

EXECUTIVE SUMMARY

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT (PEIA)
For
PROPOSED TIMBER LATEX CLONE (TLC) PLANTATION PROJECT (200.0 HA)
AT HSK BATU PAPAN (COMPARTMENT 44 (PARTIAL) & 45 (PARTIAL)),
MUKIM BATU PAPAN, DAERAH GALAS, 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 a brief guide in implementing the recommendations made herewith as well as to monitor the project from the environmental point of view. Once the proposed project has been approved, project proponent shall follow all the guidelines, requirements, regulations and condition of approval. The report entitled “**Proposed Timber Latex Clone (TLC) Plantation Project (200.0 Ha) At HSK Batu Papan (Compartment 44 (Partial) & 45 (Partial)), Mukim Batu Papan, Daerah Galas, Jajahan Gua Musang, Kelantan D.N.**” has been prepared for project proponent, **NSO Trading (NSOT)**. Any further clarification on the above-mentioned proposed project matter can contact or address to the person in-charge as listed below.

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NSOT has granted usage permit of fifty (50) years for the proposed project issued by **Department of Forestry (DOF) Negeri Kelantan** through letter ref: PHN.KN.200/1/1125(3) and PHN.KN.200/1/1125(4) dated on 11th August 2014. **NSOT** 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)D11/121/000/123(2) dated 7th September 2015. **DOE Negeri Kelantan** had officially confirm and instructed **NSOT** to first undertake the **PEIA** study before any development activity of proposed **TLC** plantation project can be carry out on-site. The **Preliminary EIA** study will conducted based on various guidelines on the 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** project. **NSOT** 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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NSOT which is a newly company incorporated in Malaysia on 21st August 2015 and having its registered office at No. 1998, Taman Kuala Krai, 18000 Kuala Krai, Kelantan D.N. **NSOT** has initially received the proposed project site from the **State Government of Kelantan** and has a responsibility as well as commitment to undertake a piece of state land measuring approximately 494.2088 acres (200.0 hectares) at **HSK Batu Papan** (Compartment 44 (Partial) & 45 (Partial)), Mukim Batu Papan, Daerah Galas, Jajahan Gua Musang, Kelantan D.N. for purpose of the proposed TLC plantation with certain term and conditions which has been agreed between the two (2) parties (**NSOT** and **Department of Forestry (DOF) Negeri Kelantan** (refer **Figure 1.0**). The proposed project is to develop 494.2088 acres (200.0 hectares) of low density forested area into proposed TLC plantation project area. The main objective of **NSOT** is to develop and enhance the economic status from agriculture development aspect for the **State Government of Kelantan** by developing existing forest into a high productive TLC plantation area. It's will take approximately three (3) years period of time to reach the overall planting stage depending on project proponent capability in term of manpower, machineries, financial, experience, etc. in undertaking the proposed TLC plantation project.

According to the **Rancangan Fizikal Negara 2010 (RFN 2010)**, **Rancangan Struktur Negeri Kelantan (RSNK 2020)** and **Rancangan Tempatan Jajahan Gua Musang (RTJGM 2020)** document, the proposed project site has been identified as forest reserve area known as **HSK Batu Papan** and located between Daerah Bertam and Daerah Galas. However, based on **DOF Negeri Kelantan** letter ref: PHN.KN.200/1/1125(3) and PHN.KN.200/1/1125(4) dated on 11th August 2014, the proposed project site is located in Daerah Galas area (refer **Figure 2.0**). The **HSK Batu Papan**, **HSK Ulu Galas** and **HSK Hulu Jelai** and various existing neighbouring area owned by **SND Teguh Enterprise**, **Gagah Kukuh Sdn Bhd**, **Pullah PC Daud Enterprise**, **SV Bahagia Solution**, **Laksana Jejaka Sdn Bhd**, **Kosmo Unik Sdn Bhd**, **Dayawani Enterprise**, **Kenangan Sepakat Sdn Bhd**, **Selangor Agriculture Development Corporation**, **Dunia Bulat Solution**, **Perbadanan Menteri Besar Kelantan** and **Wan Lan Enterprise** were found located within 5.0 km radius from the proposed project site (refer **Figure 3.0**). It is situated approximately 1.9 km east of Simpang Pulai-Lojing-Gua Musang-Kuala Berang highway (nearest point), 8.2 km northeast of Orang Asli Pos Belau community area, 13.2 km west of Kg Pulai community area, 14.3 km southeast of Orang Asli RPS Kuala Betis community area, 14.8 km southwest of Gua Musang town area, 51.1 km northwest of Kg Raja community area, 59.7 km northeast of Cameron Highlands town area, 66.3 km southwest of Dabong community area, 73.1 km northwest of Kuala Lipis town area, 88.1 km northeast of Ipoh town area, 91.1 km southwest of Kuala Krai town area, 99.3 km south of Jeli town area, 115 km southwest of Machang town area and 151 km southwest of Kota Bharu town area. The proposed project site is generally mixed terrain profile with hilly in terrain whilst flatter area at certain part of the area. The proposed project site is being access from existing logging track track via Simpang Pulai-Lojing-Gua Musang-Kuala Berang highway (main road network) located some 2.5 km (actual distance) at the west part area. This access road noted passing through the forested area (**HSK Batu Papan**) before reaching the proposed project site area.

Information obtained from **DOF Negeri Kelantan** revealed that the proposed project site is located at area, which has been gazette for proposed TLC development activity which has been approved by the **State Government of Kelantan** for the purpose of TLC plantation development programme. Information obtained from the **Pejabat Pengarah Tanah & Galian (PPTG) Negeri Kelantan** revealed that proposed project site has no overlapping issue and has identified to be located within forest reserve area (**HSK Batu Papan**). Information gathered from **Department of Irrigation & Drainage (DID)** and **Air Kelantan Sdn Bhd (AKSB) Jajahan Gua Musang** revealed that no **DID** river monitoring station and **AKSB** water intake point within 5.0 km radius of the proposed project site area. The nearest water treatment plant was Loji Rawatan Air Panggung Lalat and Loji Rawatan Air Sg Ketil, which is located some 18.0 km and 39.9 km from the proposed project site. Observation made during fieldwork exercise revealed that there is no 'tandak air' found located within the 5.0 km radius from the proposed project site. Information gathered from **JAKOA Negeri Kelantan & Terengganu**, as well as site observation revealed that no Orang Asli settlement found located within 5.0 km radius of proposed project site area. The nearest Orang Asli settlement located some 8.2 km northwest of proposed project site which known as Orang Asli Pos Belau. Information gathered from **Department of Mineral &**

Geoscience Negeri Kelantan revealed that the proposed project site is located outside potential gold area. The proposed project site is located within area classified as **Environmental Sensitive Area (ESA) Rank 1 and Rank 2**.

The proposed project site lies approximately between coordinate 04° 47' 22.3" N to 04° 48' 25.9" N and 101° 49' 48.9" E to 101° 50' 59.2" E. It was noted that the proposed project site still in existing condition and covered with secondary forest and it is generally mixed terrain profile with hilly in terrain and undulating areas with topographic contour from 220 meter up to 400 meter above sea level (ASL). The highest peak is located at northwest side of the proposed project site reaching an altitude up to 413 meter ASL whilst the undulating area can be found at the southern part of the proposed project site, which is 220 meter ASL. It was calculated approximately 66% (132 ha) of the proposed project site was laid on altitude less than 300 meter ASL which described as undulating area and the balance 34% (68 ha) was laid on altitude more than 300 meter ASL which being described as highland area. Slope analysis carried out revealed that approximately 16% (32 ha) of the proposed site consist slope > 25° whilst balance 84% (168 ha) consist slope < 25°. Analysis made on the **Soil Suitability Report** produced by the **Department of Agriculture (DOA) Negeri Kelantan** revealed that the total of 200.0 ha of study area is consists of Bungor Series and Steepland area. From the analysis, **19.4 ha (9.7%)** of the area within proposed project was occupied by Bungor Series. Meanwhile, Steepland area covered about **180.6 ha (90.3%)** of total proposed project site. The total area which has been reported suitable for proposed TLC plantation by **DOA Negeri Kelantan** was about **19.4 ha (9.7%)**. Whilst the balance of **180.6 ha (90.3%)** 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 **NSOT** have highlighted in **Chapter 8.0** of the **PEIA** report. Previous data of traffic count conducted on 2013, 2014 and 2015 had been used as to gather information on the usage of the existing road network which are Simpang Pulai-Lojing-Gua Musang-Kuala Berang highway. It is observed that the average traffic flow rate captured for Simpang Pulai-Lojing-Gua Musang-Kuala Berang highway is **671** vehicles per day during day time (consists of cars, lorries, tractors, jeeps, 4-wheel drives, motorcycles, buses, etc.). It was noted that the current number of road traffic data recorded at these routes are mainly generated by the individual involved with various plantations developments activity within this area.

The implementation of proposed TLC plantation project is expected to have an effect the quality of river water available within proposed project site. Assessment made during various fieldwork exercises revealed that the proposed project site is a river basin of Sg Semor, major rivers located some 3.0 km away. And from the geographically point of view, all small rivulets, streams and rivers available within the proposed project site will finally flow into Sg Semor. It is expected that Sg Semor will directly and indirectly affected during worst case scenario if the proposed TLC plantation project is being developed without a proper mitigating and control measures (especially on the erosion and sedimentation control plan). 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. 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 and F. The selected parameters namely pH, Dissolved Oxygen (DO), temperature, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Suspended Solids (SS), Turbidity, Ammoniacal Nitrogen (AN), E-Coli, Iron, Manganese, Zinc, Phosphorus, Nitrate, Sulphide and Oil & Grease (O&G) has been analysed at thirteen (13) sampling stations at Sg A, B, C, D, E and F

within and surrounding proposed project site. The result together with the progress development of the proposed project shall submit to the **DOE Negeri Kelantan** starting from site preparation until planting stage. Based on **DOE-Water Quality Index** revealed that all thirteen (13) monitoring stations have been analysed to be in 'Clean' category. Based on the analysis result, two (2) sampling stations had been measured to be in **Class I** category and eleven (11) sampling stations which categorized under **Class II**. Altogether seven (7) samples were taken at different locations and period of time within and surrounding the proposed project site for air and noise level measurement. Selected parameters were including Total Suspended Particulate (TSP), Sulphur Dioxide (SO₂), Nitrogen Dioxides (NO₂), Carbon Monoxide (CO), Ozone (O₃), Ammonia (NH₃) and Hydrogen Sulphide (H₂S) will be taken on-site and analysed within respective limit stipulated below **Recommended Malaysian Air Quality Guidelines** except for SO₂ value at monitoring station **A2, A3, A4** and **A5** were stipulated above **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 ranged from 47.0 to 52.3 dBA. The noise level at all monitoring station gave the value below the standard level of 65 dBA (day time level).

NSOT shall as possible to 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 20.0 meter (single sided) riparian zone is suggested to be made available on-site. And for major river 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 and F located within and surrounding the proposed project site. **26.72 ha (13.3%)** 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 **NSOT** on regular basis. The diversion channel is suggested to develop immediate after riparian zone area with approximately **3,300 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 **NSOT** 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 **twelve (12)** 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 controlled, minimized and resolved by **NSOT** through various type of mitigating measures recommended in **PEIA** report. **NSOT** suggested having 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. **NSOT** 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 - B4 - 51.1 ha)** then followed by **Phase 2 (Block B5 - B7 & B12 - 49.3 ha)**. Upon completion, the development will be carried at **Phase 3 (Block B8 - B11 - 56.1 ha)** and finally flow by **Phase 4 (B13 - B15 - 43.5 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, **NSOT** 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. Jajahan Gua Musang had recorded highest number of malaria cases for 2007, 2008, 2009, 2010, 2011, 2012, 2014 and 2015. It was noted that more than 100 cases of malaria occurrence had been reported every year for Jajahan Gua Musang starting from 2008 to 2013. Increasing number of leptospirosis cases also had been registered for Jajahan Gua Musang for year 2014-2015. 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. 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**. **NSOT** 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 Lojing 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, **NSOT** 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 7 to 8 number of elephant expected to be present within **HSK Ulu Galas**, the neighbouring forest reserve area. Whilst, based on the information obtained from **DWNP Gua Musang**, it was revealed that various conflict recorded were made by **Ladang Malaysia Beijing Sdn Bhd** (31st May 2015), **Kg Ulu Raya** (5th March 2015), **Ladang PMBK Blau** (21st May 2014), **Ladang Pandan Intan** (15th May 2014) and **Kg Belau**

(12th January 2011) which involving elephant trespassing into the respective established plantation area. Based on the **Master Plan for Ecological Linkages** or best known as **Central Forest Spine (CFS)** produced by **Department of Town & Rural Planning (DTCP)**, it was noted that the proposed project site is located some 11.9 km (nearest point) from **Primary Linkage 3 - PL3**. This linkage is develop with a purpose to establish the green connection between two (2) forested area known as **HSK Sungai Betis** and **HSK Sungai Berok**. 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 activitiy 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 incompliance 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 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.

The proposed TLC plantation project expected to generate the income after the six (6) years of overall project implementation not only to the project proponent but also to the **State Government of Kelantan**. During this period the project proponent can gain income through the latex produced by the TLC trees. And by the year 20, the project proponent is expected to generate huge revenue through harvesting of timber from the mature TLC trees. It is of the consultant opinion that the proposed timber latex clone plantation project can be considered for the implementation by **NSOT** as the proposed project is not only will increase the value of land resources and generate revenue which can be gained by local community (if any), Daerah Galas and Daerah Bertam, Jajahan Gua Musang, **State Government of Kelantan** as well as **Federal Government of Malaysia** in a long term. 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. Eventhough there is potential environmental impact targeted to be occurred on the surrounding environment especially during the initial stage of project implementation, it is more localized and can be minimized as well as can be controlled if recommended mitigation measures and also guidelines issued by the respective agencies (**DOE Negeri Kelantan, Department of Irrigation & Drainage Negeri Kelantan, Department of Forestry Negeri Kelantan, Department of Town & Country Planning, Department of Wildlife & National Parks, Pejabat Pengarah Tanah & Galian Negeri Kelantan, Pejabat Pengarah Tanah & Jajahan Gua Musang, Department of Agriculture, Department Occupational, Safety & Health**, etc.) is being well undertaken by **NSOT**. All recommendations, mitigation, abatement and control measures

highlighted in this **PEIA** shall incorporated into the overall master planning and execution requirements of the proposed project development. The short-term adverse impacts are localize and expected to occur only during the early stage of the overall project development. Impacts that may arise from the proposed timber latex clone plantation project can be controlled, minimized and resolved with an extra effort given by the project proponent. Furthermore, the proposed overall project development is expected will not impose any significant long-term environmental adverse impacts on the area within the proposed project site and also to the surrounding environmental development. And with full commitment planned to be given by **NSOT**, the potential environmental aspect is expected to be diminished once the overall project programme enters the maintenance phase. Furthermore, it will not impose any significant long-term environmental adverse impacts on the area within the project site and the surrounding environment. In the long term, this proposed project can contribute to natural forest conservation initiative by rehabilitating a heavily degraded area and turning the proposed project site into a very productive land. More importantly, the greening of the respective area may contribute in producing an oxygen and carbon dioxide needed by the human being, trees (flora) and any other living organism within and surrounding the proposed project site. **The project proponent is suggested that all mitigation and abatement measures highlighted for recommended implementation as well as overall environmental compliances during the site preparation, planting, maintenance and harvesting phase shall be specified clearly in the Contract Document or Contract Agreement with selected contractors, sub-contractors and suppliers who involved directly or indirectly in the proposed TLC plantation project.**

RINGKASAN EKSEKUTIF

KAJIAN AWAL PENILAIAN KESAN ALAM SEKITAR

Untuk

**CADANGAN PROJEK PENANAMAN POKOK GETAH KLON BALAK (200.0 HA)
DI HSK BATU PAPAN (KOMPARTMEN 44 (SEBAHAGIAN) & 45 (SEBAHAGIAN)),
MUKIM BATU PAPAN, DEARAH GALAS, 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 (TLC) (200.0 Ha) Di HSK Batu Papan (Kompartmen 44 (Sebahagian) & 45 (Sebahagian)), Mukim Batu Papan, Daerah Galas, Jajahan Gua Musang, Kelantan D.N.**" ini disediakan untuk pemaju projek **NSO Trading (NSOT)**. Sebarang penjelasan mengenai keseluruhan cadangan projek bolehlah berhubung dengan pegawai yang berkaitan seperti yang dinyatakan dibawah.

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NSOT memperolehi permit bagi kawasan cadangan tapak projek ini untuk selama lima puluh (50) tahun daripada **Jabatan Perhutanan Negeri Kelantan** melalui surat rujukan PHN.KN.200/1/1125(3) dan PHN.KN.200/1/1125(4) bertarikh 11hb Ogos 2014. **NSOT** melalui juru perunding **EIA, I.Z. EnvironMind Sdn Bhd (IZE)** juga telah mendapat maklum balas dan kelulusan rasmi **Penapisan Awal Tapak (PAT)** daripada **JAS Negeri Kelantan** menerusi surat ruj: AS(B)D11//121/000/123(2) bertarikh 7hb September 2015. **JAS Negeri Kelantan** telah mengarahkan pihak **NSOT** untuk menjalankan kajian **PEIA** sebelum menjalankan sebarang kerja-kerja pembangunan cadangan penanaman TLC di kawasan cadangan tapak projek. 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 **NSOT** 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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NSOT merupakan syarikat baru yang ditubuhkan di Malaysia pada 21hb Ogos 2015 dan didaftarkan di alamat No. 1998, Taman Kuala Krai, 18000 Kuala Krai, Kelantan D.N. **NSOT** mendapat kawasan cadangan tapak projek daripada **Kerajaan Negeri Kelantan** dan bertanggungjawab untuk membangunkan tanah berkeluasan kira-kira 494.2088 ekar (200.0 ha) yang terletak di **HSK Batu Papan** (Kompartmen 44 (Sebahagian) & 45 (Sebahagian)), Mukim Batu Papan, Daerah Galas, Jajahan Gua Musang, Kelantan D.N. bagi cadangan projek penanaman pokok TLC mengikut terma dan syarat yang dipersetujui oleh dua (2) pihak (**NSOT** dan **Jabatan Perhutanan Negeri Kelantan**) (rujuk '**Figure 1.0**'). Kawasan tapak projek seluas 494.2088 ekar (200.0 hektar) merupakan kawasan hutan yang berkepadatan rendah akan ditanam dengan pokok getah klon balak. Tujuan utama **NSOT** adalah untuk memajukan dan meningkatkan status ekonomi daripada sudut pertanian bagi pihak **Kerajaan Negeri Kelantan** dengan memajukan kawasan hutan sediaada kepada kawasan penanaman pokok TLC yang bernilai tinggi. Projek ini dijangka akan mengambil masa kira-kira tiga (3) tahun sehingga selesai kerja-kerja penanaman pokok TLC. Ianya bagaimanapun akan bergantung kepada keupayaan pemaju projek untuk menjalankan cadangan projek penanaman pokok getah klon balak ini dengan mengambil kira aspek tenaga kerja, mesin, kewangan, pengalaman dan lain-lain.

Berdasarkan kepada dokumen **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 Batu Papan** dan terletak di antara Daerah Bertam dan Daerah Galas. Walaubagaimanapun, berdasarkan kepada surat daripada **Jabatan Perhutanan Negeri Kelantan** rujukan PHN.KN.200/1/1125(3) dan PHN.KN.200/1/1125(4) kedua-duanya bertarikh 11hb Ogos 2014 mendapati kawasan cadangan tapak projek terletak di Daerah Galas (rujuk '**Figure 2.0**'). **HSK Batu Papan**, **HSK Ulu Galas** dan **HSK Hulu Jelai** dan pelbagai kawasan penanaman sediaada dimiliki oleh **SND Teguh Enterprise**, **Gagah Kukuh Sdn Bhd**, **Pullah PC Daud Enterprise**, **SV Bahagia Solution**, **Laksana Jejaka Sdn Bhd**, **Kosmo Unik Sdn Bhd**, **Dayawani Enterprise**, **Kenangan Sepakat Sdn Bhd**, **Selangor Agriculture Development Corporation**, **Dunia Bulat Solution**, **Perbadanan Menteri Besar Kelantan** dan **Wan Lan Enterprise** didapati berada dalam lingkungan 5.0 km dari kawasan cadangan tapak projek (rujuk '**Figure 3.0**'). Kawasan cadangan tapak projek terletak kira-kira 1.9 km timur lebuh raya Simpang Pulau-Lojing-Gua Musang-Kuala Berang (jarak terdekat), 8.2 km timur laut kawasan komuniti Orang Asli Pos Belau, 13.2 km barat kawasan komuniti Kg Pulau, 14.3 km tenggara kawasan komuniti Rancangan Penempatan Semula Orang Asli Kuala Betis, 14.8 km barat daya bandar Gua Musang, 51.1 km barat laut kawasan komuniti Kg Raja, 59.7 km timur laut bandar Cameron Highlands, 66.3 km barat daya kawasan komuniti Dabong, 73.1 km barat laut bandar Kuala Lipis, 88.1 km timur laut bandar Ipoh, 91.1 km barat daya bandar Kuala Krai, 99.3 km selatan bandar Jeli, 115 km barat daya bandar Machang dan 151 km barat daya bandar Kota Bharu. Kawasan cadangan tapak projek mendapati kawasan tapak cadangan projek adalah berbukit dan terdapat juga permukaan tanah rata di sesetengah kawasan. Kawasan cadangan tapak projek boleh dilalui dengan menggunakan jalan balak sediaada melalui lebuh raya Simpang Pulau-Lojing-Gua Musang-Kuala Berang (jalan utama) yang terletak kira-kira 2.5 km (jarak sebenar) arah barat. Jalan ini didapati melalui kawasan hutan (**HSK Batu Papan**) sebelum sampai ke kawasan cadangan tapak projek.

Maklumat yang diperolehi daripada **Jabatan Perhutanan Negeri Kelantan** mendapati kawasan cadangan tapak projek telah digazetkan bagi tujuan penanaman pokok getah klon balak dan telah diluluskan oleh **Kerajaan Negeri Kelantan**. 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 Batu Papan**). 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 Panggung Lalat dan Loji Rawatan Air Sg Ketil yang terletak kira-kira 18.0 km dan 39.9 km (jarak sebenar) dari kawasan cadangan tapak projek. Pemerhatian ketika kerja lapangan mendapati tiada tandak air berada dalam lingkungan 5.0 km daripada kawasan cadangan tapak projek. Maklumat yang diperolehi daripada **Jabatan Kemajuan Orang Asli (JAKOA) Kelantan & Terengganu** serta pemantaun di tapak projek mendapati tidak terdapat sebarang penempatan Orang Asli yang berada dalam lingkungan 5.0 km daripada kawasan cadangan tapak projek. Kawasan komuniti orang asli yang paling hampir terletak kira-kira 8.2 km barat daya dari kawasan cadangan tapak projek dikenali sebagai Orang Asli Pos Belau. Maklumat yang diperolehi daripada **Jabatan Mineral & Geosains Negeri Kelantan** mendapati kawasan cadangan tapak projek terletak di luar kawasan potensi emas. Kawasan cadangan tapak projek terletak di kawasan diklasifikasikan sebagai **Kawasan Sensitif Alam Sekitar (KSAS) Tahap 1 dan Tahap 2**.

Kawasan cadangan tapak projek ini terletak pada koordinat 04° 47' 22.3" N hingga 04° 48' 25.9" N dan 101° 49' 48.9" E hingga 101° 50' 59.2" E. Kawasan cadangan tapak projek masih dalam keadaan sedia ada dan dilitupi oleh hutan sekunder dimana kawasan tapak cadangan projek adalah berbukit dan beralun berada pada ketinggian 220 meter hingga 400 dari paras laut. Kawasan yang paling tinggi terletak di bahagian barat laut dengan ketinggian sehingga 413 meter manakala kawasan beralun pula terdapat di bahagian selatan kawasan cadangan tapak projek dengan ketinggian 220 meter dari aras laut. Kira-kira 66% (132 ha) kawasan cadangan tapak projek berada pada ketinggian kurang daripada 300 meter dari aras laut dimana merupakan kawasan beralun dan baki sebanyak 34% (68 ha) berada pada ketinggian melebihi 300 meter dimana merupakan kawasan tanah tinggi. Analisa cerun yang dijalankan mendapati hampir 16% (32 ha) dari kawasan cadangan tapak projek ini mempunyai cerun > 25° manakala selebihnya iaitu kira-kira 84% (168 ha) mempunyai cerun < 25°. Berdasarkan kepada **Laporan Kesesuaian Tanah** yang dikeluarkan oleh **Jabatan Pertanian Negeri Kelantan**, mendapati keseluruhan kawasan cadangan tapak projek yang 200 ha terdiri daripada Siri Bungor dan Tanah Curam. Berdasarkan analisis, sebanyak **19.4 ha (9.7%)** kawasan cadangan tapak projek terdiri daripada Siri Bungor. Manakala Tanah Curam meliputi kira-kira **180.6 ha (90.3%)** daripada keseluruhan kawasan cadangan tapak projek. Kawasan yang didapati sesuai bagi cadangan penanaman pokok getah klon balak oleh **Jabatan Pertanian Negeri Kelantan** adalah sebanyak **19.4 ha (9.7%)**. Manakala baki selebihnya sebanyak **180.6 ha (90.3%)** pula tiada sebarang aktiviti pertanian dibenarkan untuk dijalankan di kawasan 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 lebih 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 **NSOT** telah dibincangkan di dalam **Bab 8.0** laporan **PEIA** ini. Kajian lalu lintas yang dijalankan pada 2013, 2014 dan 2015 telah digunakan sebagai informasi keseluruhan penggunaan jalan raya pada waktu siang di Lebuhraya Simpang Pulai-Lojing-Gua Musang-Kuala Berang. Ini menunjukkan sebanyak **671** buah kenderaan menggunakan Lebuhraya Simpang Pulai-Lojing-Gua Musang-Kuala Berang pada waktu siang yang terdiri daripada kereta, lori, traktor, pacuan empat roda, motosikal, bas dan lain-lain. Data lalu lintas yang direkodkan di jalan ini adalah merupakan jalan utama bagi individu yang terlibat dalam pelbagai aktiviti pembangunan di kawasan ini.

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. Pemerhatian di lapangan mendapati kawasan cadangan tapak projek merupakan kawasan lembangan sungai bagi Sg Semor iaitu sungai utama yang terletak kira-kira 3.0 km daripada kawasan cadangan tapak projek dan daripada sudut geografi kesemua sungai dan anak sungai dari kawasan cadangan tapak projek akan mengalir ke arah Sg Semor.

Adalah dijangkakan bahawa Sg Semor secara langsung dan tidak langsung akan terjejas sekiranya kawasan cadangan tapak projek dimajukan tanpa langkah kawalan yang berekesan (terutamanya pelan hakisan dan kelodakan). 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. Kebanyakan sungai-sungai yang ada didalam kawasan cadangan tapak projek tidak mempunyai nama. Dan bagi tujuan persampelan sungai ini dinamakan sebagai Sg A, B, C, D, E dan F. Sebanyak tiga belas (13) sampel air Sg A, B, C, D, E dan F di kawasan tapak cadangan projek dan kawasan sekitarnya diambil bagi menentukan parameter asas kualiti air seperti kandungan pH, oksigen terlarut, suhu, keperluan oksigen biokimia, keperluan oksigen kimia, pepejal terampai, kekeruhan, Nitrogen Ammonia, E-Coli, Besi, Mangan, Zink, Fosforus, Nitrat, Sulfida dan minyak & gris. 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. Berdasarkan kepada **Indek Kualiti Air Jabatan Alam Sekitar**, kesemua tiga belas (13) stesen persampelan didapati berada dalam kategori "**Bersih**". Berdasarkan keputusan analisis, dua (2) stesen persampelan didapati berada dalam **Kelas I** dan sebelas (11) stesen persampelan berada dalam **Kelas II**. Pemantauan kualiti udara dan bunyi bising juga telah dijalankan di tujuh (7) stesen persampelan yang terletak di kawasan tapak cadangan projek dan kawasan sekitarnya. Data kualiti udara yang terdiri daripada Partikel Terampai (TSP), Sulfur Dioksida (SO₂), Nitrogen Dioksida (NO₂), Karbon Monoksida (CO), Ozon (O₃), Ammonia (NH₃) dan Hidrogen Sulfid (H₂S) berada di paras yang ditetapkan oleh **Garis Panduan Kualiti Udara di Malaysia** kecuali bagi nilai SO₂ di stesen persampelan **A2, A3, A4 dan A5** melebihi **Garis Panduan Kualiti Udara di Malaysia**. Bunyi bising diklasifikasikan sebagai bunyi yang tidak diingini 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 47.0 hingga 52.3 dBA. Tahap bunyi bising yang direkodkan di semua stesen persampelan merekodkan bunyi bising dibawah tahap yang ditetapkan 65.0 dBA (tahap bunyi waktu siang).

Pihak **NSOT** juga dikehendaki mengekalkan kawasan zon penampasan 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 20.0 meter (satu bahagian) zon pemampasan sungai perlu dikekalkan. Dan bagi sungai utama (Sg Semor) garis panduan zon pemampasan sungai daripada **JPS** perlu dipatuhi (rujuk '**Figure 4.0**'). Kawasan penampasan hendaklah dikekalkan pokok-pokok sediaada, tumbuhan semulajadi, pokok-pokok renek dan tumbuhan penutup bumi. Pihak pemaju projek disarankan untuk mematuhi **Garis Panduan untuk Zon Penampasan Sungai** yang dikeluarkan oleh **JPS** dalam membangunkan kawasan penampasan 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 dan F yang terdapat di dalam dan disekitar kawasan cadangan tapak projek. Kira-kira **26.72 ha (13.36%)** zon penampasan 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 **NSOT**. Kira-kira **3,300 meter** perparitan lencongan dicadangkan dibina selepas zon penampasan dibina. Ianya bagi mengelak berlakunya mendapan dari terus mengalir ke sungai. Pembinaan kolam perangkap mendap dicadangkan untuk dibina sebelum kerja pembersihan dan kerja tanah dilakukan. Sebanyak **empat (4)** unit kolam perangkap mendap dicadangkan untuk dibina oleh pihak **NSOT** 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 belas (12)** unit 'check dam' telah dicadangkan untuk dibina di kawasan cadangan tapak projek. Struktur-struktur kawalan hakisan ini akan betul-betul berkesan sekiranya pihak **NSOT** menjalankan kerja-kerja penyelenggaraan seperti disarankan dalam laporan **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 **NSOT** melalui pelbagai langkah seperti yang dicadangkan dalam laporan **PEIA**. Pihak **NSOT** 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. **NSOT** 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 – B4 – 51.1 ha)** kemudian diikuti **Fasa 2 (Blok B5 – B7 & B12 – 49.3 Ha)**. Setelah siap, pembangunan akan diteruskan di **Fasa 3 (Blok B8 - B11 – 56.1 Ha)** dan akhir sekali diikuti oleh **Fasa 4 (Blok B13 - B15 – 43.5 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. 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 **NSOT** hendaklah memaklumkan secara bertulis kepada **JAS Negeri Kelantan** berkenaan dengan penghasilan buangan terjadual di tapak cadangan projek. Pihak **NSOT** 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 berubut juga boleh membendung penularan malaria. Jajahan Gua Musang merekodkan kes malaria yang tertinggi pada tahun 2007, 2008, 2009, 2010, 2011, 2012, 2014 dan 2015. Sebanyak 100 kes malaria telah direkodkan setiap tahun bagi Jajahan Gua Musang bermula dari tahun 2008 hingga 2013. Peningkatan kes kencing tikus turut dilaporkan di Jajahan Gua Musang pada tahun 2014-2015. 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 **NSOT** 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 **NSOT** 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 **NSOT** 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 sedia ada 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 sekeliling kawasan cadangan tapak projek ketika pelaksanaan cadangan projek penanaman pokok getah klon balak ini, pihak **NSOT** 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 7 hingga 8 ekor gajah di kawasan **HSK Ulu Galas**, kawasan hutan berhampiran. Manakala, maklumat yang diperolehi daripada **PERHILITAN Gua Musang** mendapati pelbagai konflik yang dilaporkan adalah di **Ladang Malaysia Beijing Sdn Bhd** (31hb Mei 2015), **Kg Ulu Raya** (5hb Mac 2015), **Ladang PMBK Blau** (21hb Mei 2014), **Ladang Pandan Intan** (15hb Mei 2014) dan **Kg Belau** (12hb Januari 2011) dimana melibatkan pencerobohan gajah ke kawasan ladang. 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 11.9 km (jarak terdekat) dari '**Primary Linkage 3 – PL3**'. Jaringan ini bertujuan untuk mewujudkan jaringan hijau antara dua (2) kawasan hutan dikenali sebagai **HSK Sungai Betis** dan **HSK Sungai Berok**. 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.

Cadangan projek penanaman pokok getah klon balak ini dijangkakan akan memberi pulangan selepas tahun ke-enam (6) bukan sahaja kepada pihak pemaju projek tetapi juga kepada **Kerajaan Negeri Kelantan**. Pada masa ini pihak

pemaju projek akan memperoleh keuntungan melalui penghasilan susu getah. Dan pada tahun ke dua puluh (20), pihak pemaju projek akan memperoleh keuntungan melalui penebangan pokok getah klon balak yang telah matang. Berdasarkan kajian yang telah dijalankan, dapat disimpulkan bahawa cadangan projek penanaman pokok getah klon balak ini adalah berdaya maju, sesuai dan boleh dipertimbangkan untuk dilaksanakan oleh pihak **NSOT** memandangkan projek ini bukan sahaja akan meningkatkan nilai sumber tanah dan menjana pendapatan kepada komuniti setempat (sekiranya ada), Daerah Galas, Jajahan Gua Musang, **Kerajaan Negeri Kelantan** serta **Kerajaan Persekutuan Malaysia** untuk jangka masa panjang. Pemulihan tanah yang berpotensi rendah kepada tanah yang berpotensi tinggi ini dapat mengawal pencerobohan tanah secara haram dan aktiviti pembalakan haram, mengelakkan hakisan tanah, mengekalkan kepelbagaian biologi serta pemuliharaan semula kawasan hutan. Kawasan ini akan mengurangkan kadar pencemaran sekaligus menjadikan kawasan tersebut sebagai kawasan bernilai tinggi. Ini juga akan menghalang alam sekitar daripada berterusan terjejas dimana ianya boleh memberi kesan kepada ekosistem berhampiran dan sekeliling kawasan cadangan tapak projek. Walaupun berpotensi memberi kesan terhadap alam sekitar semasa peringkat awal pelaksanaan, ia adalah bersifat setempat dan boleh dikurangkan serta dikawal sekiranya langkah-langkah kawalan dan juga panduan oleh agensi berkenaan (**JAS Negeri Kelantan, Jabatan Pengairan & Saliran Negeri Kelantan, Jabatan Perhutanan Negeri Kelantan, Jabatan Perancangan Bandar & Desa, Jabatan Perlindungan Hidupan Liar & Taman Negara, Pejabat Pengarah Tanah & Galian Negeri Kelantan, Pejabat Tanah & Jajahan Gua Musang, Jabatan Pertanian, Jabatan Kesihatan & Keselamatan Pekerjaan**, dan sebagainya) diambil berat oleh pihak **NSOT**. Segala cadangan, langkah kawalan dan pencegahan yang ditekankan serta dicadangkan di dalam **PEIA** haruslah diikuti di dalam keseluruhan rancangan pembangunan projek yang dicadangkan. Kesan buruk jangka pendek adalah bersifat setempat dan dijangka akan berlaku hanya pada peringkat awal projek pembangunan keseluruhan. Tambahan pula, pembangunan di kawasan cadangan tapak projek adalah dijangkakan tidak akan memberi kesan berpanjangan kepada alam sekitar dalam kawasan cadangan tapak projek serta kawasan sekitarnya. Kesan yang dijangka wujud daripada cadangan projek penanaman pokok getah klon balak ini adalah boleh dikawal dan diminima dengan langkah-langkah kawalan yang bakal dijalankan oleh pihak **NSOT**. Dan dengan komitmen penuh yang bakal diberikan oleh pihak **NSOT**, impak alam sekitar dijangka akan berkurangan sebaik sahaja keseluruhan projek memasuki fasa penyelenggaraan. Selain itu, ia tidak akan meninggalkan kesan buruk terhadap alam sekitar dalam tapak cadangan projek dan juga persekitaran. Walaupun kesan terhadap persekitaran dijangkakan berlaku pada peringkat permulaan, namun cadangan projek ini akan menyumbangkan ke arah pemuliharaan hutan semulajadi ke arah hutan yang kaya dengan nilai komersial. Apa yang lebih penting, cadangan projek penanaman pokok getah klon balak ini akan dapat membantu menghijaukan kawasan dan seterusnya menghasilkan keseimbangan oksigen dan karbon dioksida yang sememangnya diperlukan oleh manusia, flora dan fauna juga hidupan lain di sekitar tapak cadangan projek. **Pemaju projek disarankan agar menjadikan langkah kawalan serta garis panduan berkaitan dengan kepentingan alam sekitar pada peringkat penyediaan tapak, penanaman, penyelenggaraan dan penuaian 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.**