLC plantation activity which approved by the **State Government of Kelantan** for the purpose of TLC plantation development programme.

The proposed project site situated within the coordinate from 05° 06' 33.3" N to 05° 08' 08.2" N and 102° 20' 35.9" E to 102° 21' 53.0" E and located nearby existing neighbouring timber latex clone plantation area owned by **Gagah Kukuh Sdn Bhd** (refer **Figure 3.0**). The proposed project site is approximately 1.0 km northeast of Kg Lepar community area, 1.1 km northeast of Kg Miak community area, 2.9 km northeast of Kg Laka community area, 3.6 km north of Kg Kasong community area, 5.0 km northwest of Lata Sunsang community area, 5.5 km southwest of Kelantan-Terengganu boundary area (nearest point), 10.3 km southeast of Orang Asli Pasir Linggi community area, 22.4 km southeast of Laloh community area, 48.3 km southeast of Dabong community area, 50.1 km southeast of Kuala Krai town area, 54.9 km northeast of Gua Musang town area, 71.1 km west of Kuala Berang town area, 86.9 km southeast of Jeli town area, 109.0 km southeast of Kota Bharu town area and 112.0 km northeast of Kuala Lipis town area. Information obtained from the **Pejabat Pengarah Tanah & Galian (PPTG) Negeri Kelantan** revealed that the proposed project site has no overlapping issue and defined to be located within forest reserve area (**HSK Lebir**). The proposed project site is being access from existing logging track and established plantation road via Jalan Gua Musang-Kuala Krai (main road network) located some 30.5 km (actual distance) at the northwest part area. This access road is noted passing through several small estate area owned by local community, local community area (Kg Lepar and Kg Miak), TLC plantation area (**Gagah Kukuh Sdn Bhd**) and forested area (**HSK Lebir**). The nearest local community settlement found located at the southwest part some 1.0 km from proposed project site known as Kg Lepar and Kg Miak. Information gathered from **JAKOA Negeri Kelantan** as well as site observation revealed that there is no Orang Asli settlement found within 5.0 km radius of proposed project site. The nearest Orang Asli settlement was located some 13.0 km from the proposed project site which known as Orang Asli Pos Lebir.

Assessment made during various fieldwork exercises revealed that the proposed project site is basically a river basin of Sg Terong, major river located nearby. This can be seen that all small rivulets, streams and rivers from the proposed project site will finally goes to Sg Terong. Some of the small rivulets which have been taken the water for quality analysing purposes have no name. And for the purpose of water sampling analysis, these small rivulets have been remarked as Sg A, B, C, D, E, F, G and H. Analysis made on the **Soil Suitability Report** produced by the **Department of Agriculture (DOA) Negeri Kelantan** revealed that the total of **367.0 ha** of study area is consists of

Chat Series, Gol Series, Musang Series and Steepland area. From the analysis, **146.1 ha (39.81%)** of the area within proposed project were occupied by Chat Series, **60.3 ha (16.43%)** of study area has being occupied by Gol Series and other **65.5 ha (17.85%)** has being occupied by Musang Series. Meanwhile, Steepland area covered about **95.1 ha (25.91%)** of total proposed project site. The total area which has been reported moderate suitable for proposed TLC plantation by **DOA Negeri Kelantan** was about **161.3 ha (44%)**. Whilst the balance of **205.7 ha (56%)** of the proposed project site area are not advisable and practical to undergo any kind of plantation activity.

It is expected to have some potential impacts on the environment due to the project implementation which will occur especially during early stage of development. The potential impacts has forecasted and identified according to various aspects including soil erosion, surface runoff, sedimentation, water pollution, air pollution, noise pollution, solid waste disposal, scheduled waste disposal, traffic congestion, ecology (flora and fauna), health & disease, safety & security and socio-economy. The detailed description on potential impacts prediction and evaluation may results from the proposed project has been comprehensively described in **Chapter 7.0** while the residual impacts are as discussed in **Chapter 9.0**. The activities, which are usually posed significant impacts are site preparation, planting and maintenance. Based on the various potential impacts predicted, various types of mitigating measures have recommended and suggested as to control, minimize and resolve the potential impacts, which might occur during various stages of proposed TLC plantation project. The details on the recommended mitigating measures that should undertake by **SRP** have highlighted in **Chapter 8.0** of the **PEIA** report. As to gather information on the usage of the road, traffic flow study has been conducted on 28<sup>th</sup> and 29<sup>th</sup> July 2013 and 11<sup>th</sup> August 2014 at Jalan Gua Musang-Kuala Krai as well as traffic movement into and from proposed project site area (Bonanza Sawmill Laloh- Proposed Project Site). It is observed that the average traffic flow rate captured at Jalan Gua Musang-Kuala Krai is **2,562** vehicles per day during day time (consists of cars, lorries, tractors, jeeps, 4-wheel drives, motorcycles, buses, etc.) which considered a medium rate of traffic low. Meanwhile the traffic movement into and from proposed project site (Bonanza Sawmill Laloh- Proposed Project Site) is **256** vehicles per day during day time. It was noted that the access road is passing through severall small estate area owned by local community, local community area, plantation area (**Yusan Jaya Resources, Teguh Purnama Enterprise, CFK Berkat Wood Trading, Sigur Ros Plantation Sdn Bhd** and **Gagah Kukuh Sdn Bhd**) and foreted area (**HSK Lebir**).

The implementation of proposed TLC plantation project is expected may affect the quality of river water available within proposed project site. It is expected that the main contributory sources of water pollution are eroded & sediment material, sewage from worker quarters, fertilizers and agriculture chemical application. Soil material is expected to wash away during rainstorm event to nearby river thus disrupted the river water quality. The usage of fertilizer and pesticide during planting and maintenance stage may cause contamination to the quality of nearby water body if not properly being controlled. Sewage and runoff from agriculture supply nutrient, which may stimulate the growth of algae and other aquatic weeds in the receiving water body. The river water within proposed project site will be sampled to determine basic water quality parameters such as pH, Suspended Solids (SS), Turbidity, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (AN), E-Coli, Oil & Grease (O&G) and selected heavy metals & nutrients (Iron, Zinc, Manganese, Sulfide, Nitrate and Phosphorus). The result together with the progress development of the proposed project shall be submitted to the **DOE Negeri Kelantan** starting from site preparation until planting stage. Sixteen (16) sampling stations have been set up for water quality sampling exercise located at Sg A, B, C, D, E, F, G, H and Sg Terong within and surrounding proposed project site. Based on **DOE Water Quality Index**, it was noted that all sixteen (16) monitoring stations have been analysed to be in 'Clean'. Based on the analysis result, all sampling stations had been measured to be in **Class I** category except for the sampling station **W1, W8, W11, W13, W14** and **W15** which categorized under **Class II**. Air quality sampling exercise and noise level measurement have carried out at six (6) sampling stations. The results of air quality gathered during **PEIA** study revealed that Total Suspended Particulate (TSP), Nitrogen Dioxide (NO<sub>2</sub>), Carbon Monoxide (CO), Ammonia (NH<sub>3</sub>) and Hydrogen Sulphide (H<sub>2</sub>S) were within respective limit stipulated below **Recommended Malaysian Air Quality Guidelines** while Sulphur Dioxide (SO<sub>2</sub>) and Ozone (O<sub>3</sub>) stipulated above **Recommended Malaysian Air Quality Guidelines** both at monitoring station **A3, A4, A5** and **A6** (SO<sub>2</sub>) and **A5** and **A6** (O<sub>3</sub>). TSP sampling carried out showed levels ranged between 27.5 to 83.5 µg/m<sup>3</sup>. These recorded air quality values considered low and well under control as compared to standard limits where values were lower than 260 µg/m<sup>3</sup> thus complied with the **Recommended Malaysian Air Quality Guidelines**. Noise is defined as unwanted sound that disrupts normal activities or that diminishes the quality of the environment. The source of noise within the proposed project site was

generated from surrounding natural elements such as wind movement, rivers and sound of wild animals and birds. The measurement carried out recorded noise levels ranging from 42.7 to 67.0 dBA. Noise levels recorded at sampling station **N2** (67.0 dBA) show above noise levels, while other recorded below standard limit (65.0 dBA) which a typical of those areas within forest or agriculture land use.

**SRP** shall preserve at least 20.0 meter (both sided) stretching along all streams, rivulets and river bank within the proposed project site. And for river located at the boundary area, at least 30.0 meter (single sided) riparian zone is suggested to be made available on-site. And for major river (Sg Terong) the guidelines by **DID** shall be followed in developing the natural riparian zone area (refer **Figure 4.0**). Buffer area can be allocate by maintaining the existing trees, natural vegetations, shrubs and cover crops. The project proponent shall follow the **Guideline for River Buffer Zone** produced by **DID** in providing the natural buffer area on any river found in or nearby the boundary of the proposed project site. This will avoid or minimize the movement of sediment or silt from directly transported into the small rivulets, streams, rivers and Sg A, B, C, D, E, F, G, H and Sg Terong located within and surrounding the proposed project site. Approximately **42.34 ha (11.54%)** of natural riparian zone is suggested to be developed at proposed project site. Sediment basins, check dam and diversion channel should always be placed at proposed location before commencements of any earthwork activities. These mitigating measures shall managed and monitored properly by **SRP** on regular basis. The diversion channel is suggested to develop immediate after riparian zone area with approximately **7,500 meter** in total length. This is to intercept any possible erosion movement towards the rivulets and rivers. Installation of sediment basin at strategic location suggested to construct before any land clearing and earthworks activities being undertaken. There are **four (4)** units of sediment basins recommended to construct by **SRP** in order to cater selected area within the proposed project site. A check dam is a small temporary dam constructed across a diversion channel or swale to reduce the velocity of concentrated stormwater flows, thereby reducing erosion. Altogether **twenty six (26)** units of check dams is recommended to be built at selected location throughout the proposed project site. These structures will effectively working if continuous maintenance work was conduct as recommended in **PEIA** report.

Erosion and sedimentation is considering one of the major issues that normally occurred in any of the agriculture development project. However, the erosion and sedimentation problem can be controlled, minimized and resolved by **SRP** through various type of mitigating measures recommended in **PEIA** report. **SRP** is suggested to have a permanent **Environmental Management Officer (EMO)** or **Project Environmental Officer (PEO)** to take care all the necessary environmental compliances as suggested by the consultant, **DOE Negeri Kelantan** and other relevant agencies. The project proponent shall immediately undertake the necessary mitigating measures such as shorten the period of bare land exposure, immediately planting cover crops, etc. **SRP** shall undertake the development on **phase by phase** basis as per recommended in this report. As initially planned, the proposed development will be carried out at **Phase 1** (Block B1, B2, B3 & B7 – 59.2 ha) then followed by **Phase 2** (Block B4, B5, B6 & B12 – 65.2 ha). Upon completion, the development will be carried at **Phase 3** (Block B8, B9, B10 & B11 – 81.8 ha), **Phase 4** (Block B15, B16, B17 & B18 – 79.9 ha) and finally followed by **Phase 5** (Block B13, B14, B19 & B20 – 80.9 ha). The idea is to prevent a huge land of area being exposed in long period of time thus to reduce the generation of huge surface runoff on-site. This will finally minimize the potential of surface runoff generation might occur from the exposed land surface. The proposed phases however, may change upon the actual activity and will be further identifying in **EMP** document. Any changes of the phases, the project proponent shall officially inform **DOE Negeri Kelantan** before any plantation activity can be undertaken at the proposed project site.

Implementation of various activities in the proposed TLC plantation project such as usage of heavy machinery, vehicles (lorry, trucks, bulldozer, tractor, dump trucks, etc) and equipments (generator, water pump and skid tank) can produce scheduled waste problem. Improper handling and management of the oil waste may potentially create an oil spillage problem on-site, which may affect the nearby water sources. The problem can be worst during the wet season where oil & grease can easily transported through surface runoff and flowing to the nearby water sources within and surrounding the proposed project site. All water pump, skid tank as well as generator set available within the proposed project site shall be constructed with proper bund system (earth bund or using sand bag) to prevent any possible excessive oil spillage from directly flow to nearby water body. The presence of oil and grease in the water body may generate buffer zone for oxygen in the ambient air from easily absorbed in the water body. This will decrease level of dissolved oxygen in the water thus affected the living microorganism and freshwater fish in the rivers. All collected oil

waste and other scheduled waste shall be properly stored at the designated covered storage area with proper safety and security signage system. The labeling of the scheduled waste shall be made according to **Regulation 10 – Labelling of Scheduled Wastes** stated that the date when the scheduled waste are first generated, name, address and telephone number of the waste generator shall be clearly labeled on the containers. A part of that, **SRP** shall officially notify **DOE Negeri Kelantan** on the estimated scheduled waste produced from the proposed project activity. Inventory of scheduled waste generated shall also be prepared, properly keep, compile and submit to **DOE Negeri Kelantan**. Continuous updating and submitting the information on the generation of scheduled waste shall be made to **DOE Negeri Kelantan** through 'E-Consignment Note (ECN)'. The registration of this application is through internet using '<http://eswis.doe.gov.my>'.

The proposed TLC plantation project may also contribute to the disease and health impacts especially during major outbreak of certain infectious disease within and surrounding the proposed project site. The most typical major infectious disease that can potentially generated from the common agriculture activity is malaria and cholera. Insecticide-treated mosquito nets can used to prevent malaria transmission. Based on the latest information gathered from **Department of Health (DOH) Negeri Kelantan**, as at to date for year 2012 to June 2014 about 102 cases of dengue had been registered for the Jajahan Gua Musang. Jajahan Gua Musang had recorded highest number of malaria cases for 2010, 2011, 2012 and 2014. It was noted that more than 100 cases of malaria occurrence had been reported every year for Jajahan Gua Musang starting from 2010 to 2013. Increasing number of leptospirosis cases also had been registered for Jajahan Gua Musang for year 2012-2014. Due to the increasing pattern of certain infectious diseases recorded at these areas, appropriate mitigating measures must be taken in order to contain or prevent major outbreak on-site. Any symptom regarding to these cases need report immediately to the nearest health care facilities or **DOH**. **SRP** shall appoint **EMO** or **PEO** and **Safety & Health Officer (SHO)** to take care on the environmental as well as safety and health matter within the proposed project site. A constant as well as proper relationship and consultation shall maintained with **Department of Health** and **Hospital** located at Gua Musang or Kuala Krai area in order to get immediate response and assistance during any major outbreak disease without further delay. A part of that the project proponent is required to prepare an **Emergency Response Plan (ERP)** for any emergency cases that may occur within or outside the proposed project site. In addition, the project proponent shall at least provide a basic health facility on-site as to cater an initial stage of controlling the disease. Regular health inspection of the workers shall be carried out so that immediate action can be taken as to control the disease from become a major outbreak at the proposed project site. The outcome of inspection shall be recorded in proper log book and analyzed frequently by the proposed project management for mitigating purpose.

The land clearing activities would result in a total loss of flora in several ways including loss of vegetation, disturbance to habitat and loss of biodiversity as a common outcome of any agriculture project. This would eventually result in the loss of natural fauna habitat and the wildlife would have to migrate to new breeding places. The forested area nearby which is still with natural habitat condition is capable in accommodating the migrated wildlife that was displaced out from their original habitat during the implementation of the proposed TLC plantation project. A properly staged land clearance activities must carried out because it will give an ample time for the wildlife to migrate and re-establish themselves in their new habitat (nearby forest) with a minimal impact. This also can avoid the wildlife from trapped during land clearance activities within the proposed project site. As to minimize, control and resolve the potential impact that may arise during the execution of the overall proposed TLC plantation project on the wildlife available within and surrounding the proposed project site, **SRP** is recommend to closely consult and implement the mitigation measures and guidelines issued by **Department of Wildlife & National Parks (DWNP)** as highlighted in the **PEIA** report. It was shown that about 8 to 14 numbers of elephants expected to be present within **HSK Lebir** area. Whilst, based on the information obtained from **DWNP Gua Musang**, it was revealed that latest conflict recorded was made by **Aring 6 (Sg Lebir)** (18<sup>th</sup> February 2014) and **Ladang TLC, Aring 8** (20<sup>th</sup> February 2014) involving elephant trespassing into plantation area. Some solid waste expected to generate during the project implementation. It is recommend that the biomass or other type of solid waste from the clear felling activity shall left to rot naturally. The daily rubbish or domestic waste can dumped at provided dustbin as well as designated dumping site area within the proposed project site. No open burning (strictly prohibited) shall carried out at all either by the project proponent or by the contractor and supplier involved in the proposed TLC plantation project. Under section **29A** of the **Environmental Quality Act 1974** which read together with section **29B** of the **Environmental Quality Act 1974**, open burning is prohibited except those activities which laid down under **Environmental Quality Act (Prescribed Activities) (Open**

**Burning) Order 2000.** Any in compliance may subject to action that can be taken by **DOE Negeri Kelantan** to the project proponent as stipulated clearly in the **Environmental Quality Act 1974** and a heavier penalty of a fine not exceeding RM 500,000.00 or to imprisonment for a term not exceeding five (5) years or both.

In ensuring the effectiveness of mitigation measures during the project implementation, the environmental compliances for environmental protection is to be accomplished by a proper **EMP**, **ESCP**, regular **EMR** and **EAE** covering river water quality, noise level measurement, air quality monitoring, waste management as well as ecological changes. **EMP** can be defined as an environmental management tool used to ensure reasonably avoidable adverse impacts of the project, operation and decommissioning of a project prevented and that the positive benefits of the project are enhance. The **ESCP** document must prepared by competent and certified consultants who have **Certified Professional in Erosion & Sediment Control (CPESC)** and need to submitted to **DID Negeri Kelantan** for approval. The approved **ESCP** document will then submitted to **DOE Negeri Kelantan** as to comply with **PEIA Conditions of Approval**. And upon development of proposed project activity, a periodic **EMR** shall be carried out in order to monitor any potential impacts that may occur to the surrounding environment. The **EMR** shall cover the site preparation, planting, maintenance, harvesting and replanting stages. It shall contain a schedule for inspecting and reporting upon the implementation of the project and associated mitigation measures identified in the **PEIA** report. The **EMR** will carried out until **DOE Negeri Kelantan** satisfied on the effort and commitment that taken by the project proponent in managing, minimizing and controlling the environmental issues as result of the project implementation. Project proponent is also required to prepare an **EAE**, which is an exercise of self-assessment to minimize and control the generation of wastes and pollution or other type of potential impact. The **EAE** suggested carrying out during site preparation, planting and maintenance stage **once a year** by an independent and qualified auditor or registered environmental consultant.

It is envisaged that the proposed project activity would result in an increase in socio-economic activities which provides not only to project proponent but also to the nearby local community (Kg Lepar and Kg Miak), Daerah Chiku, Jajahan Gua Musang and **State Government of Kelantan** as well as **Federal Government of Malaysia** in a long term. The short-term adverse impacts are localized and expected to be occurred only during the early stage of the overall proposed project development. And with a full commitment and effort planned to be given by the project proponent, the various potential environmental impact is expected to be diminished once the overall proposed TLC plantation project activity reach its completion stage approximately in two (2) or three (3) years. Rehabilitation of the degraded area will help in controlling the illegal encroachment as well as illegal logging activity, preventing soil erosion, preservation of biological diversity as well as reverse deforestation processes. The respective area and nation will be free from any potential impact and pollution, thus at the same time will commercialize the respective area into a very high productive area. This will prevent the existing environment from badly and continuously damage in large scale thus affecting the overall existing eco-system within and surrounding the proposed project site. For the commencement of the proposed TLC plantation project, the recommended mitigation measures as well as overall environmental compliance during each stage of development shall specified clearly in the **Contract Document** or **Contract Agreement** with selected contractors, sub-contractors and suppliers who directly or indirectly involved in the proposed project. It is of the consultant opinion that the proposed TLC plantation project can be considered for the implementation by **SRP** and be beneficial to various parties who direct and indirectly involve in the project implementation.

## RINGKASAN EKSEKUTIF

### KAJIAN AWAL PENILAIAN KESAN ALAM SEKITAR Untuk CADANGAN PROJEK PENANAMAN POKOK GETAH KLON BALAK (367.0 HA) DI HSK LEBIR (KOMPARTMEN 23), MUKIM RELAI, DAERAH CHIKU, JAJAHAN GUA MUSANG, KELANTAN D.N.

Kajian Awal Penilaian Kesan Alam Sekeliling (PEIA) disediakan berdasarkan kepada keperluan di bawah arahan *Akta Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Alam Sekitar), 1987 Perkara 6(a): Pengubahan penggunaan tanah hutan bukit kepada kegunaan tanah lain meliputi kawasan seluas 50 hektar atau lebih* di bawah *Akta Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Alam Sekitar), 1987*. Laporan EIA ini telah disediakan berdasarkan kepada garis panduan, syarat dan prosedur yang terkandung di dalam "*Handbook of Environmental Impact Assessment Guidelines (1995)*" yang diterbitkan oleh **Jabatan Alam Sekitar (JAS)**. Penerangan mengenai **Dokumen Pelan Pengurusan Alam Sekitar (EMP)**, **Pelan Kawalan Hakisan & Kelodakan (ESCP)**, **Kerja-kerja Pemantauan Kualiti Alam Sekitar (EMR)** dan juga **Kerja-kerja Audit Alam Sekitar (EAE)** juga terkandung di dalam laporan ini sebagai panduan dalam melaksanakan cadangan dan juga memantau keseluruhan projek. Setelah projek diluluskan, pemaju projek hendaklah mematuhi semua garis panduan, keperluan dan syarat yang telah ditetapkan. Laporan "**Kajian Awal Penilaian Kesan Alam Sekitar Untuk Cadangan Projek Penanaman Pokok Getah Klon Balak (367.0 Ha) Di HSK Lebir (Kompartmen 23), Mukim Relai, Daerah Chiku, Jajahan Gua Musang, Kelantan D.N.**" ini disediakan untuk pemaju projek **Sigur Ros Plantation Sdn Bhd (SRP)**. Sebarang penjelasan mengenai keseluruhan cadangan projek bolehlah berhubung dengan pegawai yang berkaitan seperti yang dinyatakan dibawah.

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**SRP** melalui juru perunding **EIA, I.Z. EnvironMind Sdn Bhd (IZE)** telah mendapat maklum balas **Penapisan Awal Tapak (PAT)** daripada **JAS Negeri Kelantan** menerusi surat ruj: AS(B)D11//121/000/122(2) bertarikh 21hb Julai 2015. Kajian **PEIA** telah dilaksanakan dengan mengambil kira kesan yang mungkin berlaku sepanjang aktiviti pembangunan (penyediaan tapak, penanaman, penyelenggaraan, penuaian dan penanaman semula pokok getah klon balak) di kawasan cadangan tapak projek. Garis panduan dalam mengatasi dan mengawal kesan yang mungkin berlaku turut dicadangkan untuk dilaksanakan oleh pihak pemaju bagi mengurangkan, mengawal dan mengatasi kesan yang mungkin dan telah berlaku ketika aktiviti pembangunan di kawasan cadangan projek penanaman pokok getah klon balak ini. Objektif utama **SRP** adalah untuk mengembangkan dan memajukan status ekonomi **Kerajaan Negeri Kelantan** melalui aspek pertanian. Sebarang pertanyaan mengenai cadangan projek boleh diajukan kepada pegawai yang berkaitan seperti yang dinyatakan.

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**SRP** telah ditubuhkan di Malaysia pada 5hb Oktober 2010 dan didaftarkan di alamat No. 333A, Blok 5, Laman Seri Business Park, Persiaran Sukan, Seksyen 13, 40100 Shah Alam, Selangor D.E. Pihak **SRP** telah mendapat tanah di Kompartmen 23 yang terletak di HSK Lebir daripada **Akademi Yakin Sdn Bhd (AYSB)** melalui surat rujukan AYSB/Proj/0.2/12/101 Jld 2 bertarikh 15hb Jun 2015. Manakala pihak **AYSB** pula mendapat tanah melalui permit daripada **Jabatan Perhutanan Negeri Kelantan** melalui surat rujukan PHN.KN.75/39/1 J.2(20) bertarikh 2hb Jun 2015. **SRP** bertanggungjawab untuk membangunkan tanah berkeluasan kira-kira 906.8731 ekar (367.0 ha) yang terletak di Mukim Relai, Daerah Chiku, Jajahan Gua Musang, Kelantan D.N. bagi cadangan projek penanaman pokok getah klon balak mengikut terma dan syarat yang dipersetujui oleh **AYSB** dan **Kerajaan Negeri Kelantan** (rujuk '**Figure 1.0**'). Maklumat yang diperolehi daripada kerja lapangan dan pegawai daripada **Jabatan Kemajuan Orang Asli (JAKOA) Gua Musang** mendapati tidak terdapat sebarang penempatan Orang Asli berdekatan kawasan cadangan tapak projek. Maklumat yang diperolehi daripada **Jabatan Pengairan & Saliran (JPS)** dan **Air Kelantan Sdn Bhd (AKSB) Jajahan Gua Musang** mendapati tiada stesen persampelan **JPS** dan muka sauk **AKSB** berada dalam lingkungan 5.0 km dari kawasan cadangan tapak projek. Loji rawatan air yang terdekat ialah **Loji Rawatan Air Manek Urai** yang terletak kira-kira 35.9 km (jarak sebenar) dari kawasan cadangan tapak projek.

Pemerhatian di kawasan cadangan tapak projek mendapati kawasan tapak cadangan projek adalah berbukit dan terdapat juga permukaan tanah rata di sesetengah kawasan. Kawasan cadangan tapak projek berada pada ketinggian antara 80 hingga melebihi 360 meter dari aras laut (ASL). Kawasan yang paling tinggi terletak di bahagian barat daya dengan ketinggian sehingga 372 meter dikenali sebagai Bukit Batu Papan. Kawasan cadangan tapak projek terletak di kawasan diklasifikasikan sebagai **Kawasan Sensitif Alam Sekitar (KSAS) Tahap 1**. Berdasarkan kepada '**Master Plan**' **Jaringan Ekologi** atau lebih dikenali sebagai '**Central Forest Spine (CFS)**' yang diterbitkan oleh **Jabatan Perancang Bandar & Desa (JPBD)** mendapati bahawa kawasan cadangan tapak projek terletak kira-kira 0.7 km (jarak terdekat) dari '**Secondary Linkage 1 – SL1**'. Jaringan ini menyambungkan **Taman Negeri Gunung Stong** dengan **HSK Gunung Stong Selatan**, **HSK Relai**, **HSK Ulu Temiang**, **HSK Jentiang** dan **HSK Serasa**. Berdasarkan kepada **Rancangan Fizikal Negara 2010 (RFN 2010)**, **Rancangan Struktur Negeri Kelantan 2020 (RSNK 2020)** dan **Rancangan Tempatan Jajahan Gua Musang 2020 (RTJGM 2020)**, kawasan cadangan tapak projek telah dikenalpasti berada di dalam kawasan hutan simpan kekal dikenali sebagai **HSK Lebir** (rujuk '**Figure 2.0**'). Maklumat yang diperolehi daripada **Jabatan Perhutanan Negeri Kelantan** mendapati kawasan cadangan tapak projek telah digazetkan bagi tujuan penanaman pokok getah klon balak dimana telah diluluskan oleh **Kerajaan Negeri Kelantan** bagi tujuan pembangunan penanaman pokok getah klon balak.

Kawasan cadangan tapak projek ini terletak pada koordinat 05° 06' 33.3" N hingga 05° 08' 08.2" N dan 102° 20' 35.9" E hingga 102° 21' 53.0" E dan terletak berdekatan dengan kawasan penanaman pokok getah klon balak sedia ada yang dimiliki oleh **Gagah Kukuh Sdn Bhd** (rujuk '**Figure 3.0**'). Kawasan cadangan tapak projek terletak kira-kira 1.0 km timur laut kawasan komuniti Kg Lepar, 1.1 km timur laut kawasan komuniti Kg Miak, 2.9 km timur laut kawasan komuniti Kg Laka, 3.6 km utara kawasan komuniti Kg Kasong, 5.0 km barat laut kawasan komuniti Lata Sunsang, 5.5 km barat daya sempadan Kelantan-Terengganu (jarak terdekat), 10.3 km tenggara kawasan komuniti Orang Asli Kg Pasir Linggi, 22.4 km tenggara kawasan komuniti Laloh, 48.3 km tenggara kawasan komuniti Dabong, 50.1 km tenggara bandar Kuala Krai, 54.9 km timur laut bandar Gua Musang, 71.1 km barat bandar Kuala Berang, 86.9 km tenggara bandar Jeli, 109.0 km tenggara bandar Kota Bharu dan 112.0 km timur laut bandar Kuala Lipis. Maklumat yang diperolehi daripada **Pejabat Pengarah Tanah & Galian (PPTG) Negeri Kelantan** mendapati tiada sebarang isu pertindihan kawasan dan kawasan cadangan tapak projek terletak di kawasan hutan simpan (**HSK Lebir**). Kawasan cadangan tapak projek boleh dilalui dengan menggunakan laluan balak dan ladang sedia ada melalui lebuh raya Jalan Gua Musang-Kuala Krai (jalan utama) yang terletak kira-kira 30.5 km (jarak sebenar) arah barat laut. Jalan ini didapati melalui beberapa ladang yang dimiliki oleh penduduk setempat, kawasan komuniti (Kg Lepar dan Kg Miak), kawasan penanaman pokok getah klon balak (**Gagah Kukuh Sdn Bhd**) dan kawasan hutan (**HSK Lebir**). Kawasan penempatan yang paling hampir terletak ialah Kg Lepar dan Kg Miak yang terletak kira-kira 1.0 km arah barat daya dari kawasan cadangan tapak projek. Maklumat yang diperolehi daripada **JAKOA Negeri Kelantan** serta berdasarkan kepada pemerhatian di kawasan cadangan tapak projek mendapati tiada penempatan Orang Asli yang terletak dalam lingkungan 5.0 km dari kawasan cadangan tapak projek. Kawasan penempatan Orang Asli yang paling hampir terletak kira-kira 13.0 km dari kawasan cadangan tapak projek dikenali sebagai Orang Asli Pos Lebir.



Pemerhatian di lapangan mendapati kawasan cadangan tapak projek merupakan kawasan lembangan sungai bagi Sg Terong, sungai utama yang berhampiran. Ini dapat dilihat apabila semua sungai dan anak sungai dari kawasan cadangan tapak projek akan mengalir ke arah Sg Terong. Sesetengah sungai yang dipilih sebagai stesen persampelan bagi menguji tahap kualiti air tidak mempunyai nama. Dan bagi tujuan persampelan kualiti air di sungai tersebut, sungai yang tidak bernama ini ditandakan sebagai Sg A, B, C, D, E, F, G dan H. Berdasarkan kepada **Laporan Kesesuaian Tanah** yang dikeluarkan oleh **Jabatan Pertanian Negeri Kelantan**, mendapati keseluruhan kawasan cadangan tapak projek yang berkeluasan **367.0 ha** terdiri daripada Siri Chat, Siri Gol, Siri Musang dan Tanah Curam. Berdasarkan analisis, sebanyak **146.1 ha (39.81%)** kawasan cadangan tapak projek terdiri daripada Siri Chat, **60.3 ha (16.43%)** kawasan kajian terdiri daripada Siri Gol dan selebihnya **65.5 ha (17.85%)** terdiri daripada Siri Musang. Manakala Tanah Curam meliputi kira-kira **95.1 ha (25.91%)** daripada keseluruhan kawasan cadangan tapak projek. Kawasan yang didapati sederhana sesuai bagi cadangan penanaman pokok getah klon balak oleh **Jabatan Pertanian Negeri Kelantan** adalah sebanyak **161.3 ha (44%)**. Manakala baki selebihnya sebanyak **205.7 ha (56%)** pula tiada sebarang aktiviti pertanian dibenarkan untuk dijalankan dikawasan ini.

Cadangan projek penanaman pokok getah klon balak ini dijangka akan mendatangkan kesan kepada kawasan semulajadi di dalam dan di sekitar kawasan tapak cadangan projek terutamanya semasa peringkat awal pembangunan. Impak-impak yang akan terhasil dari pelaksanaan cadangan projek penanaman pokok getah klon balak ini telah diramal dan dikenalpasti berdasarkan beberapa aspek termasuk hakisan tanah, pencemaran air, pencemaran udara, pencemaran bunyi, pelupusan sampah, pelupusan bahan buangan terjadual, kesesakan lalu lintas, ekologi (flora dan fauna), penyakit, kesihatan, keselamatan dan sosio-ekonomi. Penerangan tentang impak-impak yang dijangkakan dari pelaksanaan projek telah diterangkan secara komprehensif di dalam **Bab 7.0** sementara impak-impak lebihan dibincangkan di dalam **Bab 9.0**. Aktiviti-aktiviti yang dijangka akan mendatangkan kesan adalah penyediaan tapak, penanaman serta penyelenggaraan. Berdasarkan pelbagai impak yang telah dinilai, pelbagai langkah kawalan telah dicadangkan untuk mengawal, mengurangkan dan seterusnya menyelesaikan masalah-masalah yang dijangka akan berlaku semasa pelaksanaan cadangan projek penanaman pokok getah klon balak ini. Penjelasan secara menyeluruh bagi langkah-langkah kawalan yang perlu dilaksanakan oleh pihak **SRP** telah dibincangkan di dalam **Bab 8.0** laporan **PEIA** ini. Bagi mendapatkan data penggunaan jalan, bancian lalu lintas telah dijalankan pada 28hb dan 29hb Julai 2013 dan 11hb Ogos 2014 melibatkan Jalan Gua Musang-Kuala Krai serta jalan keluar dan masuk ke kawasan cadangan tapak projek (Kilang Papan Bonanza Laloh-Kawasan Cadangan Tapak Projek). Sebanyak **2,562** buah kenderaan (kereta, lori, traktor, pacuan empat roda, motosikal, bas dan lain-lain) menggunakan Jalan Gua Musang-Kuala Krai pada waktu siang dimana penggunaan jalan ini adalah sederhana. Manakala penggunaan jalan keluar dan masuk dari kawasan cadangan tapak projek (Kilang Papan Bonanza Laloh-Kawasan Cadangan Tapak Projek) pada waktu siang hari pula adalah sebanyak **256** buah kenderaan. Jalan ini melalui beberapa ladang yang dimiliki oleh penduduk setempat, kawasan komuniti, kawasan ladang (**Yusan Jaya Resources, Teguh Purnama Enterprise, CFK Berkat Wood Trading, Sigur Ros Plantation Sdn Bhd dan Gagah Kukuh Sdn Bhd**) dan kawasan hutan (**HSK Lebir**).

Pelaksanaan cadangan projek penanaman pokok getah klon balak ini dijangka pada peringkat awalnya akan mendatangkan kesan kepada kualiti air sungai yang terletak di dalam dan di sekitar kawasan cadangan tapak projek. Penyumbang utama bagi pencemaran kualiti air adalah berpunca dari hakisan tanah, kumbahan dari rumah pekerja serta penggunaan baja dan bahan kimia bagi tujuan pertanian. Tanah-tanah yang terhakis akan mengalir ke sungai-sungai berdekatan semasa hujan lebat dan seterusnya memberi kesan kepada kualiti air di sungai-sungai tersebut. Sisa-sisa kumbahan dan hakisan akan meningkatkan kadar pertumbuhan alga dan rumpai dalam punca bekalan air sekiranya tiada langkah kawalan dilaksanakan. Sisa-sisa kumbahan dan hakisan yang mengandungi nilai nutrient yang tinggi akan mempercepatkan pertumbuhan alga. Sampel air sungai di kawasan tapak cadangan projek dan kawasan sekitarnya diambil bagi menentukan parameter asas kualiti air seperti kandungan pH, pepejal terampai, kekeruhan, oksigen terlarut, keperluan oksigen biokimia, keperluan oksigen kimia, Nitrogen Ammonia, E-Coli, minyak & gris dan logam berat & nutrien (Besi, Zink, Mangan, Sulfida, Nitrat dan Fosforus). Keputusan parameter kualiti air bersama-sama dengan status kemajuan projek mestilah dihantar kepada **JAS Negeri Kelantan** bermula dari peringkat kerja tanah sehingga ke peringkat penanaman. Enam belas (16) stesen persampelan air sungai yang terletak di dalam dan sekitar kawasan cadangan tapak projek telah dikenalpasti dimana terletak di Sg A, B, C, D, E, F, G, H dan Sg Terong. Berdasarkan kepada **Indek Kualiti Air Jabatan Alam Sekitar**, kesemua enam belas (16) stesen

persampelan didapati berada dalam kategori “**Bersih**”. Berdasarkan keputusan analisis, kesemua stesen persampelan didapati berada dalam **Kelas I** kecuali bagi stesen persampelan **W1, W8, W11, W13, W14** dan **W15** sahaja yang berada dalam **Kelas II**. Pemantauan kualiti udara dan bunyi bising juga telah dijalankan di enam (6) stesen persampelan. Data kualiti udara yang diperolehi dari kajian **PEIA** ini mendapati bahawa Partikel Terampai (TSP), Nitrogen Dioksida (NO<sub>2</sub>), Karbon Monoksida (CO), Ammonia (NH<sub>3</sub>) dan Hidrogen Sulfid (H<sub>2</sub>S) berada di paras yang ditetapkan oleh **Garis Panduan Kualiti Udara di Malaysia** manakala bacaan Sulfur Dioksida (SO<sub>2</sub>) di stesen persampelan **A3, A4, A5** dan **A6** dan Ozon (O<sub>3</sub>) di stesen persampelan **A5** dan **A6** melebihi **Garis Panduan Kualiti Udara di Malaysia**. Bacaan TSP yang dijalankan di kawasan cadangan tapak projek menunjukkan bacaan antara 27.5 hingga 83.5 µg/m<sup>3</sup>. Bacaan yang dicatatkan ini berada dibawah paras yang ditetapkan oleh **Garis Panduan Kualiti Udara di Malaysia** iaitu 260 µg/m<sup>3</sup>. Bunyi bising diklasifikasikan sebagai bunyi yang tidak diinginkan dimana ianya menjejaskan keadaan semulajadi sesuatu kawasan. Punca bunyi di kawasan cadangan tapak projek adalah daripada deruan angin, aliran sungai dan bunyi daripada hidupan liar serta burung. Paras bunyi bising yang direkodkan di kawasan cadangan tapak projek adalah antara 42.7 hingga 67.0 dBA. Tahap bunyi bising yang direkodkan di stesen persampelan **N2** (67.0 dBA) melebihi tahap bunyi bising yang ditetapkan manakala setesen persampelan yang lain merekodkan bunyi bising dibawah tahap yang ditetapkan (65.0 dBA) iaitu bunyi yang kebiasaannya direkodkan di kawasan hutan dan ladang.

Pihak **SRP** juga dikehendaki mengekalkan kawasan zon penampungan sungai sekurang-kurangnya 20.0 meter (kedua-dua bahagian) bagi semua sungai dan anak sungai yang terdapat dalam kawasan cadangan tapak projek. Dan bagi sungai yang terdapat di sempadan kawasan cadangan tapak projek pula sekurang-kurangnya 30.0 meter (satu bahagian) zon penampungan sungai perlu dikekalkan. Dan bagi sungai utama (Sg Terong) garis panduan zon penampungan sungai daripada **JPS** perlu dipatuhi (rujuk ‘**Figure 4.0**’). Kawasan penampungan hendaklah dikekalkan pokok-pokok sediaada, tumbuhan semulajadi, pokok-pokok renek dan tumbuhan penutup bumi. Pihak pemaju projek disarankan untuk mematuhi **Garis Panduan untuk Zon Penampungan Sungai** yang dikeluarkan oleh **JPS** dalam membangunkan kawasan penampungan semulajadi di mana-mana sungai yang terdapat di dalam atau berdekatan sempadan kawasan cadangan tapak projek. Ini akan mengelakkan atau meminimumkan pergerakan mendapan atau kelodak dari terus dialirkan ke anak-anak sungai, sungai serta Sg A, B, C, D, E, F, G, H dan Sg Terong yang terdapat di dalam dan disekitar kawasan cadangan tapak projek. Kira-kira **42.34 ha (11.54%)** zon penampungan sungai telah dicadangkan untuk dikekalkan di sungai-sungai terpilih. Kolam mendapan, perparitan lencongan serta lain-lain langkah kawalan hendaklah dibina di lokasi-lokasi yang dicadangkan sebelum kerja-kerja pembersihan kawasan dijalankan oleh pihak pemaju projek. Kolam mendapan, longkang tanah, tapak lokasi khusus lebih tanah serta lain-lain langkah kawalan haruslah diurus serta diselenggara dengan berkala oleh pihak **SRP**. Kira-kira **7,500 meter** perparitan lencongan dicadangkan dibina selepas zon penampungan dibina. Ianya bagi mengelak berlakunya mendapan dari terus mengalir ke sungai. Pembinaan kolam perangkap mendapan dicadangkan untuk dibina sebelum kerja pembersihan dan kerja tanah dilakukan. Sebanyak **empat (4)** unit kolam perangkap mendapan dicadangkan untuk dibina oleh pihak **SRP** untuk mengelak berlakunya hakisan dalam kawasan cadangan tapak projek. Manakala ‘check dam’ pula dibina untuk sementara waktu merentasi longkang pintasan bagi mengurangkan kelajuan air ketika hujan lebat serta bagi mengurangkan kadar hakisan. Sebanyak **dua puluh enam (26)** unit ‘check dam’ telah dicadangkan untuk dibina di kawasan cadangan tapak projek. Struktur-struktur kawalan hakisan ini akan betul-betul berkesan sekiranya pihak **SRP** menjalankan kerja-kerja penyelenggaraan seperti disarankan dalam **PEIA**

Hakisan tanah dan kelodakan merupakan salah satu daripada isu utama yang kebiasaannya berlaku dalam setiap projek pertanian. Masalah ini walaubagaimanapun boleh dikawal, dikurangkan dan dielak oleh pihak **SRP** melalui pelbagai langkah seperti yang dicadangkan dalam laporan **PEIA**. Pihak **SRP** dicadangkan agar melantik **EMO** atau **PEO** untuk menguruskan hal-hal yang berkaitan dengan keselamatan dan kesihatan seperti yang dicadangkan oleh pihak perunding, **JAS Negeri Kelantan** dan lain-lain agensi yang berkaitan. Pemaju projek hendaklah melaksanakan setiap langkah kawalan dengan kadar segera seperti mengurangkan tempoh masa permukaan cerun daripada terdedah, mempercepatkan proses penanaman tanaman penutup bumi dan lain-lain. **SRP** hendaklah menjalankan kerja-kerja pembangunan secara berperingkat seperti yang dicadangkan dalam laporan ini. Seperti yang telah dirancang, pembangunan di kawasan cadangan tapak projek akan dimulakan di **Fasa 1** (Blok B1, B2, B3 & B7 – 59.2 ha) kemudian diikuti **Fasa 2** (Blok B4, B5, B6 & B12 – 65.2 Ha). Setelah siap, pembangunan akan diteruskan di **Fasa 3** (Blok B8, B9, B10 & B11 – 81.8 Ha), **Fasa 4** (Blok B15, B16, B17 & B18 – 79.9 ha) dan akhir sekali diikuti oleh **Fasa**

5 (Blok B13, B14, B19 & B20 – 80.9 ha). Aktiviti pembangunan dicadangkan untuk dijalankan secara berperingkat adalah bagi mengelakkan permukaan tanah terdedah untuk tempoh yang lama dan sekaligus bagi mengurangkan kadar hakisan permukaan tanah di dalam kawasan cadangan tapak projek. Sekiranya pembangunan secara berperingkat dijalankan maka potensi berlakunya hakisan permukaan tanah yang berpunca daripada permukaan tanah yang terdedah dapat dikurangkan. Walau bagaimanapun, fasa yang dicadangkan untuk aktiviti pembangunan akan berubah setelah aktiviti pembangunan dijalankan kelak dan penjelasan lebih lanjut di setiap fasa akan diterangkan di dalam dokumen **EMP**. Sebarang perubahan fasa pembangunan hendaklah dimaklumkan kepada pihak **JAS Negeri Kelantan** sebelum sebarang kerja-kerja penanaman dijalankan di kawasan cadangan tapak projek.

Penggunaan jentera berat, kenderaan (lori, trak, jentolak, traktor, trak pelupusan tanah, dan sebagainya) dan peralatan (alat janakuasa, pam air dan tangki simpanan bahan api cecair) ketika cadangan penanaman pokok getah klon balak ini akan menghasilkan masalah bahan buangan terjadual. Kegagalan untuk mengendalikan dan menguruskan sisa minyak dengan sewajarnya akan menyebabkan berlakunya masalah tumpahan minyak yang boleh menjejaskan sumber air yang berdekatan. Masalah ini boleh menjadi lebih buruk semasa musim hujan di mana minyak & gris akan meresap dan mengalir ke sungai berdekatan. Pam air, tangki simpanan bahan api cecair dan alat janakuasa yang terdapat di dalam kawasan cadangan tapak projek hendaklah dibina benteng di sekelilingnya bagi mengawal tumpahan minyak serta menghalang dari mengalir secara terus ke sungai berdekatan. Sisa minyak & gris ini akan menghalang oksigen dari mudah terlarut di dalam air. Ini akan menyebabkan oksigen terlarut di dalam air berkurangan dan menjejaskan hidupan organisma mikro dan akuatik. Semua sisa minyak serta bahan buangan terjadual hendaklah disimpan di tempat penyimpanan yang ditetapkan dan dilengkapi dengan sistem papan tanda keselamatan. Pelabelan pada setiap bekas yang mengandungi buangan terjadual hendaklah dibuat mengikut **Peraturan 10 – Pelabelan Bahan Buangan Terjadual** iaitu mengandungi maklumat berhubung dengan tarikh bila buangan terjadual dihasilkan buat kali pertama, nama, alamat dan nombor telefon pengeluar buangan terjadual tersebut. Pihak **SRP** hendaklah memaklumkan secara bertulis kepada **JAS Negeri Kelantan** berkenaan dengan penghasilan buangan terjadual di tapak cadangan projek. Pihak **SRP** juga perlu menyediakan inventori penghasilan buangan terjadual untuk dikemukakan kepada **JAS Negeri Kelantan**. Maklumat berhubung penghasilan buangan terjadual perlu dikemaskini secara berkala dan dikemukakan kepada **JAS Negeri Kelantan** melalui 'E-Consignment Note (ECN)'. Pendaftaran bagi permohonan ini boleh menggunakan '<http://eswis.doe.gov.my>'.

Cadangan projek penanaman pokok getah klon balak ini juga akan memberi kesan terhadap kesihatan terutamanya semasa berlaku wabak penyakit berjangkit di dalam dan di sekitar kawasan cadangan tapak projek. Penyakit berjangkit yang kebiasaannya berkaitan dengan aktiviti perladangan ialah malaria dan taun. Penggunaan kelambu berubat juga boleh membendung penularan malaria. Maklumat terkini yang diperolehi daripada **Jabatan Kesihatan Negeri Kelantan** mendapati pada tahun 2012 hingga Jun 2014 kira-kira 102 kes denggi dicatatkan bagi Jajahan Gua Musang. Jajahan Gua Musang telah mencatatkan kes malaria yang tertinggi bagi tahun 2010, 2011, 2012 dan 2014. Sebanyak 100 kes malaria telah direkodkan setiap tahun bagi Jajahan Gua Musang bermula dari tahun 2010 hingga 2013. Peningkatan kes kencing tikus turut dilaporkan di Jajahan Gua Musang pada tahun 2012 hingga 2014. Disebabkan berlaku peningkatan penularan jangkitan penyakit di kawasan ini, beberapa langkah pencegahan mestilah dipraktikkan bagi mengelakkan berlaku ancaman wabak penyakit di kawasan cadangan tapak projek. Sebarang tanda-tanda penularan penyakit berjangkit hendaklah segera merujuk kepada pusat kesihatan atau **Jabatan Kesihatan** yang berdekatan. Pihak **SRP** dicadangkan agar melantik **EMO** atau **PEO** dan **Pegawai Keselamatan & Kesihatan (SHO)** untuk menguruskan hal-hal yang berkaitan dengan keselamatan dan kesihatan bagi projek ini. Hubungan yang baik antara pihak **SRP** dengan **Jabatan Kesihatan** serta **Hospital** yang terletak di Gua Musang dan Kuala Krai hendaklah diwujudkan dan dikekalkan bagi mendapat bantuan yang segera sekiranya terdapat sebarang masalah wabak penyakit. Selain itu, pihak **SRP** juga disarankan untuk menyediakan **Pelan Tindakan Kecemasan (Emergency Response Plan – ERP)** bagi tujuan menghadapi keadaan kecemasan di luar jangkaan yang mungkin berlaku di kawasan tapak cadangan projek. Selain itu, pihak pemaju hendaklah menyediakan kemudahan asas kesihatan di tapak untuk mengawal penyakit. Pemeriksaan kesihatan secara berkala terhadap pekerja perlu dijalankan agar tindakan segera dapat diambil untuk mengawal sebarang penyebaran wabak di kawasan tapak cadangan projek. Rekod pemeriksaan perlu dicatatkan dalam buku log oleh pihak pengurusan ladang sebagai langkah kawalan.

Cadangan projek penanaman pokok getah klon balak yang akan dijalankan ini akan menyebabkan kehilangan kekal terhadap keseluruhan flora termasuk kemusnahan pokok-pokok, gangguan terhadap habitat serta kehilangan biodiversiti. Hal ini seterusnya mengakibatkan kehilangan habitat flora dan fauna serta penghijrahan hidupan liar ke tempat yang baru. Kesan tersebut berkemungkinan bersifat kekal dan sukar untuk kembali kepada keadaan sediaada walaupun aktiviti perladangan telah siap sepenuhnya. Kawasan hutan semulajadi berdekatan akan menjadi tempat persinggahan hidupan liar yang telah kehilangan habitat asal akibat dari pelaksanaan cadangan projek penanaman pokok getah klon balak ini. Pembersihan kawasan secara berfasa akan dapat memberi masa yang cukup serta membantu hidupan liar ini untuk berpindah ke habitat yang baru (hutan berdekatan) dengan impak yang minima. Ini juga boleh mengelakkan hidupan liar dari terperangkap semasa cadangan projek ini dilaksanakan. Bagi mengurangkan, mengawal dan menangani kesan-kesan yang mungkin berlaku terhadap hidupan liar yang terdapat di dalam dan disekeliling kawasan cadangan tapak projek ketika pelaksanaan cadangan projek penanaman pokok getah klon balak ini, pihak **SRP** disyorkan untuk berunding dan melaksanakan langkah-langkah mitigasi dan garis panduan yang dikeluarkan oleh **Jabatan Perlindungan Hidupan Liar & Taman Negara (PERHILITAN)** sepertimana yang digariskan dalam laporan **PEIA** ini. Terdapat kira-kira 8 hingga 14 ekor gajah di kawasan **HSK Lebir**. Maklumat yang diperolehi daripada **PERHILITAN Gua Musang** mendapati kes terkini yang dilaporkan adalah di **Aring 6 (Sg Lebir)** pada 18hb Februari 2014 dan **Ladang TLC, Aring 8** pada 20hb Februari 2014 dimana melibatkan pencerobohan gajah ke kawasan ladang. Pemaju projek disarankan agar membiarkan sisa-sisa dari aktiviti pembersihan kawasan mereput secara semulajadi. Sisa-sisa domestik harian pula hendaklah dibuang ke dalam tong sampah atau tempat pembuangan sampah yang telah disediakan di kawasan tapak cadangan projek. Pembakaran secara terbuka tidak boleh dijalankan (dilarang sama sekali) sama ada oleh pihak pemaju projek, kontraktor atau pembekal yang terlibat dalam aktiviti cadangan projek penanaman pokok getah klon balak ini. Di bawah **Seksyen 29A dan 29B, Akta Kualiti Alam Sekeliling 1974**, pembakaran secara terbuka adalah dilarang sama sekali, kecuali bagi aktiviti-aktiviti yang tertakluk di bawah **Akta Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Pembakaran Terbuka) 2000**. Sebarang pelanggaran boleh dikenakan tindakan oleh **JAS Negeri Kelantan** kepada pihak pemaju di bawah **Akta Kualiti Alam Sekeliling 1974** iaitu kompaun sebanyak RM 500,000.00 atau lima (5) tahun penjara atau kedua-duanya sekali.

Bagi memastikan keberkesanan langkah kawalan alam sekitar sepanjang tempoh pelaksanaan projek, **Pelan EMP, Pelan ESCP**, kerja-kerja **EMR** secara berkala dan **EAE** meliputi kualiti air sungai, pengukuran bunyi bising, pemantauan kualiti udara, pengurusan sisa serta perubahan ekologi perlu dilaksanakan. **EMP** boleh ditakrifkan sebagai pengurusan alam sekitar untuk mengenalpasti kesan buruk yang akan terhasil dari pelaksanaan cadangan projek penanaman pokok getah klon balak bagi mengurangkan kesan negatif dan meningkatkan kesan positif. Dokumen **ESCP** perlu disediakan oleh **Profesional Berdaftar** untuk **Pelan Kawalan Hakistan & Kelodakan (CPESC)** dan hendaklah dikemukakan kepada **JPS Negeri Kelantan** untuk kelulusan. Dokumen **ESCP** yang telah diluluskan kemudiannya perlu dikemukakan kepada **JAS Negeri Kelantan** bagi mematuhi **Syarat-syarat Kelulusan PEIA**. **EMR** pula perlu dilaksanakan secara berkala semasa peringkat pembangunan projek bagi memantau sebarang impak yang mungkin berlaku terhadap alam sekeliling. **EMR** secara berkala perlu dilaksanakan semasa peringkat penyediaan tapak, penanaman, penyelenggaraan, penuaian dan penanaman semula. Ia perlu mengandungi jadual untuk pemeriksaan dan pelaporan berdasarkan pelaksanaan projek dan langkah-langkah kawalan yang telah dikenalpasti dalam laporan **PEIA**. Maklumat yang diperolehi dari pemantauan alam sekitar ini juga boleh digunakan untuk memahami hubungan sebab-akibat dan seterusnya membantu dalam pelaksanaan langkah-langkah kawalan yang lebih berkesan. **EMR** perlu dijalankan sehingga **JAS Negeri Kelantan** berpuas hati dengan segala komitmen serta usaha yang diberikan oleh pihak pemaju dalam menguruskan, mengurangkan dan mengawal masalah alam sekitar yang terhasil dari pelaksanaan projek. Pemaju projek juga dicadangkan untuk menyediakan **EAE**, iaitu memantau kerja-kerja pematuhan alam sekitar yang telah dijalankan di tapak projek. **EAE** ini dicadangkan untuk dilaksanakan **sekali setahun** semasa peringkat penyediaan tapak, penanaman dan penyelenggaraan oleh juru audit persendirian yang diiktiraf atau juru audit berdaftar.

Adalah dijangkakan bahawa projek ini akan meningkatkan aktiviti sosio-ekonomi yang bukan sahaja kepada pihak pemaju tetapi juga kepada komuniti setempat (Kg Lepar dan Kg Miak), Daerah Chiku, Jajahan Gua Musang dan **Kerajaan Negeri Kelantan** serta **Kerajaan Persekutuan Malaysia** untuk tempoh jangka masa panjang. Kesan untuk jangka pendek pula bersifat setempat dan dijangkakan hanya pada peringkat awal sahaja. Dan berdasarkan kepada sepenuh komitmen dan usaha yang diberikan oleh pihak pemaju, kesan yang mungkin akan berlaku akan dapat

dihapuskan setelah cadangan projek penanaman pokok getah klon balak ini telah siap sepenuhnya kira-kira dalam tempoh dua (2) hingga tiga (3) tahun. Pemulihan tanah yang berpotensi rendah kepada tanah yang berpotensi tinggi ini dapat mengawal pencerobohan dan pembalakan haram, mengelakkan hakisan tanah, mengekalkan kepelbagaian biologi serta pemuliharaan semula kawasan hutan. Keadaan ini akan mengurangkan kadar pencemaran sekaligus menjadikan kawasan tersebut sebagai kawasan bernilai tinggi. Ini juga akan menghalang alam sekitar daripada berterusan terjejas dan memberi kesan kepada ekosistem di dalam dan di sekitar kawasan cadangan tapak projek. Langkah kawalan berkesan serta garis panduan berkaitan dengan kepentingan alam sekitar perlu dinyatakan dengan jelas serta dijadikan sebagai **Dokumen Kontrak** atau **Kontrak Perjanjian** dengan pihak kontraktor, sub-kontraktor dan pembekal yang terlibat secara langsung atau tidak langsung dalam pelaksanaan cadangan projek penanaman pokok getah klon balak ini. Berdasarkan kajian yang telah dijalankan, dapat disimpulkan bahawa cadangan projek penanaman pokok getah klon balak ini boleh dipertimbangkan untuk dilaksanakan oleh **SRP** akan memberi pelbagai faedah kepada pihak-pihak yang terbabit secara langsung atau tidak langsung dengan pelaksanaan projek ini.