MALAYSIAN SUSTAINABLE PALM OIL

HIGH CONSERVATION VALUE ASSESSMENT GUIDELINE

EXISTING OIL PALM PLANTINGS

MSPO HCV ASSESSMENT GUIDELINES FOR EXISTING OIL PALM PLANTINGS

(VERSION 1)

Document Reference Number: MSPO/ HCV Guideline/002

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Purpose

The principal objective of this document is to provide guidance to those interested in undertaking High Conservation Value (HCV) assessments on existing oil palm plantings. Considering Malaysia's developed and extensive oil palm landscape, the adoption of the HCV approach for existing oil palm plantings is a 'big step forward', greatly differing from the *status quo*. The current situation suggests that many of these existing oil palm plantings are situated adjacent to intact and disturbed forest areas. In most cases, these areas have the potential to harbour species and ecosystems that have High Conservation Value. Additionally, these areas potentially provide environmental services, subsistence and cater to the cultural needs of local communities and indigenous people and are considered to have High Conservation Value. One of the aims of this document is to guide practitioners in identifying the potential presence of all 6 HCV attributes, specifically in areas that have existing oil palm plantings, and guidance on the future management and monitoring of the identified HCV areas. The overall goal of this document is to guide the assessors and relevant stakeholders on the broader interpretation of HCV in the Malaysian oil palm context.

Intended Readership

- Oil palm growers and smallholders,
- Smallholder scheme managers,
- HCV assessors,
- Grower associations,
- Government bodies related to oil palm,
- Social and Environmental NGOs,
- Academia interested in oil palm,
- Certification bodies,
- Other organisations involved in managing, producing, and marketing palm oil,
- Palm oil processors or traders,
- Other stakeholders from the oil palm supply chain,
- Financial institutions,
- Palm oil consumers, and
- General public.

Ceyx rufidorsa
(Rufous-backed kingfisher)

Credited to MEC

ACKNOWLEDGEMENT

The Malaysian Sustainable Palm Oil (MSPO) organisation, formerly known as the Malaysian Palm Oil Certification Council (MPOCC), would like to express its sincere appreciation and gratitude to Malaysian Environmental Consultants (MEC) for their exceptional dedication and hard work in developing the MSPO High Conservation Value (HCV) Assessment Guideline for existing oil palm plantings. MEC has demonstrated an unwavering commitment to environmental sustainability and conservation. Their efforts in crafting these guidelines have contributed significantly to the advancement of sustainable practices within the Malaysian oil palm industry.

MEC's expertise and thorough understanding of environmental impact assessments have been invaluable in formulating comprehensive guidelines that address the complex challenges associated with assessing and managing High Conservation Value areas. Through their research, extensive fieldwork, and collaboration with various stakeholders, MEC has ensured that the HCV Assessment Guidelines are robust, scientific, and aligned with international best practices.

MSPO would also like to extend our heartfelt gratitude to the members of the MSPO HCV Technical Committee who provided invaluable technical input throughout the guidelines' development process. Their collective expertise and insights have enriched the guidelines, ensuring that they reflect the diverse perspectives and considerations necessary for responsible land management.

The successful completion of the MSPO HCV Assessment Guidelines is a testament to the collaborative spirit and dedication exhibited by MEC and the MSPO HCV Technical Committee members. Their unwavering commitment to sustainable palm oil production has paved the way for improved practices, protecting and conserving our precious ecosystems while promoting responsible economic development.

MSPO is immensely grateful for the contribution of MEC and the MSPO HCV Technical Committee members, whose hard work and technical input have been instrumental in the development of these guidelines.

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Disclaimer

This guideline provides a general approach on how to undertake HCV assessments in the Malaysian oil palm landscape for existing oil palm plantings. The scenarios presented cannot be claimed to be comprehensive, and it should be recognised that ground conditions may provide variations. Adaptability of this HCV guideline to ground conditions is a prerequisite to successfully undertaking field assessments. This document does not claim to be the ultimate guide in undertaking HCV assessments in Malaysia but serves as a minimum requirement to meet the MSPO standard. A rigid interpretation of the requirements is not encouraged; rather, a flexible interpretation suited to ground conditions is proposed. A full understanding of this document is suggested, and further clarification from MSPO or their appointed representatives is encouraged to avoid any form of errors in future assessments and reporting.

This guide is not exhaustive but serves to prompt field assessments and reporting that will accurately identify all the potential HCV areas existing within the oil palm plantings. Creative interpretation is encouraged without sacrificing the HCV attributes existing on the ground.

There is no support, endorsement, or special recognition given to any of the organisations referenced and mentioned in this report. MSPO does not accept any form of liability for errors or omissions that may result from following this guideline.

The final content of this guideline document is determined by the MSPO HCV Technical Committee and MEC bears no responsibility for any dilution of the international stakeholder requirements.

Key Point

The key point in undertaking HCV assessments in the Malaysian oil palm landscape is to identify any form of natural, social, and cultural areas of significance; irrespective of size, degradation, biological and ecological composition, and social importance. These identified areas will be conserved through the MSPO HCV assessment process and will contribute to both the protection and conservation of sites within the oil palm landscape. As part of the Malaysian sustainable palm oil production initiative, these sites will support the national conservation cause.

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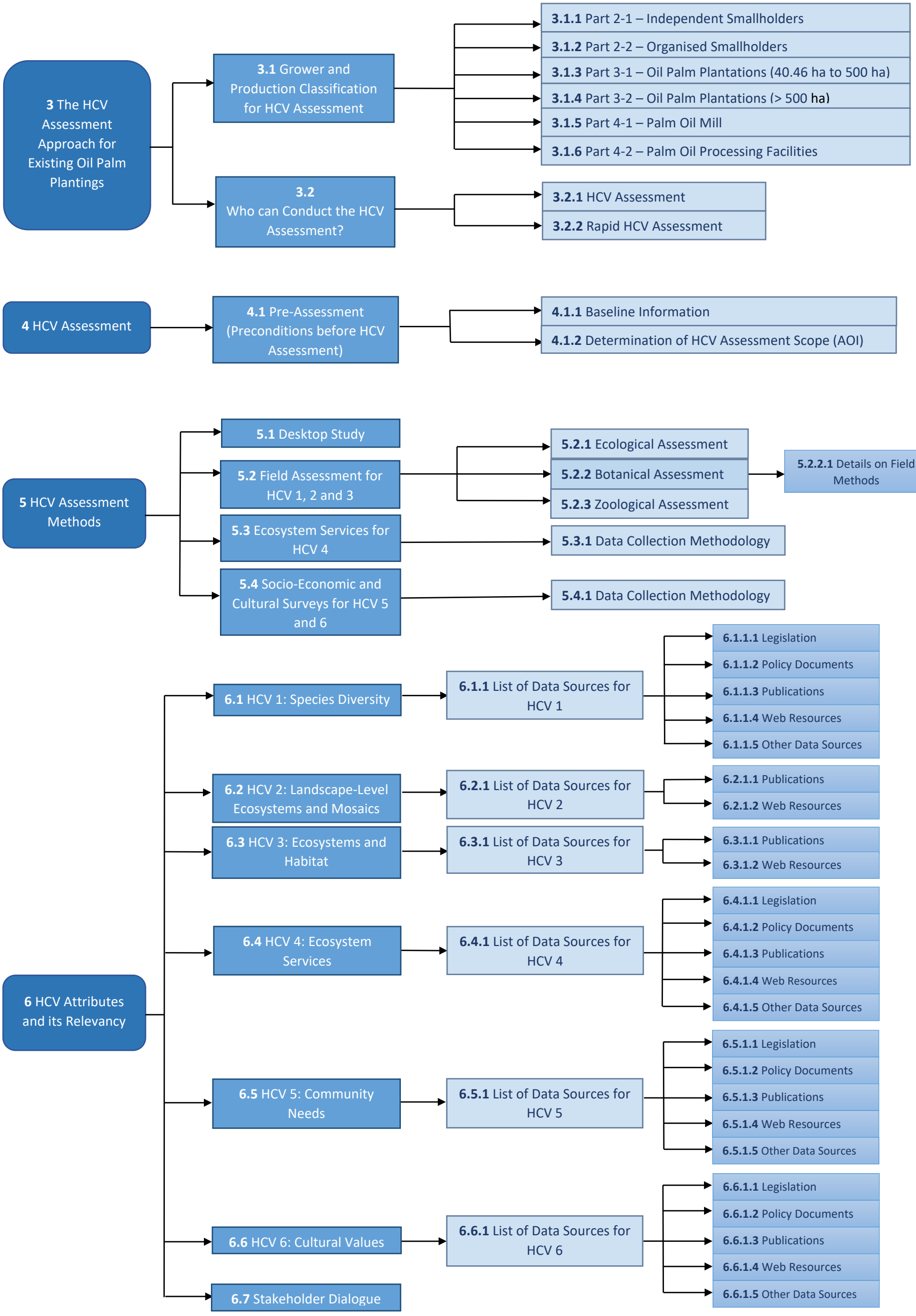

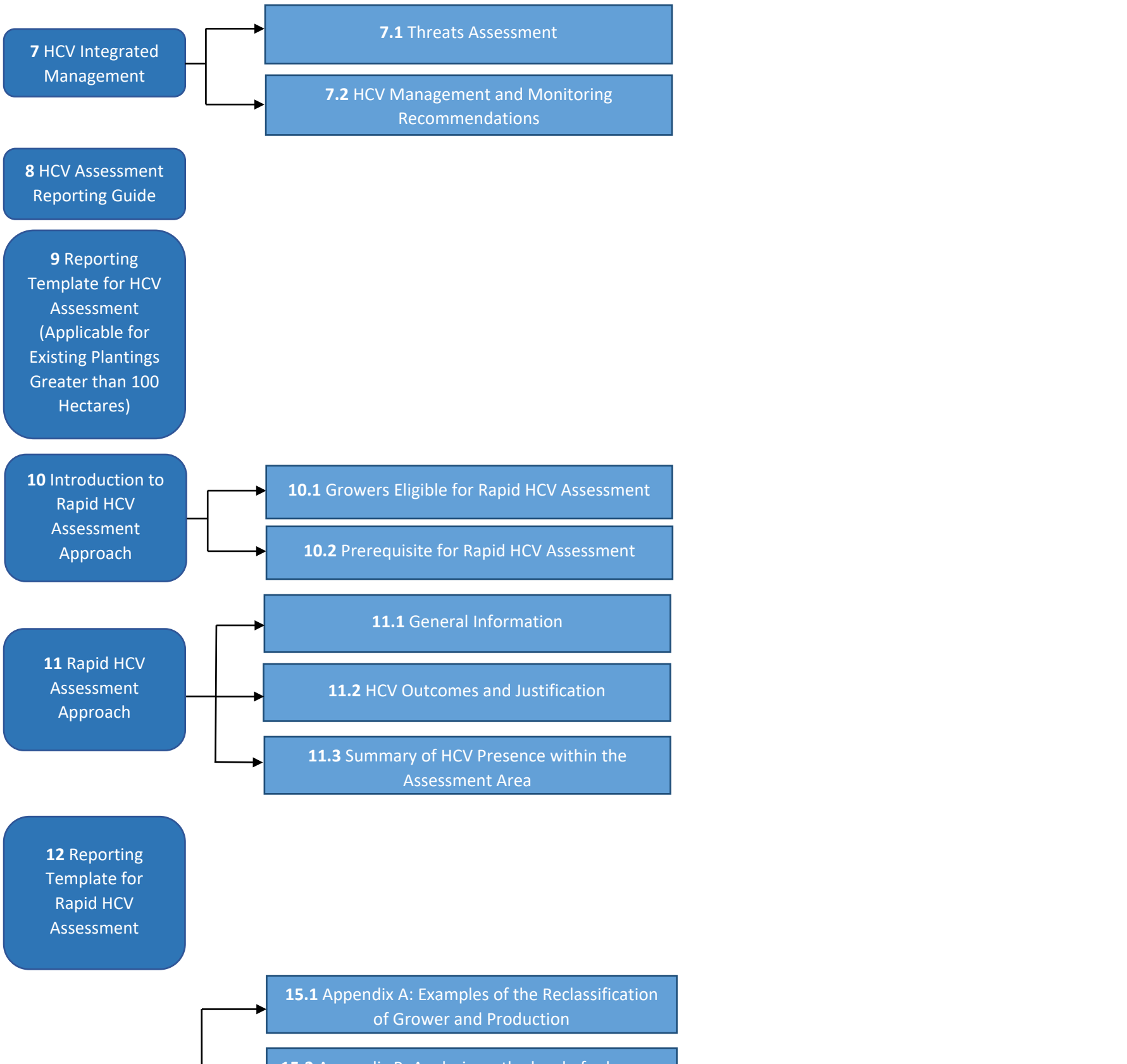
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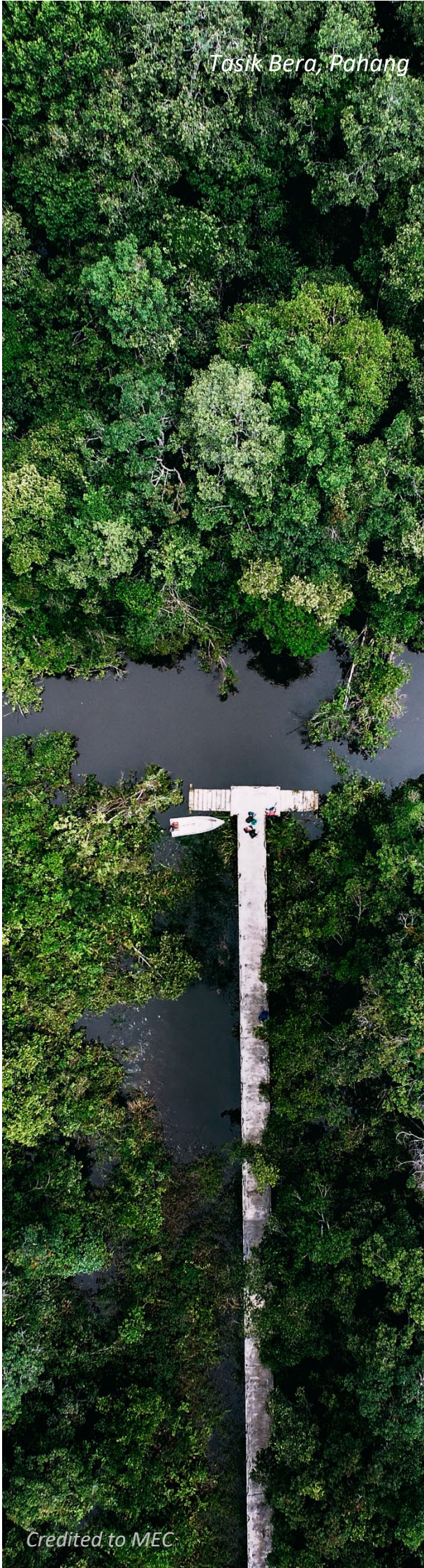
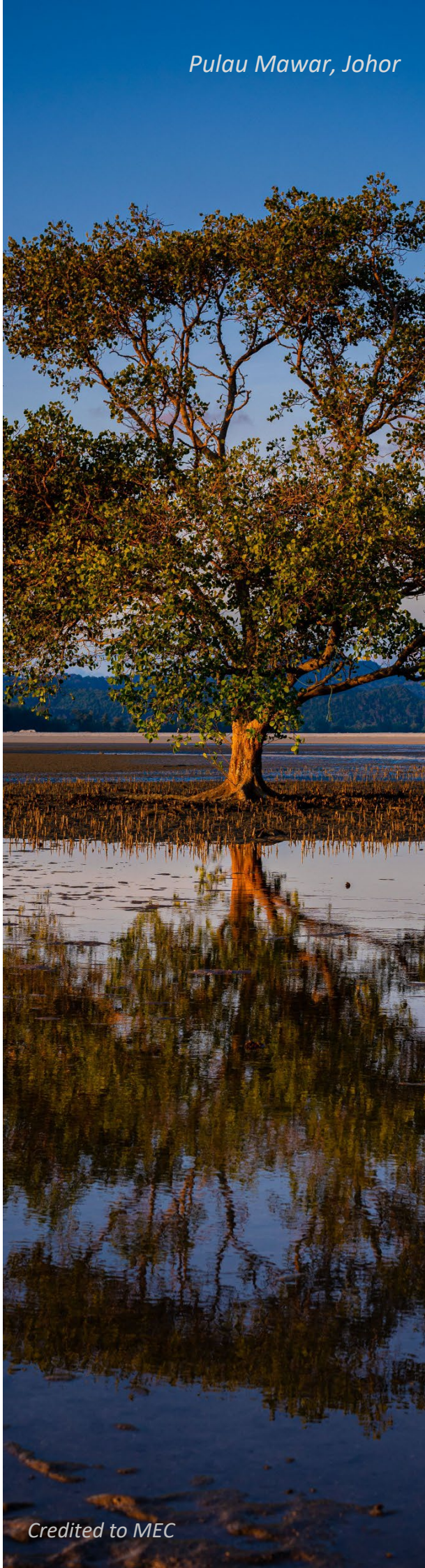
(Dusky leaf monkey)





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(*Blunt-headed Slug Snake*)

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List of Abbreviations

<	Less than
>	Greater than
≥	Greater than or equal to
AGB	Above Ground Biomass
AOI	Area of Interest
asl	Above Sea Level
BNB	British North Borneo
CITES	Convention on International Trade in Endangered Species
DBH	Diameter at breast height
DEM	Digital Elevation Model
EIA	Environmental Impact Assessment
FELCRA	Federal Land Consolidation and Rehabilitation Authority
FELDA	Federal Land Development Authority
FFB	Fresh Fruit Bunch
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
GIS	Geographical Information System
GPS	Global Positioning System
HBV	High Biodiversity Value
HCV	High Conservation Value
HCVF	High Conservation Value Forest
HCVN	High Conservation Value Network
IFL	Intact Forest Landscapes
IUCN	International Union for Conservation of Nature
JPPH	*Jabatan Penilaian & Perkhidmatan Harta*
LCC	Land Capability Classification
MU	Management Unit
MEOA	Malaysian Estate Owners Association
MPIC	Ministry of Plantation and Commodities (KPK)
MPOA	Malaysian Palm Oil Association
MPOB	Malaysian Palm Oil Board
MPOCC	Malaysian Palm Oil Certification Council (Currently known as MSPO)
MSPO	Malaysian Sustainable Palm Oil (Formerly known as MPOCC)
NCR	Native Customary Rights
NGOs	Non-Governmental Organisations
NSC	National Standards Committee on Oil Palm and Its Products
NTFP	Non-Timber Forest Product
PIC	Person-in-charge
PORAM	Palm Oil Refiners Association Malaysia
RISDA	Rubber Industry Smallholders Development Authority
RSPO	Roundtable on Sustainable Palm Oil
RTE	Rare, Threatened or Endangered

SALCRA	Sarawak Land Consolidation & Rehabilitation Authority
SCC	Soil Suitability Class
SFM	Sustainable Forest Management
SIA	Social Impact Assessment
SLDB	Sabah Land Development Board
SOPPOA	Sarawak Oil Palm Plantation Owners Association
SOPs	Standard Operating Procedures
SPOC	Sustainable Palm Oil Cluster
TC MSPO	Technical Committee on MSPO
TUNAS Officer	Oil Palm Demonstration and Advisory Officer *(Pegawai Tunjuk Ajar dan Nasihat Sawit)*
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
WGs	Working Groups
WWF	World Wide Fund for Nature

Glossary

Term	Definition
Aquifer	An aquifer can be defined as any saturated hydrogeologic unit (body of permeable rock and/or sediment) that contains a significant quantity of water, and sufficient permeability to transmit said water. Aquifers are located underground, serving as natural subterranean storages and distribution systems for groundwater. The groundwater sourced from aquifers is commonly used for agricultural, domestic, or industrial services.
Biogeographic area	A biogeographic area is where a distinctive group of plants and animals are found and are believed to have evolved and diversified over a long period of time. Biogeographic areas are often defined by physical and climatic boundaries, such as oceans, mountain ranges, and deserts, that have influenced the distribution and evolution of life forms within the region.
Brackish-water Forest/ Mangrove	Brackish water refers to a mixture of fresh water and salt water that has a higher salt concentration than fresh water, but lesser than seawater. It is often found in estuaries, lagoons, and coastal wetlands, where fresh water from rivers and streams mix with salt water from the ocean. The salinity of brackish water can vary greatly depending on factors such as tidal changes and precipitation levels. The salinity levels fall between the oligohaline (0.5 – 5 parts per thousand) and mesohaline (5 – 18 parts per thousand) classifications.
Ecosystem	An ecosystem is a biological community of biotic and abiotic factors interacting together in a particular environment. It includes all the living organisms (plants, animals, fungi, microorganisms, etc.) as well as their physical surroundings (air, water, soil, climate, etc.) and the relationships they have with each other. An ecosystem is a dynamic and complex system, where everything is interconnected and changes in one part of the ecosystem can affect other parts. Ecosystems can range in size from small, localised systems, such as a pond or forest, to large, complex systems, such as the earth's biosphere.
Endemic species	An endemic species is a species of plant or animal that is native to a specific geographic region and is not found naturally anywhere else in the world. Endemic species are unique to their geographic region and play important roles in the local ecosystem. These species may be particularly vulnerable to extinction, especially if their geographic region is subject to environmental degradation or other impacts.
Flow regime	A flow regime refers to the pattern and characteristics of water flow in a river or stream, including the frequency, duration, and magnitude of flow events such as floods and droughts. The flow regime is influenced by many factors including precipitation, temperature, landscape features, and human activities such as water withdrawals and dam construction. The flow regime can play an important role in shaping the structure and function of aquatic ecosystems and can have important impacts on water supply, flood management, and ecosystem health. Understanding and managing the flow regime is an important aspect of river management and water resource planning.

Term	Definition
Forest Reserve Extent	Forest reserve extent is the total area of land that has been designated as a forest reserve. A forest reserve is an area set aside by state governments in Malaysia or authority for the purpose of preserving its natural resources, particularly its forests, wildlife, and ecosystems. These areas were initially set up for logging but are often protected from development to maintain biodiversity, mitigate climate change, and provide other ecological benefits.
Fragile/Marginal Soil	Soils that are susceptible to degradation (reduction in fertility) when disturbed and/or unlikely to produce acceptable economic returns for the proposed crop at reasonable projections of crop value and costs of amelioration. *(Source: Malaysian Standard [MSPO Part 1- General Principles (First Revision)])*
Habitat or refugium	A habitat is the natural environment in which a species of flora or fauna lives and finds the resources it needs to survive and reproduce. A habitat can range from a small area, such as a pond or a patch of forest, to a large region, such as a grassland or a desert. A refugium, on the other hand, is a habitat that provides refuge, protection, and favourable conditions for a species or groups of species, especially during periods of environmental stress, such as changes in climate or habitat loss. Refugia can serve as centres of biodiversity, providing safe havens for species to persist and evolve over time, and can play an important role in the conservation of biodiversity. Examples of refugia include wetlands, forests, and isolated islands.
Hydrology	Hydrology is the scientific study of water, its distribution and management across the Earth's surface and within the Earth's subsurface. It encompasses the physical, chemical, and biological processes that control the movement, distribution, and quality of water, including precipitation, evaporation, infiltration, runoff, groundwater recharge, and water storage. Hydrology is concerned with the water cycle, and the ways in which water is affected by and affects the environment, including weather patterns, climate change, land use, and human activities. Hydrologists study these processes to better understand water resources and their management, including issues related to water supply, flood control, and water quality.
Intact Forest Landscape (IFL)	An Intact Forest Landscape (IFL) is a seamless mosaic of forest and naturally treeless ecosystems within the zone of current forest extent, which exhibit no remotely detected signs of human activity or habitat fragmentation and is large enough to maintain all native biological diversity, including viable populations of wide-ranging species. *(Source: https://intactforests.org/)*

Term	Definition
Indigenous people	Indigenous peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic, and political characteristics that are distinct from those of the dominant societies in which they live. Despite their cultural differences, indigenous peoples from around the world share common problems related to the protection of their rights as distinct peoples. Indigenous peoples have sought recognition of their identities, way of life and their right to traditional lands, territories, and natural resources for years; yet throughout history, their rights have always been violated. Indigenous peoples today, are arguably among the most disadvantaged and vulnerable groups of people in the world. The international community now recognises that special measures are required to protect their rights and maintain their distinct cultures and way of life. *Orang Asli* is a specific term used for indigenous peoples in Peninsular Malaysia. *(Source: UNDESA, Division for Inclusive Social Development, Indigenous Peoples)*
Management Unit	A defined area of land planted with oil palm actively producing. The size may vary between one ha to a few thousands. The term indicates that it is actively managed with inputs to ensure economic production is achieved. The management unit can be individually owned, private companies, cooperatives, government-linked companies, and government agencies.
Natural Forest	A forest that is a natural ecosystem natural forests possess many or most of the characteristics of a forest native to the given site, including species composition, structure, and ecological function, natural forests include: a) primary forests that have not been subjected to major human impacts in recent history; b) regenerated (second-growth) forests that were subjected to major impacts in the past (for instance by agriculture, livestock raising, tree plantations, or intensive logging) but where the main causes of impact have ceased or greatly diminished and the ecosystem has attained much of the species composition, structure, and ecological function of prior or other contemporary natural ecosystems; c) managed natural forests where much of the ecosystem's composition, structure, and ecological function exist in the presence of activities such as: i) harvesting of timber or other forest products, including management to promote high-value species; and ii) low intensity, small-scale cultivation within the forest, such as less-intensive forms of swidden agriculture in a forest mosaic. d) forests that have been partially degraded by anthropogenic or natural causes (e.g., harvesting, fire, climate change, or invasive species) but where the land has not been converted to another use and where degradation does not result in the sustained reduction of tree cover below

Term	Definition
	the thresholds that define a forest or sustained loss of other main elements of ecosystem composition, structure, and ecological function. *(Source: Malaysian Standard [MSPO Part 1- General Principles (First Revision)])*
Non-Timber Forest Product (NTFP)	Any product or service other than timber that is produced in forests. *(Source: https://www.cifor.org/Publications/Corporate/FactSheet/ntfp.htm)*
Peat ecosystem	A peat ecosystem refers to a wetland environment in which organic matter accumulates in the form of peat, a dense layer of partially decayed plant material that accumulates over time due to slow decomposition in waterlogged conditions. Peat ecosystems are found in various regions around the world, including the northern hemisphere, South America, and Southeast Asia. Peat ecosystems can provide important ecosystem services such as water filtration and storage, carbon storage and sequestration, and habitats for a variety of plants and animals. However, peat ecosystems are also vulnerable to degradation and destruction due to human activities, including peat extraction for fuel and horticulture, and drainage for agriculture and urbanisation. Conservation and restoration of peat ecosystems are important for preserving their unique biodiversity and mitigating the impacts of climate change.
Riparian buffer	A riparian zone is essentially the land adjacent to streams and rivers. It is a unique transitional area between aquatic and terrestrial habitats. Plant communities in the riparian zone are called riparian vegetation. This zone is often described as consisting of four sections, each having different physical conditions, particularly in terms of exposure to water currents, periodicity of inundation, and soil type. The plants found in each section have specific adaptations which enable them to tolerate these physical conditions: a) Lower bank: Constantly subjected to erosive water current. The plants here are able to survive submerged underwater for extended periods of time, with root systems that are able to hold the soil in place. b) Upper bank: Occasionally subjected to erosive water current. The plants here are tolerant to sporadic inundation. c) Terrace face: Only subjected to inundation during high flow events, such as annual flooding. The plants found here can range from wetland to dryland species. d) Upper terrace: Only subjected to extreme high flow events, such as 1 in 100-year floods. The plants here are mainly dryland species. *(Source: Malaysian Standard [MSPO Part 1- General Principles (First Revision)])*

Term	Definition
Rare, Threatened, and Endangered (RTE)	**Rare Species** A rare species is a species of plant or animal that has a low population density and a limited distribution range, making it vulnerable to extinction. A species may be considered rare due to its naturally occurring low population density or because its population has been reduced by human activities such as habitat destruction, hunting, and climate change. Rare species play important roles in their ecosystems and can provide valuable information for scientific research and conservation efforts. Protecting and conserving rare species is an important aspect of biodiversity conservation, as the loss of these species can have cascading effects on the overall health of an ecosystem.
	Threatened and Endangered Species Species that have high conservation value classifications under international and national conservation standards. For the international standards, the IUCN Red List provides taxonomic, conservation status, and distribution information on taxa that have been globally or regionally evaluated. A species will be considered as an RTE species if they fall under one of these classifications: Critically Endangered (CR), Endangered (EN,) and Vulnerable (VU) under the IUCN Red list. The species under these categories are considered to be threatened with global extinction. In addition to this, species whose trade is regulated under international agreements (CITES), as well as nationally protected species are also considered as threatened and endangered species in the HCV context. As for the national standards, species that fall under the protection statuses in the Wildlife Conservation Act 2010 (Amended in 2022) – Peninsular Malaysia, Wildlife Protection Ordinance 1998 – Sarawak and Wildlife Conservation Enactment 1997 – Sabah will also be classified as RTE species. Conservation Enactment 1997- Sabah will also be classified as RTE species.
Species diversity	Species diversity refers to the variety of different species that exist within a particular ecosystem or geographical area. It is a *measure of the richness and complexity of the biotic community, and encompasses the number of species, their relative abundance, and the range of different functional roles they perform in the ecosystem*. High species diversity is generally considered to be an indicator of a healthy and stable ecosystem, as it is associated with a range of services, such as pollination, pest control, and soil fertility, that support the ecosystem's resilience and productivity.

Term	Definition
Species richness	Species richness is the number of different species present in a particular ecosystem or geographical area. It is a *measure of the diversity of species in a given region and does not consider the relative abundance of each species.* High species richness is often associated with high levels of biodiversity and a diverse range of habitats and ecological niches, which can increase the resilience of an ecosystem to environmental changes. However, it is important to note that species richness is just one aspect of biodiversity and that other measures, such as evenness (the distribution of individuals among species) and functional diversity (the variety of different roles that species perform in the ecosystem), also play important roles in maintaining a healthy and stable ecosystem.
Steep slope	Any slope with an incline greater than 25 degrees.
Top predator	A top predator, also known as an apex predator, is a species that sits at the top of a food chain and has no natural predators in its ecosystem. It typically feeds on other predators and prey on lower trophic levels, playing a crucial role in controlling populations and maintaining balance in the ecosystem. These species are important indicators of ecosystem health, as declines in their populations can have far-reaching impacts on the overall structure and functioning of the ecosystem. The loss of top predators can lead to imbalances in prey populations, which can have cascading effects on the entire food chain such as outbreaks of pests and diseases.
Viable population	A viable population is a group of organisms that has sufficient size (numbers) and genetic diversity to persist over the long term and avoid the risks of genetic drift and inbreeding. This means that the population has enough individuals to maintain a healthy gene pool, avoid disease and other negative effects of inbreeding, and adapt to changing environmental conditions. The minimum viable population size varies depending on the species, its life history, and the size of the habitat, but generally, a population size of at least 500 individuals is considered to be a minimum threshold for short-term viability. However, for long-term viability, populations need to be much larger, typically in the thousands to tens of thousands of individuals, depending on the species and its life history.

Part 1 Introduction and Background

Malaysian Sustainable Palm Oil (MSPO) Scheme & High Conservation Value (HCV) Concept

1 Introduction

The Malaysian Sustainable Palm Oil (MSPO) Revised Standard (MS 2530: 2022) has incorporated the High Conservation Value (HCV) concept, stressing the need for HCV identification and management. It focuses on maintaining the value of conservation areas within the oil palm landscape, contributing to Malaysia's conservation efforts and ensuring that Malaysian palm oil is sustainably produced.

1.1 Background on MSPO

The Malaysian Sustainable Palm Oil (MSPO) is a national certification standard endorsed by the Malaysian government in 2013. The certification scheme was introduced by MSPO in 2016. The certification scheme focuses on palm oil production and its supply chains, covering plantations, independent and organised smallholdings, and palm oil processing facilities in Malaysia. The Department of Standards Malaysia, which owns the MSPO Standard, is required to review the standard every 5 years.

The MS 2530: 2022 revised standard was initiated by the National Standards Committee on Oil Palm, and its products (NSC 24)[1] were developed by the Technical Committee in MSPO (TC MSPO) and its supporting Working Groups in MSPO (WGs MSPO). A multi-stakeholder consultative approach was undertaken with representatives from government agencies, industries, social and environmental (Non-Governmental Organisations) NGOs, relevant organisations as well as research institutes and other relevant parties.

The major transition from the MS 2530: 2013 standard to the MS 2530: 2022 standard involves increasing the number of parts in the MS 2530: 2022 standard. The new standard has 8 parts from the previous 4. Table 1.1 below shows the comparison between the 2 standards.

Table 1.1: A comparison between the 2013 and 2022 MSPO standard requirements

MS 2530: 2013		MS 2530:2022	
MS2530-1:2013	General Principles	MS 2530-1: 2022	General Principles
MS2530-2:2013	Independent smallholders	MS 2530-2-1: 2022	Independent Smallholders
		MS 2530-2-2: 2022	Organised Smallholders
MS2530-3:2013	Oil Palm Plantations and Organised smallholders	MS 2530-3-1: 2022	Oil Palm Plantations (40.46 hectares to 500 hectares)
		MS 2530-3-2: 2022	Oil Palm Plantations (> 500 hectares)
MS2530-4:2013	Palm Oil Mill	MS 2530-4-1: 2022	Palm Oil Mill and Supply Chain
		MS 2530-4-2: 2022	Palm Oil Processing Facilities
		MS 2530-4-3: 2022	Dealers

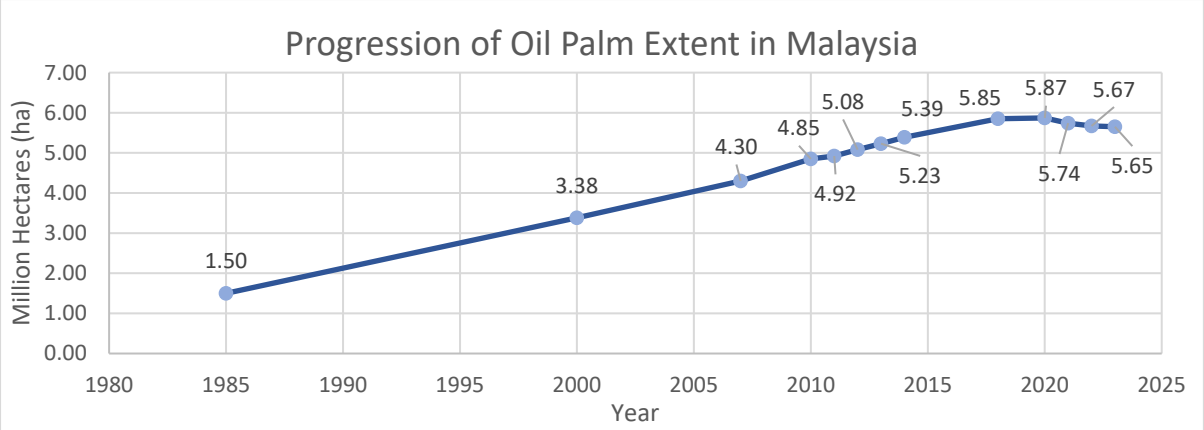
[1] NSC 24 – Oil Palm and Its Products. Source: Department of Standards Malaysia, Ministry of Investment, Trade and Industry (MITI), https://www.jsm.gov.my/about-us/corporate-info/advisory-committees/national-standards-committees-nscs

The major revision in the latest MSPO standard has been the subdivision of the grower and production categories. This is an attempt by MSPO and its stakeholders to create a more penetrative and inclusive standard for the palm oil industry. In addition, MSPO with the revised standard, aims to build international credibility, gain market acceptance, and implement the assurance of sustainable palm oil production in Malaysia. In view of this, the revised standard emphasises transparency, the consultative process, technical competence, the industry's best practices, and a practical approach in managing sustainable palm oil production.

1.2 Oil Palm Scenario in Malaysia

Oil palm is a significant crop in Malaysia. Beginning with its first commercial establishment in Tennamaran Estate, Selangor, in 1917, to occupying 5.87 million hectares in 2020 (Ministry of Plantation Industries and Commodities – MPIC). As of 2019, there are 452 palm oil mills, 51 refineries, 43 palm kernel crushing plants, 21 oleochemical plants, and 19 biodiesel plants in Malaysia (Ghulam Kadir, 2020). Chart 1.1 below shows the progression of oil palm development in Malaysia from 1985 to 2023. It is evident that the new oil palm planting expansion started to plateau in 2018. There is an apparent difference in the total oil palm extent in Malaysia, where the statistics indicate a decrease of approximately 200,000 ha in oil palm. This could be due to the data correction exercise undertaken by MPOB to increase the accuracy of the smallholders' planting extent.

Chart 1.1: The Extent of Oil Palm Progression in Malaysia



Source: MPOB 2023 statistics

Table 1.2 shows the planting extent of oil palm based on grower categories for the years 2021 to 2023. Based on the statistics provided by MPOB, it would indicate that there is a 5% correction in the total independent smallholder extent between these years and a 1% correction in the organised smallholder category as of 2023. As of the end of 2023, the total smallholder category extent is 1,496,526 ha, representing 26% of the total oil palm extent in Malaysia.

Table 1.2: Breakdown of oil palm extent according to general grower categories in Malaysia

Type of Growers	2021		2022		2023	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Independent Smallholders	863,360	15	816,107	14	822,073	14.5
Organised Smallholders	672,986	12	667,868	12	674,453	11.9
Plantation	4,201,385	73	4,190,766	74	4,156,043	73.5
Total	**5,737,731**	**100**	**5,674,741**	**100**	**5,652,569**	**100**

Source: MPOB 2023 statistics

The distribution of oil palm plantings in Peninsular Malaysia, Sabah, and Sarawak as of 2018 is shown in Map 1.1 to Map 1.3. The national environment, throughout the years, has been subjected to major impacts. The loss of lowland habitats is highly significant due to the increase in oil palm plantings between 1985 and 2018, totalling 4.35 million ha. From a High Conservation Value perspective, there are potentially fragments of lowland habitats that would have survived the oil palm expansion. This would be in the form of remnant patches of lowland dipterocarp forest, various forms of swamp forest, as well as riparian forest and vegetation, some of which would have been degraded through encroachment and disturbance. In addition to environmental and ecological benefits of these remnant ecosystems, the human dependency on these forest fragments could also potentially exist, especially the use of rivers and forest patches, which could harbour wildlife as sources of protein and other sources of sustenance. Sites of historical, cultural, and religious importance could have also survived the expansion. During these decades of expansion, Malaysia has become an established oil palm landscape. The oil palm industry in Malaysia has been broken down by MSPO into the following sub-categories:

i. Part 2-1: Independent Smallholders,
ii. Part 2-2: Organised Smallholders,
iii. Part 3-1: Oil Palm Plantations (40.46 hectares to 500 hectares),
iv. Part 3-2: Oil Palm Plantations (> 500 hectares),
v. Part 4-1: Palm Oil Mill and Supply Chain,
vi. Part 4-2: Palm Oil Processing Facilities, and
vii. Part 4-3: Dealers.

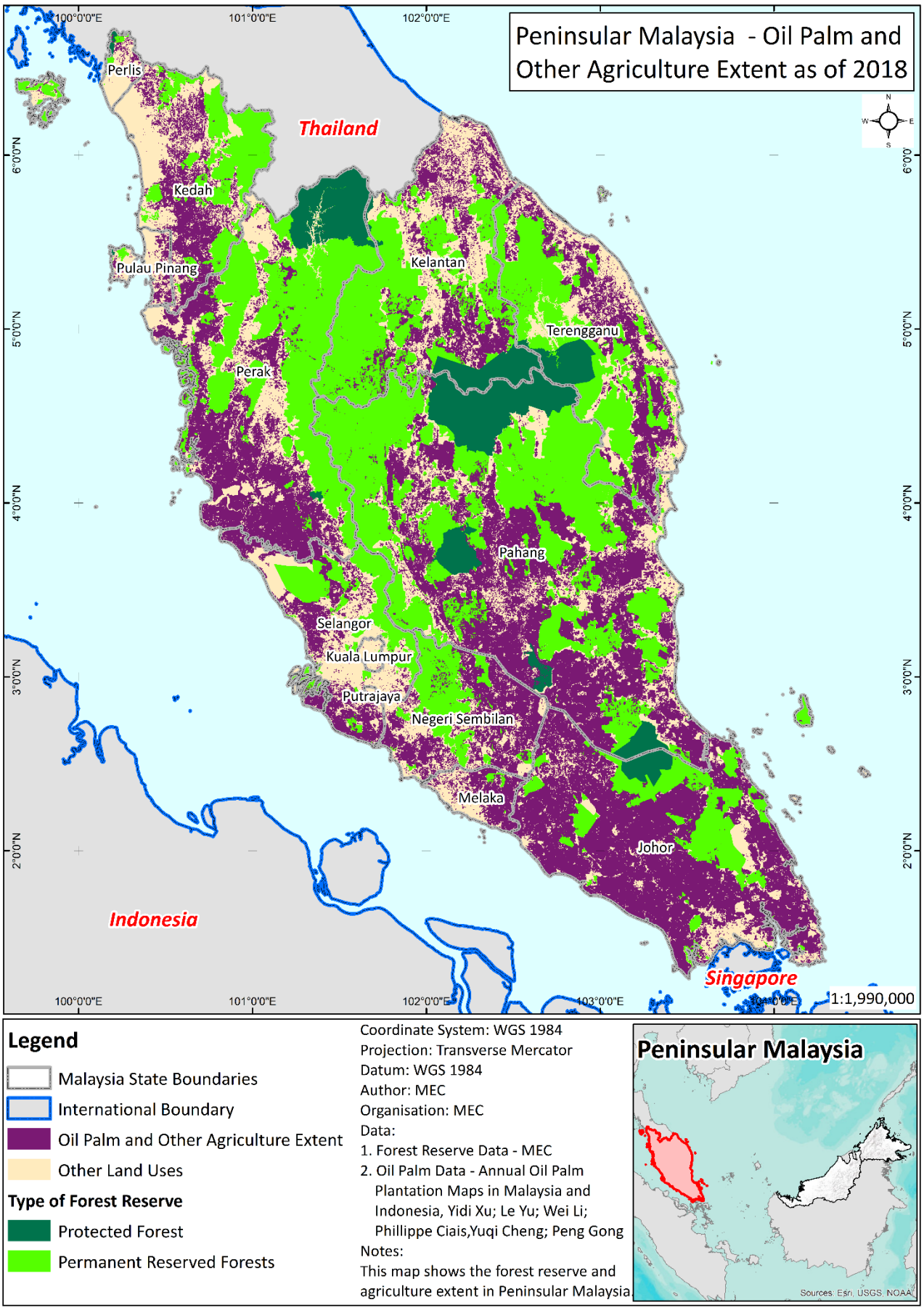
The land used to establish oil palm in Malaysia is presented in Table 1.3. As of December 2023, Peninsular Malaysia has 2,518,883 ha (44.6%), while Sabah has a total of 1,510,025 ha (26.7%), and Sarawak has a total of 1,623,661 ha (28.7%). The cumulative oil palm extent in Malaysia is 5,652,569 ha, which is 17% of Malaysia's land mass (33,052,400 ha[2]). Table 1.3 shows the breakdown of oil palm planted areas according to the states of Malaysia as of December 2023.

[2] Source: Department of Statistics, Malaysia (https://www.dosm.gov.my)

Table 1.3: Oil Palm Planted Area as of December 2023 (Hectares)

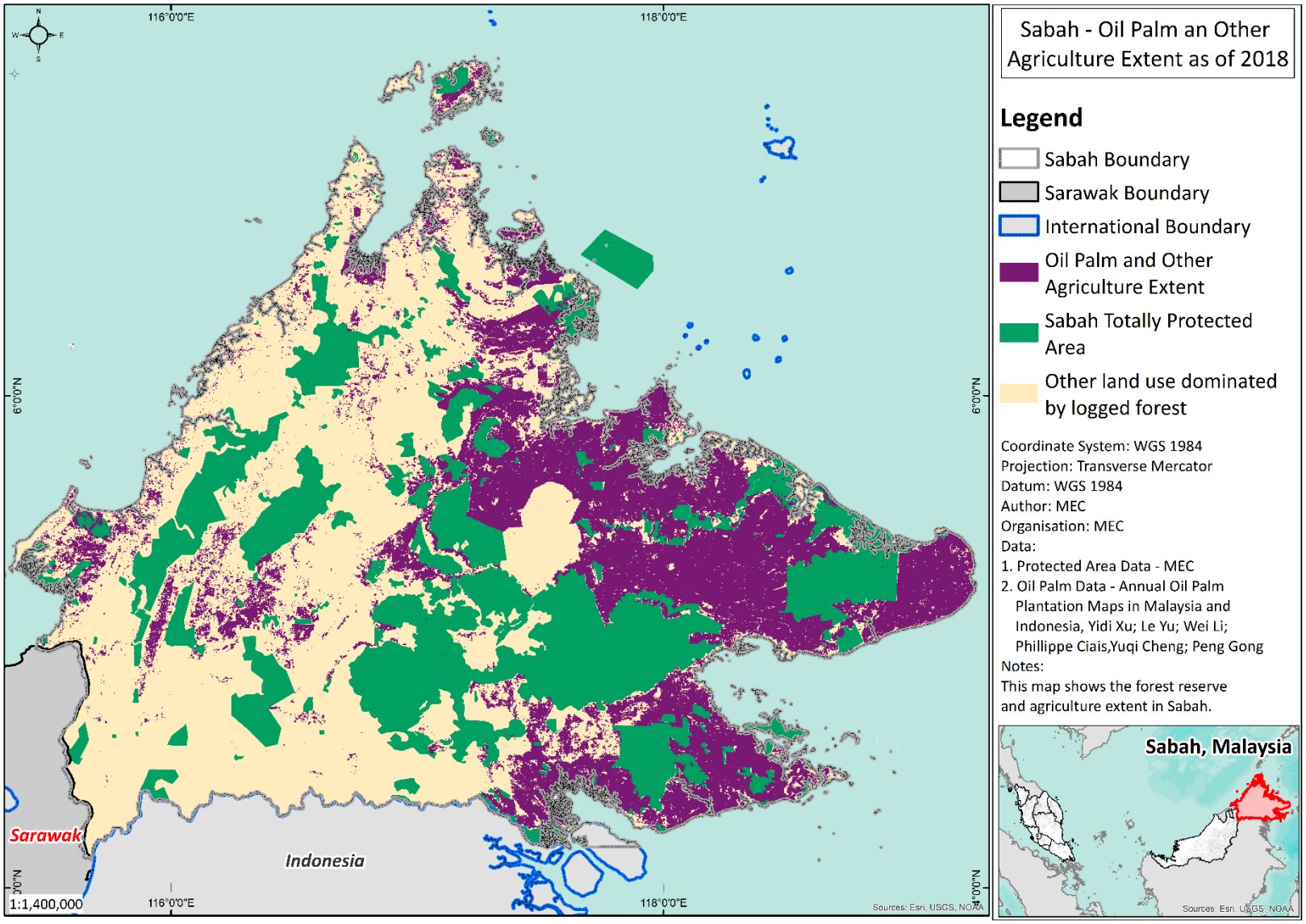
State	Mature (ha)	Percentage	Immature (ha)	Percentage	Total (ha)	Percentage
Johor	624,369	93.1%	46,493	6.9%	670,862	11.9%
Kedah	76,502	89.1%	9,369	10.9%	85,871	1.5%
Kelantan	141,322	89.1%	17,319	10.9%	158,641	2.8%
Melaka	47,667	93.3%	3,416	6.7%	51,083	0.9%
Negeri Sembilan	168,203	94.8%	9,263	5.2%	177,467	3.1%
Pahang	681,200	91.3%	64,870	8.7%	746,070	13.2%
Perak	320,499	91.8%	28,725	8.2%	349,224	6.2%
Perlis	865	98.2%	16	1.8%	881	0.02%
Pulau Pinang	8,107	98.5%	127	1.5%	8,234	0.1%
Selangor	95,245	91.5%	8,903	8.5%	104,148	1.8%
Terengganu	143,566	86.3%	22,836	13.7%	166,402	2.9%
Peninsular Malaysia	**2,311,432**	**91.6%**	**211,338**	**8.4%**	**2,518,883**	**44.6%**
Sabah	1,316,356	87%	193,669	12.8%	1,510,025	26.7%
Sarawak	1,506,271	92.8%	117,390	7.2%	1,623,661	28.7%
Sabah & Sarawak	**2,822,626**	**90.1%**	**311,059**	**9.9%**	**3,133,685**	**55.4%**
Malaysia	**5,130,172**	**90.8%**	**522,397**	**9.2%**	**5,652,569**	**100%**

Source: MPOB 2023 statistics



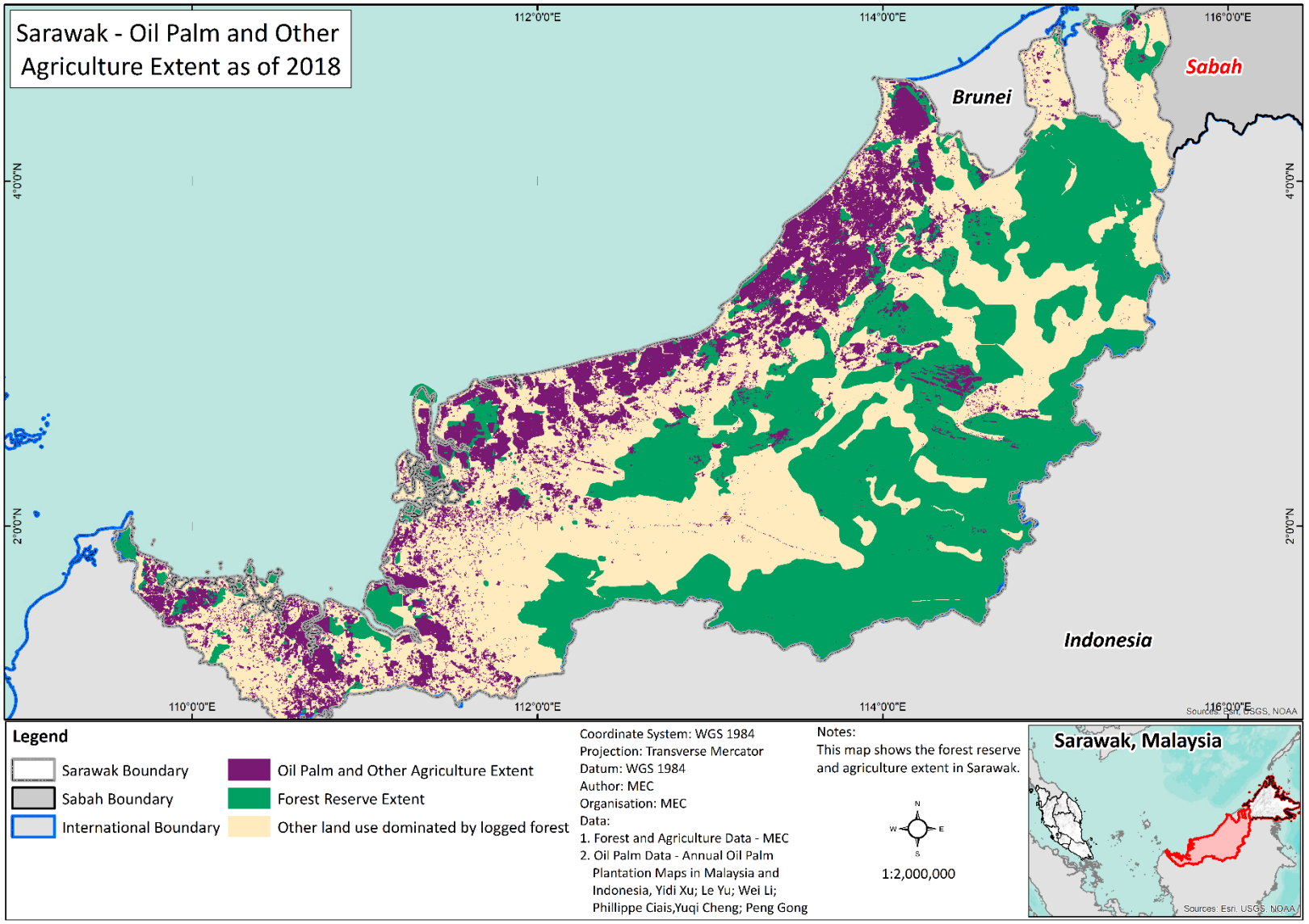
Credits: MEC

Map 1.1: Distribution of oil palm plantings and other agriculture in Peninsular Malaysia



Credits: MEC

Map 1.2: Distribution of oil palm plantings and agriculture in Sabah



Credits: MEC

Map 1.3: Distribution of oil palm plantings and agriculture in Sarawak

1.2.1 Classification of Oil Palm Growers and Production in Malaysia

For the purposes of effective HCV identification, the grower and production categories have been reclassified. The reason for this reclassification is to ensure that the HCV assessments are conducted comprehensively and appropriately according to the scale of operations and resource availability, as well as aid in the identification and effective protection of existing and potential HCVs. Apart from supporting conservation efforts, the requirements should not restrict or hinder the opportunity for smallholders and small estates to achieve sustainability.

The reclassification presented is only applicable to the 4 grower/producer categories and is based on 3 characteristics. Table 1.4 shows the description of the 3 characteristics, being number of management units (MU), certification category and spatial distribution of management units. Table 1.5 below describes the 15 sub-categories in terms of 1) management, 2) certification and 3) spatial distribution characteristics. This HCV guideline caters for existing oil palm plantings throughout the 13 sub-categories. It is to be noted that the term 'landscape' (Area of Interest - AOI) will be defined and elaborated in section 4.1.2.

Table 1.4: Characteristic description of each grower and production categories

Organisation Characteristics	Description
Management	The number of management units and management responsibility.
Certification	Whether the management unit is certified as an individual or a group.
Spatial Distribution (for group certification)	The distribution of smallholdings or management units. The 2 possible scenarios are (i) management units sharing common boundaries and (ii) management units dispersed within a landscape (e.g., district or state administrative boundary).

Chart 1.2 classifies the derivation of the 15 sub-categories (shown in blue and green boxes). The 2 categories in Part 4 are establishments that do not require reclassification, as these are standalone entities. **All existing oil palm plantings require HCV assessments.** Based on the reclassification, a strategy has been devised to address the different requirements of the categories – variations in methodology. Refer to Appendix A (Section 15.1) for the examples of the reclassification scenarios of the grower and production categories.

Caveat: *In cases where organisations are unable to determine which grower and production classification they fall under, please refer to MSPO for guidance.*

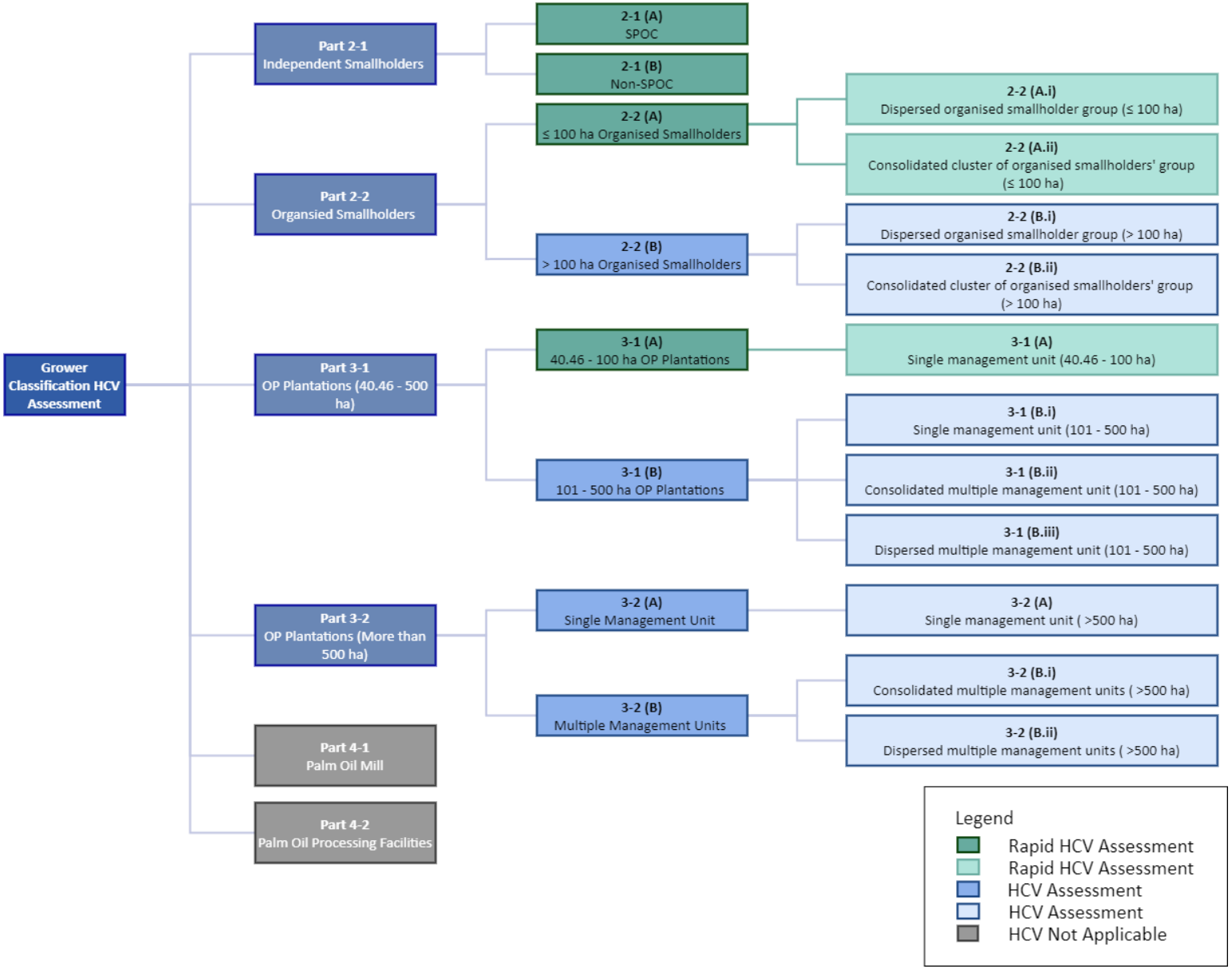


Chart 1.2: A classification chart of the grower and production categories for HCV assessments

Table 1.5: Classification of grower and production based on their characteristics (for existing oil palm plantings)

MSPO's Grower/Producer Categories	MSPO's Standard Definition	1st Level Reclassification	2nd Level Reclassification	Description
Part 2-1 Independent Smallholders	Independent smallholders are individual farmers who own, or lease less than 40.46 hectares of an oil palm holding and manage the area themselves. Independent smallholders or leases may employ workers to carry out daily work at their smallholdings.	**2-1(A)** SPOC - Sustainable Palm Oil Cluster	n/a	• **Management:** Grouped under SPOC by MPOB. The groups are coordinated by MPOB TUNAS officers (*Pegawai Tunjuk Ajar dan Nasihat Sawit)*. • **Certification:** Group certification. • **Spatial Distribution**: Multiple management units (MU) are dispersed within a defined wider landscape. Therefore, each MU requires a separate Rapid HCV Assessment.
		2-1 (B) Non-SPOC		• **Management:** Individual independent smallholders who are not classified under MPOB's SPOC grouping and form their own groups. Smallholding owners may manage the smallholdings themselves or appoint someone to manage it. • **Certification:** Group certification. • **Spatial Distribution**: Multiple MUs are dispersed within a defined wider landscape. Therefore, each MU requires a separate Rapid HCV Assessment.
Part 2-2 Organised Smallholders	Organised smallholders are a group of farmers who individually own, or lease less than 40.46 ha of smallholdings that are consolidated with other smallholdings and are managed by government agencies such as FELDA, RISDA, FELCRA, SALCRA, SLDB and other organisations.	**2-2 (A)** ≤100 ha organised smallholding groups	**2-2 (A.i)** Dispersed organised smallholder group (≤100 ha)	• **Management:** Managed by government agencies such as FELDA, RISDA, FELCRA, SALCRA, SLDB and other state agencies. Each organisation commonly has several subsidiary MUs or clusters. Each MU is managed separately. • **Certification:** Group certification. • **Spatial Distribution**: Multiple MUs are dispersed within a landscape. Therefore, each group of MU requires a separate Rapid HCV Assessment.
			2-2 (A.ii)	• **Management:** Managed by government agencies such as FELDA, RISDA, FELCRA, SALCRA, SLDB and other state agencies. Each organisation commonly has several

MSPO's Grower/Producer Categories	MSPO's Standard Definition	1st Level Reclassification	2nd Level Reclassification	Description
			Consolidated cluster of organised smallholders' group (≤ 100 ha)	subsidiary entities or clusters. Each MU is managed separately. • **Certification:** Group certification. • **Spatial Distribution**: Multiple consolidated organised smallholding MUs which share common boundaries or have a maximum distance of 5km from the neighbouring boundaries. Therefore, each group of MU requires a separate Rapid HCV Assessment.
		2-2 (B) >100 ha organised smallholding groups	**2-2 (B.i)** Dispersed organised smallholder group (>100 ha)	• **Management:** Managed by government agencies such as FELDA, RISDA, FELCRA, SALCRA, SLDB and other state agencies. Each organisation commonly has several subsidiary MUs or clusters which may be located within the same landscape or widely spread. Each MU is managed separately. • **Certification:** Group certification. • **Spatial Distribution**: Multiple MUs are dispersed within a landscape. Therefore, each group of MU requires a separate HCV Assessment.
			2-2 (B.ii) Consolidated cluster of organised smallholders' group (> 100 ha)	• **Management:** Managed by government agencies such as FELDA, RISDA, FELCRA, SALCRA, SLDB and other state agencies. Each organisation commonly has several subsidiary MUs or clusters. Each MU is managed separately. • **Certification:** Group certification. • **Spatial Distribution**: Multiple consolidated organised smallholding MUs which share common boundaries or have a maximum distance of 5km from the neighbouring boundaries. Therefore, each group of MU requires a separate HCV Assessment.

MSPO's Grower/Producer Categories	MSPO's Standard Definition	1st Level Reclassification	2nd Level Reclassification	Description
Part 3-1 Oil Palm Plantations (40.46 hectares to 500 hectares)	Small estate: 40.46 ha to 500 ha	**3-1 (A)** 40.46 – 100 ha	**3-1 (A)** Single management unit (40.46 – 100 ha)	• **Management:** Managed as a single unit. • **Certification:** Individual certification. • **Spatial Distribution**: Not applicable. Therefore, each MU requires a separate Rapid HCV Assessment.
		3-1 (B) 101 – 500 ha	**3-1 (B.i)** Single management unit (101 – 500 ha)	• **Management:** Managed as a single unit. • **Certification:** Individual certification. • **Spatial Distribution**: Not applicable. Therefore, each MU requires a separate HCV assessment.
			3-1 (B.ii) Consolidated multiple management units (101 – 500 ha)	• **Management:** Involves more than one MU. Possible different owners but are certified as a group. • **Certification:** Group certification. • **Spatial Distribution**: Multiple estates which share common boundaries or have a maximum distance of 5km from the neighbouring concession boundaries. Therefore, the whole consolidated MU requires a separate HCV Assessment.
			3-1 (B.iii) Dispersed multiple management units (101 – 500 ha)	• **Management:** Involves more than one MU. Possibility of different owners but are certified as a group. • **Certification:** Group certification. • **Spatial Distribution**: Multiple estates which are dispersed within a landscape. Therefore, each MU requires a separate HCV Assessment.
Part 3-2 Oil Palm Plantations (> 500 hectares)	Large estate/plantations: > 500 ha	**3-2 (A)** Single Management unit (>500 ha)	n/a	• **Management:** Managed as a single unit. • **Certification:** Individual certification. • **Spatial Distribution**: Not applicable. Therefore, each MU requires a separate HCV Assessment.

MSPO's Grower/Producer Categories	MSPO's Standard Definition	1st Level Reclassification	2nd Level Reclassification	Description
		3-2 (B) Multiple Management Units	**3-2 (B.i)** Consolidated multiple management units (>500 ha)	• **Management:** Involves more than one MU. • **Certification:** Group certification. • **Spatial Distribution**: Multiple estates which share common boundaries or have a maximum distance of 5km from the concession boundaries. Therefore, each consolidated MU requires a separate HCV Assessment.
			3-2 (B.ii) Dispersed multiple management units (>500 ha)	• **Management:** Involves more than one MU. • **Certification:** Group certification. • **Spatial Distribution**: Multiple estates are dispersed within a landscape. Therefore, each MU requires a separate HCV Assessment.
Part 4-1: Palm Oil Mill	Palm Oil Mills	n/a	n/a	• **Management:** Managed as a single processing unit. • **Certification:** Individual certification. • **Spatial Distribution**: Not applicable. Therefore, HCV assessment is not required for this category.
Part 4-2: Palm Oil Processing Facilities	Palm Oil Processing Facilities (Refineries)	n/a	n/a	• **Management:** Managed as a single processing unit. • **Certification:** Individual certification. • **Spatial Distribution**: Not applicable. Therefore, HCV assessment is not required for this category.

1.3 The Presence of HCV in the Malaysian Oil Palm Landscape

Currently, there are 2 representative oil palm landscapes in Malaysia; the mature oil palms within old plantations, and the newly planted and expanding oil palm plantations (sometimes of which may also be seen developing at the periphery of old plantations). This document aims to promote a realistic approach of the HCV assessments and management for the existing oil palm planting areas. Some of the areas within existing oil palm plantings may include degazetted forest reserves and heavily logged state land forest areas. The land cover consideration ranges from intact forest to low-stature vegetation in the form of shrub-dominated areas. While forested areas have extensive HCV potential, heavily disturbed and converted areas will have fragments or assemblages that have the potential for conservation value. This is where the precautionary approach should be adopted to ensure that these sites are conserved within the oil palm landscape. For assessment purposes and stakeholder acceptance, this document will still refer to global HCV definitions. However, this approach has been adapted for the Malaysian oil palm scenario.

1.4 The Approach: Practical HCV Assessment and Management for Existing Oil Palm Plantings

This document streamlines the HCV assessment approach by first reclassifying the different scale and intensity of oil palm plantings and then providing assessment guidelines that take into consideration the size, spatial distribution, and management capacity. A blanket HCV assessment approach will fail to capture the actual occurrences of HCVs in the different oil palm settings, and this could possibly result in an unnecessary burden for smallholders and small estates. This guideline is specifically for assessments in the oil palm landscape and should not be confused with other generic HCV guidelines, which also incorporate forestry operations. It is different in the sense that it recognises the ground conditions of HCVs that would potentially occur in existing oil palm planting areas.

It is reiterated here that any form of HCVs found in these areas have probably been impacted and found mainly as intact or remnant ecosystems where the scale of valuation differs from the conventional approach promoted in generic HCV assessment guidelines. For the MSPO standard, components of economic situations, social considerations, and environmental conservation needs have been considered, resulting in a balanced approach. The HCV assessment is one of many factors that determine sustainable palm oil production. A skewed approach where only conservation is the primary focus is what this document aims to avoid.

In an attempt to facilitate HCV assessments in existing oil palm planting areas, the size of the development is a major determining factor. Existing oil palm plantings involving smallholders and small plantations of less than 100 hectares need to be approached separately. A Rapid HCV Assessment methodology is outlined in this document (Section 11). For areas greater than 100 hectares, the HCV Assessment approach is advocated and described throughout this document.

Although a precautionary but practical approach is advocated, **this document does not support the clearing of natural forests which includes parts of forest reserves in Malaysia that have been degazetted and allocated for oil palm development and should not be certified as being sustainable**. Under the MSPO Standard, natural forests are specifically defined as below:

"*A forest that is a natural ecosystem natural forests possess many or most of the characteristics of a forest native to the given site, including species composition, structure, and ecological function, natural forests include:*

a) primary forests that have not been subjected to major human impacts in recent history;

b) regenerated (second-growth) forests that were subjected to major impacts in the past (for instance by agriculture, livestock raising, tree plantations, or intensive logging) but where the main causes of impact have ceased or greatly diminished and the ecosystem has attained much of the species composition, structure, and ecological function of prior or other contemporary natural ecosystems;

c) managed natural forests where much of the ecosystem's composition, structure, and ecological function exist in the presence of activities such as:

   i) harvesting of timber or other forest products, including management to promote high-value species; and

   ii) low intensity, small-scale cultivation within the forest, such as less-intensive forms of swidden agriculture in a forest mosaic.

d) *forests that have been partially degraded by anthropogenic or natural causes (e.g., harvesting, fire, climate change, or invasive species) but where the land has not been converted to another use and where degradation does not result in the sustained reduction of tree cover below the thresholds that define a forest or sustained loss of other main elements of ecosystem composition, structure, and ecological function."*

2 Introduction to the HCV Approach

The first MSPO standard that was endorsed in 2013 adopted the High Biodiversity Value (HBV) Concept. By definition, HBV focused on conserving *land that has one of the following statuses*:

- *Primary forest.*
- *Areas designated by law or by the relevant competent authority to serve the purpose of nature protection.*
- *Areas for the protection of rare, threatened, or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations.*

Source: MSPO 2013 (MS 2530-3:2013)

The current standard recognises global requirements and thus adopts the HCV approach, and its scope covers the following attributes:

1. Biodiversity Values
2. Protected Areas
3. Rare, Threatened and Endangered Species
4. Endemism
5. Critical Temporal Use
6. Landscape-level Forest
7. Forest Fragments and Connectivity
8. Ecosystems
9. Services of Nature
10. Watershed Protection
11. Erosion Control
12. Barriers to Destructive Fire
13. Basic Needs of Local Communities
14. Cultural Identity of Local Communities

Modified from WWF HCVF Malaysian Toolkit 2009

The High Conservation Value concept was incorporated into the Forest Stewardship Council (FSC) Principles and Criteria in 1999 for sustainable forestry certification. It was initially known as High Conservation Value Forests (HCVF) and was used to protect forests with significant biological, ecological, social, and cultural importance. Over the years, the HCV concept has gained global recognition and has been adapted for a broader landscape. This enables the concept to be incorporated into several commodity sustainable standards, such as for palm oil, soy, sugar, biofuel, carbon, etc. Therefore, the description of HCV is now known as "*an area designated on the basis of High Conservation Values (HCVs) which are biological, ecological, social or cultural values considered outstandingly significant at the national, regional or global level."*[3]

[3] https://www.biodiversitya-z.org/content/high-conservation-value-areas-hcva

2.1 The 6 HCV Categories and Definitions

There are 6 recognised High Conservation Values. An HCV area is a critical area in a landscape which needs to be managed and enhanced to maintain significant ecological, environmental, and social values. Refer to Table 2.1 for the definition of the 6 HCVs.

Table 2.1: The 6 HCVs categories and their definitions.

HCV Value	Key Attributes	Adapted Definition from HCV Network (HCVN)
HCV 1  *Photo credit: MEC*	**Species diversity**	Concentrations of biological diversity including endemic species, and rare, threatened, or endangered species, that are significant at global, regional, or national levels.
HCV 2   *Photo credit: MEC*	**Landscape-level ecosystems and mosaics**	Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL), that are significant at global, regional, or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.
HCV 3  I.e., Mangrove Forest	**Ecosystems and habitats**	Rare, threatened, or endangered ecosystems, habitats or refugia.

HCV Value	Key Attributes	Adapted Definition from HCV Network (HCVN)
 I.e., Peat Swamp Forest *Photo credit: MEC*		
HCV 4  *Photo credit: MEC*	**Ecosystem services**	Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.
HCV 5  *Photo credit: MEC*	**Community needs**	Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or indigenous peoples.
HCV 6   *Photo credit: MEC*	**Cultural values**	Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance, and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

2.1.1 MSPO Indicators related to HCV Assessments

There are a number of relevant principles, criteria, and indicators in Parts 2-1, 2-2, 3-1 and 3-2 of the Revised MSPO Standard (MS 2530: 2022) that require HCV assessment and subsequent management and monitoring for existing oil palm plantings. These are summarised in Table 2.2 (Parts 2-1 and 2-2) and Table 2.3 (Parts 3-1 and 3-2). The HCV assessment requirements for existing oil palm plantings are embedded in Principles 1 and 5.

Table 2.2: HCV-Related Indicators in MS 2530-2-1: 2022 and MS 2530: 2-2

Principle	Criteria	HCV-related Indicator in MS 2530-2-1: 2022	HCV-related Indicator in MS 2530-2-2: 2022
4.1 Principle 1: Management commitment and responsibility	**4.1.4 Criterion 4: Replanting**	***4.1.4.1 Indicator 1:*** *Replanting programme shall be established in line with industry best practices.*	***4.1.4.1 Indicator 1:*** *Replanting programme shall be established in line with industry best practices.*
		4.1.4.2 Indicator 2: *HCV areas shall be identified and demarcated prior to any replanting activities.*	***4.1.4.2 Indicator 2:*** *SIA, EIA and HCV assessments shall be conducted or relevant management and monitoring plans shall be reviewed prior to any replanting activities. The results of the review shall be incorporated into the replanting programme.*
4.5 Principle 5: Environment, natural resources, biodiversity, and ecosystem services	**4.5.6 Criterion 6: Environmental conservation and protection**	***4.5.6.1 Indicator 1:*** *Independent smallholders and workers shall be made aware of the relevant laws, deforestation concerns, relevant HCV category and disciplinary measures.*	***4.5.6.1 Indicator 1:*** *The organisation, through engagement with stakeholders, shall assess, identify, and record the presence and status of High Conservation Values that exist within the vicinity of the smallholdings.*

Principle	Criteria	HCV-related Indicator in MS 2530-2-1: 2022	HCV-related Indicator in MS 2530-2-2: 2022
		4.5.6.2 Indicator 2: *Independent smallholders complete training on and be aware of the importance of maintaining and conserving HCV areas.*	***4.5.6.2 Indicator 2:*** *If High Conservation Values, rare, threatened, or endangered (RTE) species are present, a management plan shall be established, effectively implemented and include:* *a) Ensuring any legal requirements relating to the protection of the species are met;* *b) Discouraging any illegal or inappropriate hunting, fishing, or collecting activities;* *c) Developing responsible measures to resolve human-wildlife conflicts; and* *d) Putting in place measures to help sustain wild populations of rare, threatened, or endangered species.*
		4.5.6.3 Indicator 3: *Independent smallholders implement precautionary practices, manage and maintain rare, threatened and endangered (RTE) species and HCV areas, where applicable.*	***4.5.6.3 Indicator 3:*** *The organisation shall demonstrate that periodic monitoring is carried out to assess changes in the status of High Conservation Values and shall adapt its management plan at periodic intervals to ensure their effective protection.*
		4.5.6.4 Indicator 4: *Independent smallholders manage and maintain riparian/riparian buffer zones.*	***4.5.6.4 Indicator 4:*** *The organisation shall ensure that the smallholders/members are aware and understand the importance of HCV areas.*

Source: MSPO

Table 2.3: HCV Related Indicators in MS 2530-3-1: 2022 and MS 2530: 3-2

Principle	Criteria	HCV related Indicator in MS 2530-3-1: 2022	HCV related Indicator in MS 2530-3-2: 2022
4.1 Principle 1: Management commitment and responsibility	**4.1.4 Criterion 4: Replanting**	***4.1.4.1 Indicator 1:*** *Replanting programme shall be established in line with industry best practices.*	***4.1.4.1 Indicator 1:*** *Replanting programme shall be established in line with industry best practices.*
		4.1.4.2 Indicator 2: *SIA, EIA and HCV assessments shall be conducted or relevant management and monitoring plans shall be reviewed prior to any replanting activities. The results of the review shall be incorporated into the replanting programme.*	***4.1.4.2 Indicator 2:*** *SIA, EIA and HCV assessments shall be conducted or relevant management and monitoring plans shall be reviewed prior to any replanting activities. The results of the review shall be incorporated into the replanting programme.*
4.5 Principle 5: Environment, natural resources, biodiversity, and ecosystem services	**4.1.6 Criterion 6: Environmental conservation and protection**	***4.5.6.1 Indicator 1:*** *The organisation, through engagement with stakeholders, shall assess, identify and record the presence and status of High Conservation Values that exist within or adjacent to the management area. The results of the assessment shall be incorporated into a management plan.*	***4.5.6.1 Indicator 1:*** *The organisation, through engagement with stakeholders, shall assess, identify, and record the presence and status of High Conservation Values that exist within or adjacent to the management area. The results of the assessment shall be incorporated into a management plan.*
		4.5.6.2 Indicator 2: *If High Conservation Values, rare, threatened, or endangered species are present, a management plan shall be established, effectively implemented, and include:*	***4.5.6.2 Indicator 2:*** *If High Conservation Values, rare, threatened, or endangered species are present, a management plan shall be established, effectively implemented, and include:*

Principle	Criteria	HCV related Indicator in MS 2530-3-1: 2022	HCV related Indicator in MS 2530-3-2: 2022
		a) Ensuring any legal requirements relating to the protection of the species are met; *b) Discouraging any illegal or inappropriate hunting, fishing, or collecting activities;* *c) Developing responsible measures to resolve human-wildlife conflicts;* *d) Putting in place measures such as enrichment of riparian areas, unplantable areas and other set asides, to help sustain wild populations of rare, threatened, or endangered species; and* *e) Protection of customary sites as well as allowing access to indigenous people and local communities.*	*a) Ensuring any legal requirements relating to the protection of the species are met;* *b) Discouraging any illegal or inappropriate hunting, fishing, or collecting activities;* *c) Developing responsible measures to resolve human-wildlife conflicts;* *d) Putting in place measures such as enrichment of riparian areas, unplantable areas and other set-asides, to help sustain wild populations of rare, threatened, or endangered species; and* *e) Protection of customary sites as well as allowing access to indigenous people and local communities.*
		4.5.6.3 Indicator 3: *The organisation shall demonstrate that periodic monitoring is carried out to assess changes in the status of High Conservation Values and shall adapt its management plan at periodic intervals to ensure their effective protection.*	***4.5.6.3 Indicator 3:*** *The organisation shall demonstrate that periodic monitoring is carried out to assess changes in the status of High Conservation Values and shall adapt its management plan at periodic intervals to ensure their effective protection.*

Source: MSPO

2.2 MSPO Interpretation of HCV Requirements

In the Malaysian palm oil context, it is evident that, as the second largest producer of palm oil globally, the spatial distribution of the crop is extensive and contiguous as far as land take is concerned. The oil palm landscape is the dominant altered agricultural ecosystem that was established mostly on lowland dipterocarp forested areas. The setting is such that, HCV assessments in altered landscapes having a history of 100-years of cultivation, requires a reinterpretation of the globally accepted HCV attributes. HCV assessments for stable landscape oil palm establishments need a modified approach with the objective of conserving what remains in terms of biodiversity and ecosystem functioning. Although there are other existing HCV guidelines (for Roundtable on Sustainable Palm Oil – RSPO and Forest Stewardship Council – FSC standards) in the public domain for reference, this HCV guideline is the first that attempts to focus on conducting HCV assessments specifically in the Malaysian oil palm landscape. It refrains from broad generalisations of HCVs being present in agriculturally altered landscapes. It attempts to be practical, to the point of avoiding forced interpretation of the presence of HCVs. The social conservation values also require reinterpretation, especially where smallholdings are concerned. Generic global HCV templates assume that most ecosystems are intact with high biodiversity occurrences. In the case of Malaysian oil palm landscapes, ecosystems are degraded to a point where species composition and environmental functions are at their lowest points. This, however, is what the landscape presents, and thus, a reinterpretation of HCV attributes will incorporate a precautionary approach and conserve what remains with the low assemblage of species and functionality. This is potentially true for developed oil palm areas.

The interpretation of HCVs for smallholders and small estates (areas less than 100 ha) in the Malaysian landscape is presented in Table 2.4 where the practicalities of considering the detailed attributes are commented upon. In cases where these attributes are found to be either non-relevant or cannot be assessed, modifications are required as recorded in Appendix B (Section 15.2). Review of the content of both Table 2.4 and Appendix B (Section 15.2) is required before planning any field assessment.

Table 2.4: MSPO HCV interpretation for the Malaysian oil palm landscape, focusing on existing oil palm planting scenarios

Adapted HCV Definition from HCVN	Descriptor of HCV Attributes adapted from HCVN Global Guidance document	Attribute relevance to the Malaysian oil palm landscape	HCV Assessment Considerations
HCV 1: Concentrations of biological diversity including endemic species, and Rare, Threatened or Endangered (RTE) species that are significant at global, regional, or national levels.	1. Species Richness / Diversity 2. Population of endemic and RTE species 3. Viable populations of endemic or RTE species (including migratory species) 4. Areas where small populations of endemic or RTE species critically dependent on 5. Approximating key protected areas or priority sites for RTE species 6. Genetic variance	In developed areas and established plantations, species richness and diversity are low and, in most cases, will be irrelevant. Assessing concentrations of population is not possible in an established oil palm landscape. The patches of forest potentially found in the agricultural landscape are relatively small and would not be able to support viable small populations of endemic and RTE species. Critical dependency would be unlikely or rare. The likelihood of genetic variant species present within an established oil palm landscape is also minimal.	For HCV assessments in existing oil palm planting scenarios, a flora and fauna species listing with protection and conservation status is required. If species with RTE, endemic, migratory, and both national and local protection statuses are found within the forest patches in established plantations, then these areas have HCV 1 status. Human-wildlife conflict should also be considered during the assessment. Population studies are not required for HCV assessments as these are rapid assessments.
HCV 2: Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL), that are	1. Intact forest landscape 2. Areas that provide connectivity and buffering 3. Forest mosaic	In existing oil palm planting scenarios, Intact Forest Landscapes (IFLs) and forest mosaics are likely to be connected with the forest patches within the developed sites. Forested and vegetated areas, providing connectivity and buffering, can potentially be	Mapping of the forest patches and river corridors within the plantation and its connectivity to adjacent forests is a requirement.

Adapted HCV Definition from HCVN	Descriptor of HCV Attributes adapted from HCVN Global Guidance document	Attribute relevance to the Malaysian oil palm landscape	HCV Assessment Considerations
significant at global, regional, or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.		identified, especially in areas connected by riparian reserves. The retention of forest mosaics and buffer linkages within the oil palm plantation will serve the function of HCV 2.	
HCV 3: Rare, threatened, or endangered ecosystems, habitats or refugia	1. Rare intact ecosystems (natural) - Peat, Limestone, Mangrove Ecosystem 2. Anthropogenically rare ecosystems (due to human activities) 3. Threatened or endangered ecosystems 4. Nationally or internationally threatened ecosystem - Peat, Limestone, Mangrove Ecosystem	In the Malaysian landscape, RTE ecosystems are considered rarities in the established oil palm landscape. However, established areas could potentially have peat/wetland ecosystems and remnants of lowland dipterocarp forest.	Ecosystem mapping, irrespective of land cover, is a requirement to identify the presence of existing RTE ecosystems, particularly the existing fragments. A precautionary approach towards conserving these areas is also a requirement.
HCV 4: Basic ecosystem services in critical situations including protection of water	1. Extreme flow events 2. Downstream flow regimes 3. Water quality 4. Fire	In an established oil palm landscape, most rivers and streams are not vegetated or have been converted to drains. Thus, these rivers do not serve the purpose of managing extreme flow.	Ground mapping of the rivers, natural water bodies, vulnerable and fragile soils, and steep slopes areas is required.

Adapted HCV Definition from HCVN	Descriptor of HCV Attributes adapted from HCVN Global Guidance document	Attribute relevance to the Malaysian oil palm landscape	HCV Assessment Considerations
catchments and control of erosion of vulnerable soils and slopes.	5. Vulnerable soils, aquifers, and fisheries 6. Clean water, slope stability	There are however cases where vegetated river buffers have been maintained in some sections of established plantings. These buffers would then serve to regulate flow and maintain water quality. Maintaining downstream flow regimes is a natural occurrence irrespective of its conservation value. Maintaining water quality would be possible especially if the river flows along continuous blocks of oil palm concessions. Fire prevention is only relevant for peat areas.	
HCV 5: Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.	1. Hunting 2. Non-timber Forest Products (NTFP) 3. Fuel for household consumption 4. Source of proteins in rivers 5. Building materials 6. Fodder 7. Water consumption 8. Resources for barter or livelihood or natural resources for cash income	Occurrence is only possible if local communities and indigenous groups still depend on the forest and riverine system within the existing oil palm planting sites. Investigation with local communities and/or indigenous peoples is required.	Positive and open engagement with local communities and indigenous peoples is required to track historical use and level of dependency. Assessment of the needs of local communities and/or indigenous peoples is required.

Adapted HCV Definition from HCVN	Descriptor of HCV Attributes adapted from HCVN Global Guidance document	Attribute relevance to the Malaysian oil palm landscape	HCV Assessment Considerations
HCV 6: Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance, and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.	1. Nationally or internationally recognised historical, cultural, or religious site 2. Religious or sacred sites, burial grounds, and sites for traditional ceremonies 3. Plant and animal resources for rituals	Occurrence is only possible if such sites exist within the existing oil palm planting sites and if it is still of significance to the surrounding local communities and indigenous peoples. Investigation with local communities and/or indigenous peoples is required.	Positive and open engagement with local communities and indigenous peoples is required to track historical use, level of significance, and location of HCV 6 sites. Assessment of the needs of local communities and/or indigenous peoples is required.

2.3 Terrestrial Ecosystems in Malaysia

The natural vegetation of Malaysia probably remained fairly undisturbed until the early 1910's. Over the following decades, various forest products were harvested, forest areas were cleared and planted with agriculture crops such as rice, coconut, tapioca, and vegetables. As demand for timber increased, along with other forest products such as resins, forestry became an increasingly important revenue earner. Other forest products and various timber species were selectively harvested. As demands increased, more species were harvested, and some form of forest management was introduced. Some forestry research was also initiated and conducted, and forests were described and classified. Symington (1974) proposed a classification system for the forests of Malaysia. However, this classification system has not been significantly revised by subsequent foresters.

Thus, with intensive harvesting based on Selective Management System projections, extensive forest areas were harvested, and this also encouraged forest clearing and conversion to other land use – development, and infrastructures such as roads and buildings. From the late 1960s to the early 1970s, significant portions of federal and state forests were cleared for conversion to rubber plantations. Subsequently, when rubber prices declined, most rubber plantations were converted to oil palm plantations. This resulted in a shift of dependency from 1 million hectares of rubber to over 3 million hectares of oil palm by the year 2000. Apart from oil palm, other tree crops, such as cocoa, coffee and fruit trees, like durians, also increased in extent.

According to Symington (1974), the natural forest types found in Malaysia comprise of climatic climax forests, edaphic climax forests, biotic climax forests and 'unstable' forests undergoing changes. This classification can also be applied to the forests in Sabah and Sarawak, with some modifications according to the altitudes they are located in, as well as combining forest types that are difficult to differentiate (See forest types listed in Table 2.5). Map 2.1 to Map 2.3 show the distribution of the original ecosystems in Malaysia. The original ecosystems identified in these maps have taken into consideration both altitude and edaphic factors for mapping purposes. The ecosystems listed in Table 2.5 remain as the basis for ecosystem classification in HCV assessments.

The classifications of forest types are based on a combination of altitude, soils (sandy, mineral, peat or muck, limestone, particle size- clay, silt, sand grit, stones- depth of soil, etc.), and water factors (level and regimes, salinity), as well as biotic factors (human, animal, and natural disturbance); some of these can be sub-divided further. The vegetation types in Peninsula Malaysia are based on climatic factors, soils, and also biotic factors. The classification of forest types differs slightly from those developed for Sabah and Sarawak, especially with reference to the altitudes of the different forest types. The vegetation types are classed under 2 broad categories – dry land types with mineral, sands, or soils moderately rich in organic matter, and wetland or semi-wet types with high water table or waterlogged conditions.

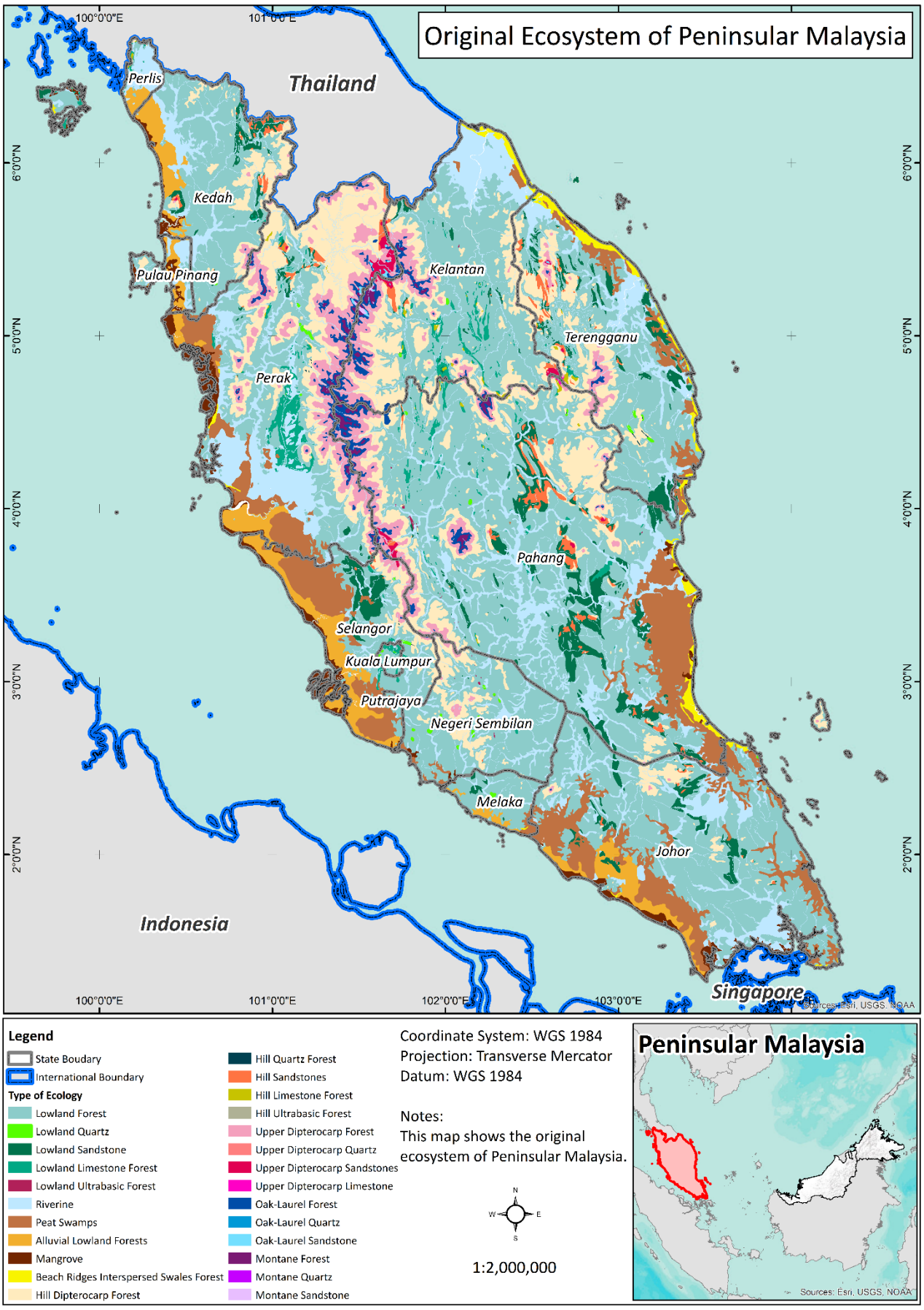
Table 2.5: Type of Ecosystem in Malaysia

No.	Area	Type of Ecosystem	Sub-type	Description
1.	Peninsular Malaysia	Dry Inland Forests (based on altitude)	Upper Montane Forest (found at altitudes above 1500 m)	The Upper Montane Forest in Peninsula Malaysia is also known as Montane Ericaceous Forest on account of the dominance of species from the families *Ericaceae*, *Myrtaceae* and also species from the phyla Coniferae. The soils found in this Upper Montane Forest are usually thin and occasionally have montane peat overlaying them. The tree species found here are adapted to low nutrient levels, lower temperatures, and low evapotranspiration rates. At this altitude, the humidity is relatively high, and transpiration rates are low. The trees are generally less than 20 m in height and the species found in this sub-type usually have small leaves.
2.			The upper level of the Lower Montane Forest (LMF)	The upper level of the Lower Montane Forest (LMF), sometimes known as the Oak Laurel Forest, is found between 1200 – 1500 m. This namesake originates from the tree families that dominate this sub-type, these being, *Fagaceae* (the oak family, with species from the *Lithocarpus* and *Quercus* genera) and *Lauraceae* (the laurel family, with species from the *Alseodaphne* and *Cinnamomum* genera).
3.			The lower level of the LMF - Upper Dipterocarp Forest (750 - 1200 m asl)	This sub-type represents the upper limits of the Dipterocarp forests found throughout Peninsular Malaysia. As indicated by its name, the sub-type is dominated by dipterocarp trees from the family *Dipterocarpaceae*, with some examples of species being *Shorea platyclados, Shorea ciliata, Shorea ovata* and *Dipterocarpus retusus.* In addition to these, this sub-type also contains species from the families *Anacardiaceae* and *Sapotaceae*.
4.			Lowland Forest comprised of Hill Dipterocarp Forest (HDF) found between 350 – 750 m and Lowland Dipterocarp Forest (LDF) found below 350 m asl.	This subtype contains 2 classes of forests, the first being the Hill Dipterocarp Forests, which are commonly comprised of dipterocarp species such as *Shorea curtisii, Neobalanocarpus heimii, Shorea lepidota* and species from the genera *Anisoptera.* The second class, being the Lowland Dipterocarp Forest, has the widest range of tree species for both dipterocarp and non- dipterocarp groups. These non-dipterocarps consist of species from the families *Leguminosae, Anacardiaceae, Sapotaceae, Apocynaceae, Burseraceae, Rosaceae* and a multitude of various other plant families.

No.	Area	Type of Ecosystem	Sub-type	Description
5.		Permanently or seasonally wet or waterlogged forests	Mangrove Forest/ Tidal Forest	These are coastal wetlands characterised by their saline environments. This sub-type is dominated by plant species that can thrive in high-salinity environments, some examples of genera being *Avicennia, Rhizophora, Ceriops* and *Bruguiera*.
6.			Brackish water/Estuarine	This subtype refers to areas of partially enclosed coastal bodies of water where freshwater from rivers and streams mixes with saltwater from the ocean. These areas are commonly dominated by species from the genera *Nypa* and *Pandanus*.
7.			Peat Swamp Forest	This subtype, as the name suggests, is characterised by the large amounts of peat (organic material) found within this forest's soil. Due to its acidic and waterlogged nature, this area is dominated by plants that are adapted to such conditions. Some examples of species are from the genera *Koompassia, Shorea, Gonystylus, Cratoxylon, Campnospermum* and *Pandanus*. Plants from the families *Arecaceae* (Palms) and *Myristicaceae* (Nutmeg) are common in this sub-type.
8.	Sabah	Dry Inland Forests (based on altitude)	Sub alpine (> 3500 m)	This subtype has relatively thin soil and displays rocky conditions. In terms of vegetation, there are no trees, and only sparse amounts of herbs and shrubs can be found.
9.			Upper Montane Forest (2500 -3500 m)	These are low statured forests (less than 10 m in height), comprising species that can tolerate low temperatures and frequent cloud cover. This sub-type shares many similarities with the Montane Forests in Peninsular Malaysia. Also known as Montane Elfin Forests, these areas are dominated by species from the *Ericaceae* and *Myrtaceae* families, as well as species from the *Coniferae* family.
10.			Lower Montane Forest (1000 – 2500 m)	Unlike the Lower Montane Forests of Peninsular Malaysia, this sub-type is instead found at higher altitudes. Similarly, these forests are dominated by species from the genera *Lithocarpus* (Fagaceae), *Quercus* (Fagaceae), *Litsea* (Lauraceae) and *Calophyllum* (Calophyllaceae).
11.			Lowland Dipterocarp Forest	Unlike the Lowland Dipterocarp Forests of Peninsular Malaysia, this sub-type is classified as being < 500 m above sea level (asl) while the former is classified as being below 350 m asl. The two types of forests share many similarities such as being dominated by species from the

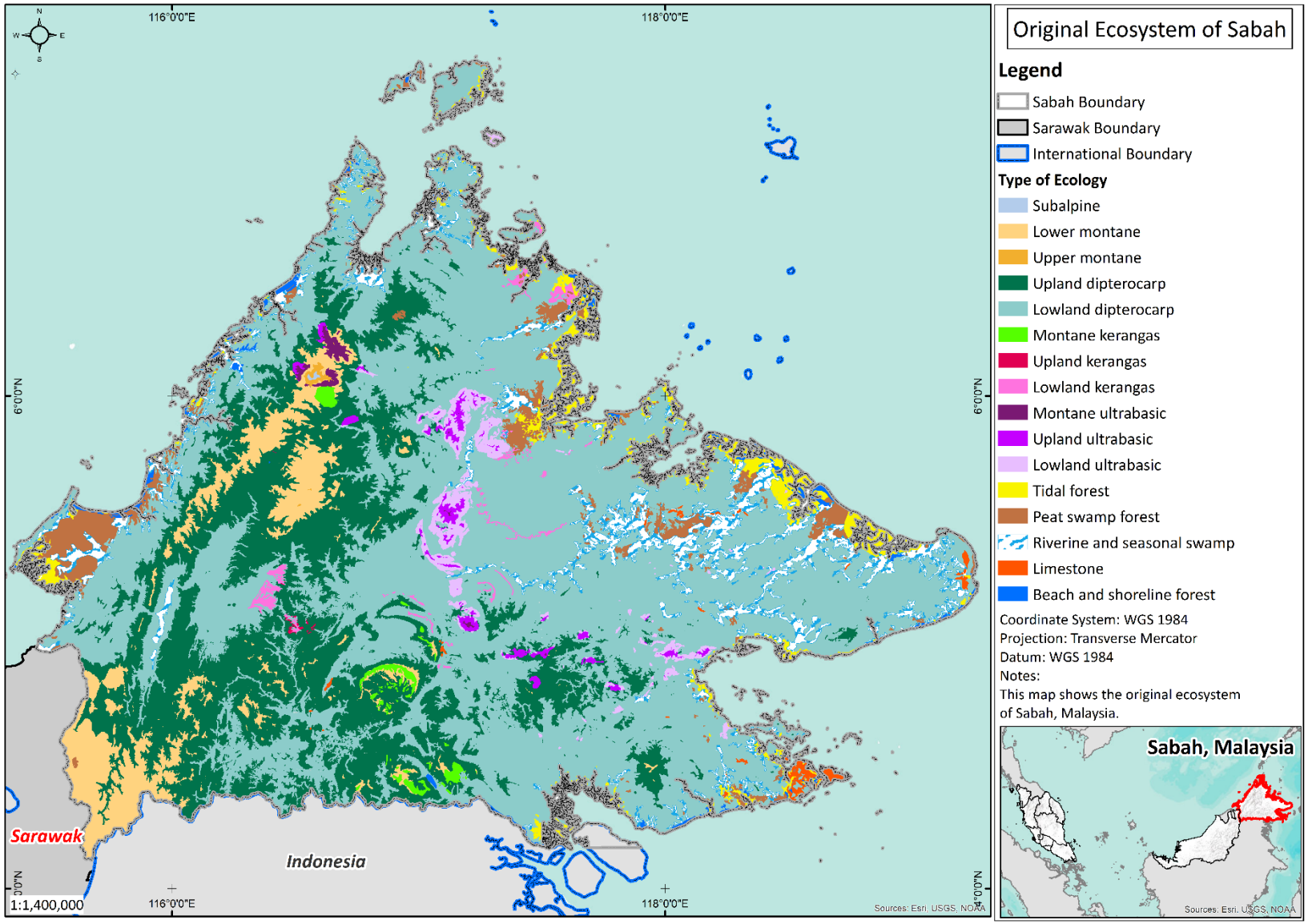
No.	Area	Type of Ecosystem	Sub-type	Description
				families *Dipterocarpaceae, Leguminosae, Myristicaceae, Sapotaceae* and *Apocynaceae*.
12.		Permanently or seasonally wet or waterlogged forests	Peat Swamp Forest	This sub-type, like the Peat Swamp Forests of Peninsular Malaysia, is characterised by the large amounts of peat (organic material) found within this forest's soil. Due to its acidic and waterlogged nature, this area is dominated by plants that are adapted to such conditions. Some examples of species that dominate these areas come from the genera *Dryobalanops, Shorea, Madhuca, Gonystylus, Dactylocladus. Cratoxylon* and *Campnospermum.*
13.			Riparian/ Riverine Forest	Riparian/ Riverine Forests can vary in form and have different species compositions depending on their altitude. For example, in montane regions, riparian forests can be found along rocky stream banks and are dominated by species from the genera *Saraca, Syzygium* and *Tristania.* At mid-level altitudes, riparian forest can form gallery forests in which trees and branches hang over the rivers forming semi-closed arches over these rivers. The species that dominate here belong to the genera *Shorea, Dipterocarpus, Saraca, Sterculia* and *Intsia.*
14.			Mangrove Forest/ Tidal Forest	Mangrove Forests in Sabah are very much similar to the Mangrove Forests of Peninsular Malaysia. The dominant genera include *Avicennia, Rhizophora, Ceriops* and *Bruguiera.* For the brackish estuaries, the areas are similarly dominated by species from the genera *Nypa,* and *Pandanus.*
15.			Fresh water Swamp	This sub-type is widely found in the lowlands of eastern Sabah where the longer rivers meander and form swamps and oligotrophic lakes. These swamps can be dominated by either single or multiple species from the genera *Lophopetalum, Metroxylon, Campnospermum, Alstonia, Fagraea, Nauclea, Ploiarium, Mitragyna* and *Macaranga.*
16.	Sarawak	Dryland Forests	Upper Montane Forest	Similar to the previous Upper Montane Forests of Sabah and Peninsular Malaysia, this area is dominated by montane ericaceous species as well as conifers. These forests, in Sarawak, are located 1200 m asl, unlike the altitudes observed in the other two regions.
17.			Lower Montane Forest	Lower Montane Forests in Sarawak are found at altitudes between 800 m to 1200 m and are usually dominated by

No.	Area	Type of Ecosystem	Sub-type	Description
				oaks and laurels, similar to the Lower Montane Forests in the other two regions.
18.			Mixed Dipterocarp Forest (MDF)	This sub-type is found below 800 m and is not differentiated into lowland and hill sub-types as seen in the Sabah and Peninsular Malaysia regions. These habitats include alluvial forests as well as riparian forests along larger streams and smaller rivers. The dominant dipterocarp genera are *Shorea, Dryobalanops* and *Hopea* while the dominant non-dipterocarps are from the families *Leguminosae, Anacardiaceae* and *Burseraceae*.
19.			Sundaland Heath Forest (Kerangas)	Sundaland Heath Forests (also referred to as Kerangas or Kerapah forests) are found over sandy soils at different elevations and are essentially dominated by species from the genera *Shorea, Cratoxylon* and conifer genera like *Podocarpus* and *Dacrydium*. In addition to this, these forests may also contain species from the families *Casuarinaceae* and *Clusiaceae*.
20.			Limestone Forest	The Limestone Forests of Sarawak comprise of lowland (< 800 m) and montane (> 800 m) types of species. This sub-type's species composition is similar to the types of species found in Kerangas forests.
21.		Wet or waterlogged habitats	Peat Swamp Forest	This sub-type shows many similarities to its counterparts in Sabah and Peninsular Malaysia. The dominant species are from the genera *Shorea, Cotylelobium, Litsea, Combretocarpus* and *Dactylocladus.*
22.			Mangrove Forest/ Tidal Forest	As seen in Sabah and Peninsular Malaysia regions, the mangrove forests of Sarawak are similar in vegetation species composition. Likewise, the brackish estuaries are dominated by *Nypa*, ferns and sedges.
23.			Lakes and semi-permanent lakes	This sub-type is dominated by species with high tolerance to being waterlogged, belonging to the genera *Pandanus*, *Shorea, Dryobalanops, Dactylocladus* and various *Syzygium spp*.



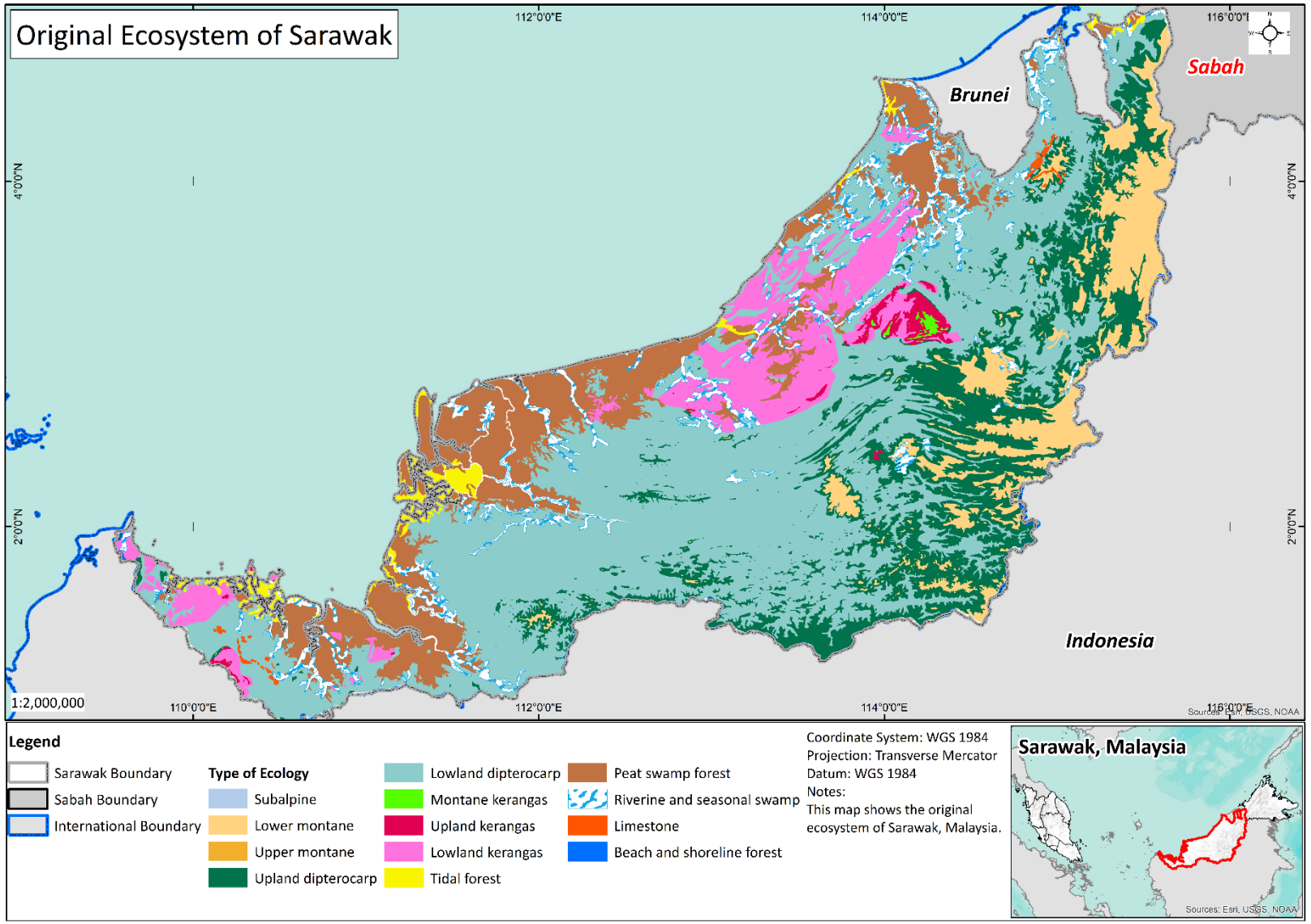
Map 2.1: Original Ecology with Forest Reserve Extent in Peninsular Malaysia

Credits: MEC



Map 2.2: Original Ecology with Forest Reserve Extent in Sabah, Malaysia

Credits: MEC



Map 2.3: Original Ecology with Forest Reserve Extent in Sarawak, Malaysia

Credits: MEC

2.4 History of Land Use Change in Malaysia

Introduction

In the 1800s and the early 1900s, Malaysia (Peninsular, Sabah and Sarawak) was likely completely forested. Today, natural forests cover just about half of their original extent. Forests have been cleared primarily for development (infrastructure such as roads and houses/buildings) and for agriculture (vegetables, fruits, and industrial plantation crops). Shifting cultivation may have been practiced but at a much lower scale than what has been seen recently.

2.4.1 Peninsular Malaysia

A. Before the 1900s

The earliest form of land use that involved the clearing of forested areas was mining. The mining of various minerals such as coal, tin, gold, and iron ores was initiated in the 1800s. These activities led to the development of settlements in various parts of the country and many of these settlements would later become the capitals of the various states of Peninsular Malaysia. In addition to mining, there were other activities that supported the communities, such as timber harvesting, collection of various non-timber forest products and vegetable farming, which also resulted in the clearing of forests, but at small and localised scales.

B. Early 1900s to the 1960s

With the intensification of various economic activities and increasing demands of various ores and other natural products such as resins, gambier, gums and latex as well as food, more forests were cleared and either replanted with food crops such as paddy, vegetables and fruit trees or other industrial crops such as rubber, coconut (for oil) and oil palm, resulting in the degradation of said forests and the natural ecosystems. The Agriculture and Forestry departments were established in the late 1800s and early 1900s. In the effort to manage the forest resources during this time, the Forest Research Institute was also established. Early forms of silviculture, adopted mainly from European forestry techniques and approaches, were introduced and research efforts were initiated. During the Second World War, patches of forests were cleared and planted with food crops, including tapioca. After the war, extensive areas were abandoned, and secondary forests began their establishment in these patches.

C. Conditions in the 1970s and 1980s

After the 1960s, Malaya and subsequently Malaysia undertook intensive agricultural development as well as industrialisation, ensuing in the clearance of more natural forests. The areas selected for development were mainly lowland forests, as these areas were accessible, and the terrain was easily traversable. With the establishment of more infrastructure such as roads, buildings, housing, and industries, advancements would facilitate the establishment of large-scale agricultural estates – including rubber and oil palm plantations as well as farms for food crops. In addition to the actions in the early 1900s, even more extensive areas were cleared for mining operations, leaving behind large areas of sandy landscape and mining pools without any sign of natural vegetation, as there were often no post-mining restoration efforts.

D. From the 1980s to the current state of land-use

From the 1980s onwards, there has been relatively intensive forest clearing for further establishment of large-scale plantations. In an effort to save the country's forests and ecosystems, Malaysia committed to conserve at least 50% of its total land area under forest, although there was no specific commitment or indication to keeping primary or undisturbed forest. A large proportion of forested areas included logged over forest, National Parks and areas established for the protection of wildlife and other purposes.

Throughout this period, some large forest areas have been clear-felled for the establishment of crops, including rubber, oil palm, sugar, banana, coconut, coffee, and tea plantations. The intensive and expanding cultivation of crops has been a significant driver of deforestation and the degradation of land and water. In the year 2000, there was approximately 220,000 ha of agricultural plantations. These figures are likely limited to non-tree (industrial) agriculture, as there was already about 1 million ha of rubber and over 3 million ha of oil palm at the time.

Increased concern for the conservation of forests, accompanied by the increased involvement of international agencies in conservation programmes resulted in the protection of a number of forested areas. Over time, forests were conserved through various programmes and the Sustainable Forest Management (SFM) approach was introduced. This approach implemented techniques that increased forest pre-felling/ harvesting planning and reduced the impact of other harvesting techniques. Over a period of 40 years, the forested areas in Peninsular Malaysia have hovered around 60% of the total area of the landmass. The Ministry of Primary Industries reported in 1998 that there was over 20.56 million ha of forested land in Malaysia. This is equivalent to about 62.4 % of the landmass of Malaysia.

2.4.2 Sabah

Sabah is located in the north-east part of Borneo with an area of 7.49 million ha. Sabah can be divided into four main physiographic regions, namely the Western Lowlands to the west of the Crocker Range; the Western Cordillera comprising of the Crocker, Trusmadi, Witti and Maligan ranges and associated inter-montane plains and valleys; the Central Uplands, comprising of extensive tracts of mountainous country to the east of the Western Cordillera, including the Labuk, Kuamut, Segama and Tawau highlands; and the Eastern Lowlands that stretches from the Bengkoka Peninsula in the north to the Semporna Peninsula in the south which includes tracts of moderate to low hills, the valleys of the Sugut, Labuk, Kinabatangan and Segama rivers and extensive deltas.

A. Historical land use

During the 1800s, the Sultans of Sulu and Brunei had overlapping claims over North Borneo (Sabah) with rampant piracy. The first case of Western interest came from the British East India Company, when William Dalrymple agreed with the Sultan of Sulu to establish a factory in Balimbangan Island. Piracy problems persisted and attempts were made to establish a base in Labuan. When James Brooke arrived in Sarawak, British involvement increased and instead of using Balimbangan, he established himself in Kuching and became the Rajah (King) of Sarawak. During this time, business interests from the Americans increased and a portion of land was leased in North Borneo from the Sultans of Sulu

and Brunei. The lease was transferred a number of times and eventually ended up in the hands of Alfred Dent, who set up the North Borneo Chartered Company. In the 1880s, the British administration agreed to make the three north Borneo states of Sarawak, Brunei, and North Borneo as Protectorates, coming under the protection of the British Army and Navy.

The period between the late 1800s and 1940s saw the migration of millions of Chinese and Japanese into British North Borneo (BNB) to work as labourers, miners, planters, and merchants. The rubber tree (*Hevea brasiliensis*) was introduced in 1881, mostly to smallholders at the time. Subsequently, over time, large scale planting of rubber followed up by the mid-1900s. The farmers also shifted from subsistence farming to cash cropping with growing interest in rice, pepper, cocoa, tobacco, and eventually oil palm. Logging also became more intensive after the 1940s, with the harvesting of peat swamp forests and the lowland dipterocarp forests.

In the 18th century, tobacco was North Borneo's foremost planting industry. The logging history in North Borneo can be traced back to the 1870s. In the 1890s, hardwood exports increased, with the expansion of the logging industry, especially during the interwar period. In the 1900s, North Borneo joined the rubber boom.

The completion of the North Borneo Railway Line helped to transport forest resources to a major port on the west coast. By 1915, around 34,828 acres (14,094 ha) of land, in addition to Chinese and North Borneo smallholdings, had been planted with rubber trees. In the same year, the North Borneo Governor, Aylmer Cavendish Pearson, invited Japanese emigrants to participate in the economic activities in North Borneo. The Japanese government responded to the request positively and sent researchers to discover potential economic opportunities.

B. Situation after 1945 to independence in 1963 and 1970s to 2000.

After Malaya became independent, similar aspirations for independence developed in Sarawak and North Borneo and efforts were made to join Malaya to form Malaysia in 1963. Since their independence in 1963, various development projects were undertaken. In the early 1970s, it was estimated that over 90% of Sabah was still forested, with about 5% under agriculture and the rest under shifting cultivation (at different stages of the cycle of clearing, planting, and fallow).

From the 1970s, agriculture became the mainstay of the economy with rubber and rice being the most important crops. Rubber was planted extensively in large estates and smallholdings and was an important external trade commodity. Paddy was grown on smallholdings and provided food and a livelihood mainly for the locals. Coconuts were grown in the coastal areas and exported as copra. Cocoa, bananas, and vegetables were also grown. Oil palm was first established in Sabah in 1961 with a mere 2,000 ha, but rose to 40,000 ha in 1970, 100,000 ha in 1980, 281,000 ha in 1990, 630,000 ha in 1995, and 980,000 ha in 2000. In the rural areas, shifting cultivation was still being practiced and hill paddy, maize, tobacco, and vegetables were planted. Cattle, buffaloes, and pigs were also reared. Subsequently, the expansion of agriculture became very rapid; the extent of agriculture land increased to 564,000 ha by 1980, to 1,000,000 ha by 1990, and to 1,182,000 ha by 2000.

The timber industry also expanded rapidly, and the number of sawmills increased. Most of the timber produced was used locally, especially in the expanding towns and cities.

C. Situation post 2000

By 2009, about 67% or 1.47 million ha of the 2.2 million ha of State land that was deemed suitable for agriculture development had already been developed into various agricultural plantations. Approximately 730,000 ha of largely forested state land remained available and was designated for conversion to agriculture. As of 2009, a total of 1,330,364 ha, or 90% of developed agriculture land, was covered by oil palm. With the rising price of crude palm oil, the extent of oil palm plantations in Sabah is expected to expand further.

Currently, Sabah's main agricultural crops are oil palm, rubber, paddy, cocoa, and coconut. The areas for rubber and cocoa, however, have been declining steadily since the year 2000, often being replaced by oil palm. This decline also affected coconut plantations, which saw an area of 20,836 ha in 2003 fall to 18,875 ha in 2009. Paddy occupied about 38,936 ha in 2009.

Forest tree plantations were considered to meet the shortfall of the declining timber supply from the natural forest reserves and state land forest. Studies by research organisations were optimistic about the returns on investments. Financial factors, however, favoured short rotation crops over long-rotation crops, a factor which increases the likelihood that natural forests will continue to be cleared and replaced with monoculture plantations of fast-growing forest trees, often exotic species. However, since 2010, other approaches for conservation of forests, such as carbon capture, carbon trading and wildlife conservation, have been considered. These efforts have yet to significantly increase the extent of forested areas, with natural/ indigenous tree species, in Sabah.

D. Present

Sabah has a total land area of 7.36 million hectares. Based on the Land Capability Classification (LCC) and Soil Suitability Class (SSC) guidelines, Sabah's land use comprises of four categories:

- Forest Reserves which occupy about 3.6 million ha (48%),
- State land which occupies 3.48 million ha (46%),
- Wildlife Sanctuaries which occupy 152,828 ha (2%), and
- Sabah Parks which extend over 245,172 ha (3%).

Among these four land uses, the State land and Forest Reserves have been subject to rapid changes — mainly due to the conversion to oil palm. Agricultural use comes mainly from clearance of state land (forests).

Sabah had 4.36 million hectares of forested areas in 2005, 4.44 million ha in 2012, 4.3 million ha in 2015 and 4.77 million ha in 2018 (no difference between Permanent Forest and State Land Forest). Sabah's network of Forest Reserves comes under the authority of its forestry department and stood at 3.50 million ha in 2005 and 3.51 million ha in 2006. This increased slightly to 3.54 million ha in 2018. In mid-2020, after its latest reclassification exercise on the Forest Reserves, this figure rose to 3.57 million ha. According to the data obtained, the total area of terrestrial conservation areas (Sabah

Parks, Wildlife Sanctuaries and Wildlife Conservation Areas) did not change much between 2011 and 2020. The total area of Sabah Parks remained the same at about 0.24 million ha, while the size of its Wildlife Sanctuaries and Wildlife Conservation Areas declined slightly from 29,097 ha in 2011 to 28,957 ha in 2020.

2.4.3 Sarawak

The land use changes in Sarawak over the last century do not follow that of Peninsular Malaysia as Sarawak has had a different historical pathway since the middle of the 19th century. In order to appreciate the differences, we can view the situation over different time periods of the last two centuries.

A. Pre 1950s situation:

Sir James Brooke became the Rajah of Sarawak after assisting the Sultan of Brunei in 1841 to quell a rebellion. The status was passed on to his family members and then to Charles Vyner in 1917. In 1946, Sarawak was ceded to the British government as a British Protectorate and a British crown colony.

Between the 1800s and the year 1941, several million Chinese entered Malaya, Sarawak, and British North Borneo (BNB) to work as labourers, miners, planters, and merchants; subsequently Indians were brought in as workforce for rubber estates. Under Rajah Brooke and as a colony, Sarawak was economically segregated with most Malays in government service and fisheries, the Chinese mainly in trade, labour, and farming of cash crops and the Ibans in the police force and practicing shifting cultivation.

Historically, the first agricultural activity to have significant impact on the land use and forests of Sarawak was rubber (*Hevea brasiliensis*), which was introduced in 1881, followed by the large-scale planting of the tree in 1905, mostly by smallholders. The farmers then shifted from subsistence farming to cash cropping by growing pepper, gambier, tobacco, and then later, oil palm. Logging became more intensive after the 1940s, beginning with the harvesting of peat swamp forests and subsequently the lowland dipterocarp forest.

B. Situation from the 1950s to the 1960s (independence in 1963) and the 1970s

After Malaya became independent, similar aspirations for independence developed in Sarawak and North Borneo and efforts were made to gain independence and then join Malaysia in 1963. From independence in 1963 and onwards, various development projects that involved the clearing of forests were undertaken. Rubber planting increased and then decreased; while logging of forests intensified and timber became the main export. Data showed that in the 1970s, approximately 75% of Sarawak was still forested, although much of it had been earmarked for logging. During this period, rubber planting declined and was replaced mainly by oil palm plantations which extended even into peat swamp forests.

C. Situation from the 1970s to present (2020)

Sarawak has a land mass of 12.4 million ha, most of which is covered by forest. In the early 1990s, Permanent Forest cover, 57.71% of the forested area in Sarawak, were mainly for timber production. Areas were licensed for timber extraction. While the actual areas involved are not accurately known, some estimates place it at about 8.8 million ha. In 2010, the total forested area in Sarawak was estimated to be around 7.85 million ha or 63.76% of land area and agricultural land came up to about 1.35 million ha (10.96%).

Forest tree plantations have also become an important land use component recently. In 2008, approximately 207,502 ha of forest tree plantations, comprising mainly of *Acacia mangium* and *Eucalyptus*, were established. The area increased in 2009 to almost 255,000 ha and included other species from the genera *Neolamarckia, Peronema* and *Paraserianthes*. The total area was targeted to reach 1 million ha by 2020. The planted forest area reported in 2020 was 325,314 ha, although the actual figure is uncertain. Other estimates from the Forest Department revealed that 452,760 ha had been planted with various species in 2021.

Protected areas in Sarawak comprise of National Parks, Nature Reserves and Wildlife Sanctuaries. The first national park, Bako National Park covering an area of 2,727 ha was gazetted in 1957. Since then, a number of totally protected areas have been established and in November 2020, there were 47 National Parks, 15 Nature Reserves and 5 Wildlife Sanctuaries covering a total area of 867,416 ha.

The greatest impact on land conversion in Sarawak is from the establishment of oil palm (*Elaeis guineensis*) plantations, accelerated partly by the exhaustion of suitable land for oil palm in Peninsular Malaysia. Oil palm plantations in Sarawak increased from 28,500 ha in 1985 to 744,372 ha in 2008.

In 2021, an estimated 1.6 million ha was planted with oil palm in Sarawak. The extent of rubber estates has fluctuated over the last 70 years. In 1941, there was 239,557 acres (approximately 94,300 ha). This figure increased to about 118,100 ha in 1962 and then declined to less than 50,000 in 1990. However, there was a reported surge to over 160,000 ha in 2020 after some government incentives were introduced. The conversion rate of land for the other crops has been relatively low compared to rubber and oil palm.

3 The HCV Assessment Approach for Existing Oil Palm Plantings

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This document provides the guidelines for undertaking HCV assessments for existing oil palm plantings that adhere to the revised MSPO standard. The scope of this document is to establish the minimum requirements for the assessment, reporting, management, and monitoring of HCVs. This includes identification of HCV presence within the existing oil palm plantings, HCV reporting, as well as management and monitoring recommendations.

This guideline presents the approach that should be adhered to, based on the growers and production classification provided in the next section. For existing oil palm planting areas of less than 100 hectares and smallholdings of less than 40.46 hectares, a **Rapid HCV Assessment** approach is outlined. For existing oil palm plantings greater than 100 hectares, an **HCV Assessment** is required. The methods and reporting templates are also provided in this guideline.

3.1 Grower and Production Classification for HCV Assessment Approach

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Prior to initiating any form of HCV assessment, smallholders and other organisations are advised to identify which category of organisation category they fall under. This is important to ascertain the HCV assessment approach and pathway. Table 3.1 shows the sub-categories of organisation classes that are required to conduct an HCV assessment.

Note: Please refer to the MSPO HCV Assessment Procedure for the HCV Assessment approach for the organisation's grower and production classification.

Table 3.1: Classification of Organisations Requiring Type of HCV Assessments (Applicable to Existing Oil Palm Plantings Only)

MSPO Revised Category	Category Code	Organisation Category	Type of HCV Assessment (Refer to Table 1.5)
Part 2-1 Independent Smallholders	**2-1(A)**	SPOC	**Single-Site Rapid HCV Assessment**
	2-1 (B)	Non-SPOC	**Single-Site Rapid HCV Assessment**
Part 2-2 Organised Smallholders	**2-2 (A.i)**	Dispersed organised smallholder group (≤ 100 ha)	**Multi-Site Rapid HCV Assessment**
	2-2 (A.ii)	Consolidated cluster of organised smallholders' group (≤ 100 ha)	**Multi-site Rapid HCV Assessment**
	2-2 (B.i)	Dispersed organised smallholder group (> 100 ha)	**Multi-site HCV Assessment**
	2-2 (B.ii)	Consolidated cluster of organised smallholders' group (> 100 ha)	**Multi-site HCV Assessment**
Part 3-1 Oil Palm Plantations (40.46 hectares to 500 hectares)	**3-1 (A)**	Single management unit (40.46 – 100 ha)	**Single-Site Rapid HCV Assessment**
	3-1 (B.i)	Single management unit (101 – 500 ha)	**Single-site HCV Assessment**
	3-1 (B.ii)	Consolidated multiple management units (101 – 500 ha)	**Multi-site HCV Assessment**
	3-1 (B.iii)	Dispersed multiple management units (101 – 500 ha)	**Single-site HCV Assessment**
Part 3-2 Oil Palm Plantations (> 500 hectares)	**3-2 (A)**	Single Management unit (> 500 ha)	**Single-site HCV Assessment**
	3-2 (B.i)	Consolidated multiple management units (> 500 ha)	**Multi-site HCV Assessment**
	3-2 (B.ii)	Dispersed multiple management units (> 500 ha)	**Single-site HCV Assessment**
Part 4-1: Palm Oil Mill		Palm Oil Mills	**HCV Assessment is not required for this category**
Part 4-2: Palm Oil Processing Facilities		Palm Oil Processing Facilities (Refineries)	**HCV Assessment is not required for this category**

HCV assessments should be conducted for all existing oil palm plantings. For the plantings with existing HCV assessment reports prior to the issuance of the Malaysian Sustainable Palm Oil (MSPO) Revised Standard (MS 2530: 2022), it is advised to seek clarification on the validity of these previous HCV assessment reports. This is regardless of whether the previous HCV assessment reports were undertaken for other sustainability standards such as Roundtable on Sustainable Palm Oil (RSPO) Principles & Criteria. Validation will be provided by MSPO. The description of applicable grower and production categories is presented below.

3.1.1 Part 2-1 – Independent Smallholders

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1. 2-1 (A) SPOC

Independent smallholders are individual farmers who own or lease less than 40.46 ha of oil palm smallholdings and independently manage these areas. The term 'SPOC' refers to a group of smallholders who have been grouped under MPOB and are coordinated by an MPOB TUNAS officer (*Pegawai Tunjuk Ajar dan Nasihat Sawit*).

This refers to smallholders grouped by MPOB which individually own less than 40.46 ha and may be in close proximity with one another or dispersed within a landscape. Considering their independent status, each smallholding requires a separate Rapid HCV Assessment.

2. 2-1 (B) Non-SPOC

Unlike the independent smallholders grouped under the SPOC scheme, these smallholders have not been classified under MPOBs or any other government agency's grouping scheme. Thus, they do not receive any advice from external parties related to the oil palm industry as they are solely responsible for the management of their holdings.

This refers to smallholders who individually own less than 40.46 ha, may be in close proximity with one another or dispersed within a landscape and are not dependent on any external agency for advice and management. Considering their independent status, each smallholding requires a separate Rapid HCV Assessment.

3.1.2 Part 2-2 – Organised Smallholders

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1. 2-2 (A.i) Dispersed organised smallholder group (≤ 100 ha)

An organised smallholder group (≤ 100 ha) consists of farmers who individually own oil palm smallholdings that are less than 40.46 ha. The 'dispersed' classification refers to the distance of which these smallholdings are away from each other. For this classification, the boundary of one smallholding must be more than 5 km away from the boundary of another. Unlike the SPOC and Non-SPOC groups, these holdings are managed by a government agency such as Federal Land Development Authority (FELDA), Rubber Industry Smallholders Development Authority (RISDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Sarawak Land Consolidation & Rehabilitation Authority (SALCRA), Sabah Land Development Board (SLDB) and other government agencies. Each government agency may have several subsidiary entities or clusters which are managed separately. These agencies and their subsidiaries are also responsible for implementing MSPO requirements in the smallholdings to attain group certification for each organised smallholder. The agency also has to commission the HCV assessment and implement HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to organised smallholding groups that are less than or equal to 100 ha and are dispersed (> 5km) within a landscape. Therefore, each grouped entity requires a separate Rapid HCV Assessment.

2. 2-2 (A.ii) Consolidated cluster of organised smallholders' group (≤ 100 ha)

An organised smallholder group (≤ 100 ha) consists of farmers who individually own oil palm smallholdings that are less than 40.46 ha. The 'consolidated' classification refers to the distance between each smallholder in the group. For this classification, the smallholdings either share common boundaries or are less than 5km apart. Unlike the SPOC and Non-SPOC groups, these holdings are managed by a government agency such as Federal Land Development Authority (FELDA), Rubber Industry Smallholders Development Authority (RISDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Sarawak Land Consolidation & Rehabilitation Authority (SALCRA), Sabah Land Development Board (SLDB) and other state agencies. Each government agency may have several subsidiary entities or clusters which are managed separately. These agencies and their subsidiaries are also responsible for implementing MSPO requirements in the smallholdings to attain group certification for each organised smallholder. The agency also has to commission HCV assessments and implement HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to groups of multiple consolidated organised smallholding entities (less than or equal to 100 ha) which share common boundaries or have a maximum distance of 5km from the concession boundaries. Therefore, each grouped entity requires a separate Rapid HCV Assessment.

3. 2-2 (B.i) Dispersed organised smallholder group (> 100 ha)

An organised smallholder group (> 100 ha) consists of individual farmers who individually own oil palm smallholdings that are less than 40.46 ha. The 'dispersed' classification refers to the distance between each smallholding. For this classification, the boundary of one smallholding must be more than 5 km away from the boundary of another. Unlike the SPOC and Non-SPOC groups, these holdings are managed by a government agency such as Federal Land Development Authority (FELDA), Rubber Industry Smallholders Development Authority (RISDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Sarawak Land Consolidation & Rehabilitation Authority (SALCRA), Sabah Land Development Board (SLDB) and other state agencies. Each government agency may have several subsidiary entities or clusters which are managed separately. These agencies and their subsidiaries are also responsible for implementing MSPO requirements in the smallholdings to attain group certification for each organised smallholder. The agency also has to commission HCV assessment(s) and implement HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to organised smallholding groups that are larger than 100 ha and are dispersed (> 5km) within a landscape. Therefore, each grouped entity requires a separate HCV Assessment.

4. 2-2 (B.ii) Consolidated cluster of organised smallholders' group (> 100 ha)

An organised smallholder group (> 100 ha) consists of individual farmers who individually own oil palm smallholdings that are less than 40.46 ha. The 'consolidated' classification refers to the distance between each smallholder in the group. For this classification, the smallholdings either share common boundaries or are less than 5km apart. Unlike the SPOC and Non-SPOC groups, these holdings are managed by a government agency such as Federal Land Development Authority (FELDA), Rubber Industry Smallholders Development Authority (RISDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Sarawak Land Consolidation & Rehabilitation Authority (SALCRA), Sabah Land Development Board (SLDB) and other state agencies. Each government agency may have several subsidiary entities or clusters which are managed separately. These agencies and their subsidiaries are also responsible for implementing MSPO requirements in the smallholdings to attain group certification for each organised smallholder. The agency also has to commission the HCV assessment and implement HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to groups of multiple consolidated organised smallholding entities (less than or equal to 100 ha) which share common boundaries or have a maximum distance of 5km from the concession boundaries. Therefore, each grouped entity requires a separate HCV Assessment.

3.1.3 Part 3-1 – Oil Palm Plantations (40.46 ha to 500 ha)

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1. 3-1 (A) Single management unit (40.46 – 100 ha)

An oil palm plantation between the extent of 40.46 ha to 100 ha and is managed as a single management unit, are required to conduct an HCV assessment for their single estates and implement HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to single management units that are 40.46 to 100 ha. Therefore, each management unit requires a separate Rapid HCV Assessment.

2. 3-1 (B.i) Single management unit (101 – 500 ha)

An oil palm plantation between the extent of 101 ha to 500 ha and is managed as a single management unit, are required to conduct an HCV assessment for their single estates and implement HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to single management units that are 101 to 500 ha. Therefore, each management unit requires a separate HCV Assessment.

3. 3-1 (B.ii) Consolidated multiple management units (101 – 500 ha)

This classification applies to multiple oil palm plantations or estates with a total group area between 101 and 500 ha. The 'consolidated' classification refers to the distance between each estate in the group. For this classification, the estates either share common boundaries or are less than 5km apart. These estates may be under the same parent company and are certified as a group. Each individual estate is an independent management unit. The management units are responsible for implementing the MSPO's standard requirements and attaining MSPO certification.

This refers to groups of multiple estates (101 – 500 ha) which share common boundaries or have a maximum distance of 5km from the concession boundaries. Therefore, the whole consolidated management unit requires a separate HCV Assessment.

4. 3-1 (B.iii) Dispersed multiple management units (101 – 500 ha)

This classification applies to multiple oil palm plantations or estates with a total group area between 101 and 500 ha. The 'dispersed' classification refers to the distance between each estate. For this classification, the boundary of one estate must be more than 5 km away from the boundary of another. These estates may be under the same parent company and are certified as a group. Each individual estate is an independent management unit. The management unit is responsible for implementing the MSPO's standard requirements and attaining MSPO certification.

This refers to groups of multiple estates which are 101 – 500 ha and are dispersed (> 5km apart) within a landscape. Therefore, each management unit requires a separate HCV Assessment.

3.1.4 Part 3-2 – Oil Palm Plantations (> 500 ha)

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1. 3-2 (A) Single Management unit (> 500 ha)

This classification is applicable for an oil palm plantation with an area larger than 500 ha and managed as a single unit. The management is responsible for implementing the MSPO's standard requirements and attaining MSPO certification. The management units are responsible for commissioning their own HCV assessments and implementing HCV management and monitoring actions according to the MSPO HCV guidelines.

This refers to single management units that are more than 500 ha. Therefore, each management unit requires a separate HCV Assessment.

2. 3-2 (B.i) Consolidated multiple management units (> 500 ha)

This classification is applicable for oil palm plantations/estates owned by a single parent company with separate estates, with each estate being larger than 500 ha and considered as independent management units. The 'consolidated' classification refers to the distance between each estate in the group. For this classification, the estates either share common boundaries or are less than 5km apart. The management unit is responsible for implementing the MSPO's standard requirements and attaining MSPO certification.

This refers to groups of multiple estates (> 500 ha) which share common boundaries or have a maximum distance of 5km between concession boundaries. Therefore, each consolidated management unit requires a separate HCV Assessment.

3. 3-2 (B.ii) Dispersed multiple management units (> 500 ha)

This classification is applicable for oil palm plantations/estates owned by a single parent company with separate estates with each estate larger than 500 ha and considered as an independent management unit. The 'dispersed' classification refers to the distance between each estate. For this classification, the boundary of one estate must be more than 5 km away from the boundary of another. The management unit is responsible for implementing the MSPO's standard requirements and attaining MSPO certification.

This refers to groups of multiple estates which are dispersed (> 5 km) within a landscape. Therefore, each management unit requires a separate HCV Assessment.

3.1.5 Part 4-1 – Palm Oil Mill

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This classification is applicable to all existing palm oil mills.

HCV Assessment is not required for this category.

3.1.6 Part 4-2 – Palm Oil Processing Facilities

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This classification is applicable to all existing palm oil processing facilities (Refineries, kernel crushers, biodiesel plants, product manufacturers etc.).

HCV Assessment is not required for this category.

3.2 Who can Conduct the HCV Assessment?

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For existing oil palm plantings, the management has the following options:

1. To conduct the HCV assessments using internal resources, or
2. To utilise external expertise to undertake the HCV assessments.

3.2.1 HCV Assessment

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The internal/external team should comprise of members with the expertise in the following fields:

- **Mandatory** – MSPO Registered Lead HCV assessor (Please refer to MSPO's HCV procedure document and/or contact MSPO for clarification),
- GIS (Geographical Information System) and remote sensing,
- Ecology,
- Zoology,
- Botany, and
- Social Science.

The members of the team should be familiar with HCVs and the consultative approach required for the assessment.

3.2.2 Rapid HCV Assessment

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The internal/external team should comprise of members with the expertise in the following fields:

- **Mandatory** – MSPO Registered Lead HCV assessor (Please refer to MSPO's HCV procedure document and/or contact MSPO for clarification)
- At minimum two field experts with the ability to identify flora and fauna species.

The members of the team should be familiar with HCVs and the consultative approach required for the assessment.

Part 2 Guidance for HCV Assessment

Methods, Identification, Mapping, Management & Monitoring, Threats, and Reporting

4 HCV Assessment

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The HCV assessment process flow is presented in Chart 4.1. It provides the fundamental linear flow that must be taken into consideration while planning and finalising the HCV assessment and reporting. It is a simplified representation of the stages required in fulfilling the MSPO HCV requirements. Details of the stages are presented in the following sections.

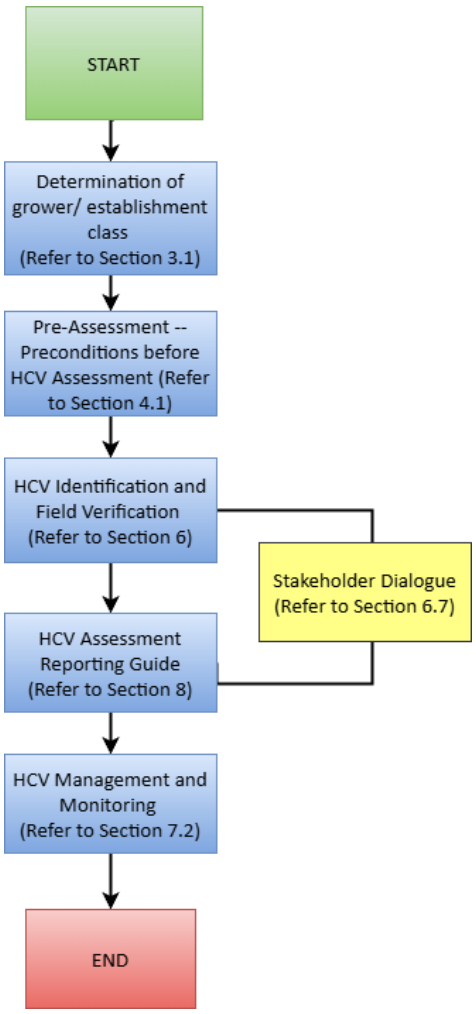

Chart 4.1: General Flow of the Full HCV Assessment

4.1 Pre-Assessment (Preconditions before HCV Assessment)

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Prior to conducting an HCV assessment, organisations and assessors are required to undertake an exercise that involves preliminary information gathering, secondary data analysis and planning a scoping study. The following information must be recorded and presented as part of this process:

1. To start, the organisation must ensure it has legal rights to manage oil palm plantations. The HCV Assessment scope must be conducted for the declared legal extent of the operations. Any increase in the extent must be declared and the HCV assessment must be expanded to the additional areas.

2. The organisation shall demonstrate their commitment to implement the MSPO standard. This should be presented in the form of a policy document.
   Note: All certification units shall demonstrate proof of their commitment towards implementing the MSPO standard requirements as stated in the MS 2530 Criterion 4.1.1, "*There shall be a policy on the implementation of Malaysian Sustainable Palm Oil (MSPO) by the organisation to demonstrate its commitment. The policy shall emphasise commitment to continual improvement.*"

3. The organisation shall commit to undertaking an HCV assessment in existing oil palm planting within its legal boundary. Any form of replanting shall only commence after HCV assessment reports have been finalised and accepted. For the acceptance by MSPO, a Stakeholder Dialogue must be conducted and recorded before the finalisation and submission of the HCV report.

4.1.1 Baseline Information

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The information gathering should be undertaken by the assessors in order to get a preliminary understanding of the potential HCVs that could be present within and surrounding the oil palm and establishment boundaries. Data from the pre-assessment will be used for building a preliminary ecological model and to generate a preliminary ecosystem map. The ecosystem map is then used to plan the stratified sampling ground survey points, identify locations of sampling points, types of land use, river systems, and hilly areas of the site. The pre-assessment will then determine how intense the HCV assessment should be based on the oil palm operation's impact on the environment.

Baseline information is required as the first part of the pre-assessment phase. The list of information required is presented in Table 4.1. The organisations and the assessors should provide this information in the HCV assessment report.

Table 4.1: Baseline Information Required

Topic	Information required
Profile Information	1. Information on growers: • Types of growers (organised smallholder/ oil palm plantation). • Parent company. • Company/ group name. • Entity/ cluster name. • Address of the management unit. • Location (sub-district, district, division, state). • Coordinates of oil palm plantation. • Person-in-charge (PIC) - full name, position, contact number, email.
Background information	1. Sustainability-related certification information. • Types of certifications acquired (RSPO/ MSPO), if any. • Group/ individual certification. • Certification date (if applicable). • Certification number (if applicable). • Validity period of certification (if applicable). 2. Legal permit (land title & licence) – All units must show that they have legal rights to use land for oil palm development. 3. History of land conflict (if any). 4. Total legal concession boundary extent. 5. Total planted area (if planted). 6. Year of planting. 7. Is there any new oil palm planting after 31st December 2019? 8. The extent of new oil palm planting (if any). 9. Mill information- which mill(s) do you supply to? • Mill name. • Location. • Sustainability-related certification information (RSPO/ MSPO).

Topic	Information required
	10. Updated stakeholder list (refer to Appendix F (Section 15.6)) – to provide in the appendix of the HCV assessment report: • Contact person (full name & position), • Full name of organisation/ department, and • Address, contact detail & email address.

Based on the information collected and analysed in the pre-assessment exercise, the assessors will be required to conduct a gap analysis to identify any remaining data needed. This information will then be used to produce a scoping study.

4.1.2 Determination of HCV Assessment Scope (AOI)

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The Area of Interest (AOI), in terms of an HCV assessment, can be defined as a non-existent boundary which encloses the concessions requiring the assessment, as well as a defined wider landscape surrounding the entirety of the concessions. It is important to consider the characteristics within the AOI in order to assess the impact due to palm oil operations. Evaluating the condition and continuity of HCV presence beyond the boundary is important to protect the HCV continuity within and outside the boundary. AOI beyond the concession boundary is strictly for assessing and supporting the identification of HCV within the concession. **There is no requirement to identify and manage HCVs beyond the concession boundary.** Since this document adopts a practical approach, the minimum defined AOI for each grower and production sub-category is presented in Table 4.2.

The Area of Interest (AOI) must be defined prior to identifying the HCV values within the legal concession. The assessment team is advised to record essential information for the pre-assessment as listed below:

- Land Use and Land Cover identification of the AOI,
- Historical land use of the AOI,
- Condition of natural vegetation (intactness),
- Types of ecosystems,
- Soil types,
- Geology and Topographic characteristics - elevation and slope consideration,
- Riverine system, watershed,
- Protected areas,
- Important Bird Areas and Bird Migratory sites,
- Permanent Forest Reserves, Gazetted and Degazetted Forest Reserves, Central Forest Spine with Primary and Secondary linkages, Heart of Borneo, Wildlife Sanctuaries, Ramsar Sites, Peatlands,
- UNESCO sites,
- Indigenous / *Orang Asli* Reserves, Native Customary Rights (NCR) Land, and
- Social setting of the areas – socioeconomic considerations and resources of the land for basic livelihood.

Table 4.2 The Minimum Defined AOI for Each Grower and Production Categories

MSPO Revised Category	Category Code	Grower and Production Categories	Defined AOI
Part 2-1 Independent Smallholders	**2-1 (A)**	SPOC	**50 metres** for each proposed development unit's outermost boundary.
	2-1(B)	Non-SPOC	**50 metres** for each proposed development unit's outermost boundary.
Part 2-2 Organised Smallholders	**2-2 (A.i)**	Dispersed organised smallholder group (≤100 ha)	**50 metres** for each proposed development unit's outermost boundary.
	2-2 (A.ii)	Consolidated cluster of organised smallholders' group (≤ 100 ha)	**50 metres** for each proposed development cluster's outermost boundary.
	2-2 (B.i)	Dispersed organised smallholder group (>100 ha)	**50 metres** for each proposed development unit's outermost boundary.
	2-2 (B.ii)	Consolidated cluster of organised smallholders' group (> 100 ha)	**50 metres** for each proposed development cluster's outermost boundary.
Part 3-1 Oil Palm Plantations (40.46 hectares to 500 hectares)	**3-1 (A)**	Single management unit (40.46 – 100 ha)	**100 metres** for each proposed development unit's outermost boundary.
	3-1 (B.i)	Single management unit (101 – 500 ha)	**100 metres** for each proposed development unit's outermost boundary.
	3-1 (B.ii)	Consolidated multiple management units (101 – 500 ha)	**100 metres** for each proposed development unit's outermost boundary.
	3-1 (B.iii)	Dispersed multiple management units (101 – 500 ha)	**100 metres** for each proposed development unit's outermost boundary.
Part 3-2 Oil Palm Plantations (> 500 hectares)	**3-2 (A)**	Single Management unit (> 500 ha)	**1 kilometre** for each proposed development unit's outermost boundary.
	3-2 (B.i)	Consolidated multiple management units (> 500 ha)	**1 kilometre** for each proposed development unit's outermost boundary.
	3-2 (B.ii)	Dispersed multiple management units (> 500 ha)	**1 kilometre** for each proposed development unit's outermost boundary.
Part 4-1: Palm Oil Mill	**4.1**	Palm Oil Mills	HCV Assessment is not applicable to this category.
Part 4-2: Palm Oil Processing Facilities	**4.2**	Palm Oil Processing Facilities (Refineries)	HCV Assessment is not applicable to this category.

5 HCV Assessment Methods

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The methods provided for assessing HCV in existing oil palm plantings are similar to Full HCV Assessments for new oil palm plantings/establishments. This is to maintain the credibility of HCV assessments in Malaysia. Existing oil palm plantings will have lesser HCV presence as compared to forested areas being converted for oil palm establishments. However, the fact remains that there is potential for areas with HCV attributes within the existing oil palm plantings. The scale of assessment will be reduced, but the methods and steps required will remain the same. It is predicted that, even though the methods are similar, the field assessment and subsequent reporting will be a rapid exercise that requires less effort comparatively, especially when it is done as an internal exercise.

The HCV Assessment methods can be divided into 3 components; (i) biodiversity survey for HCVs 1 to 3, (ii) evaluation of ecosystem services for HCV 4 and (iii) socio-economic and cultural survey for HCVs 5 and 6. To ensure a comprehensive data collection process, the assessors shall undertake the assessment in 3 stages. These stages are the desktop study, field survey/ verification and data analysis. Chart 5.1 shows the HCV pathway from the desktop study to data analysis of each component of the HCV assessment. This HCV assessment method is a recommendation that is prescriptive to allow standardising of output. If there are alternative methods to some of the components of this document's prescription, assessors are permitted to use them as long as the quality of the output meets the same standard requirement. Saying this however, this guidance document provides the minimum standard to conduct an HCV assessment under the MSPO scheme.

5.1 Desktop Study

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The desktop study should involve a compilation of all available data – reports, maps, administrative and legal documents related to the land use of the area of interest and their incorporation into a GIS database. This is followed by the generation of various 'layers' of information and maps, which are used for the determination of sample points for field surveys and further analysis.

The first step for HCV assessment is to build a land cover map, which would allow the assessment team to determine the potential presence of HCV within its oil palm planting areas. For developed areas, the land cover mapping exercise should take into consideration fragments (remnant ecosystems present within the boundaries of the concession), and its AOI. To facilitate localised land cover mapping, landscape-level maps detailing forest ecological types are compiled in a portfolio and presented in Appendix D (Section 15.4). The content of these maps will provide assessors with an understanding of the ecology of the area and the forest types present, either in the AOI or within the concession boundary.

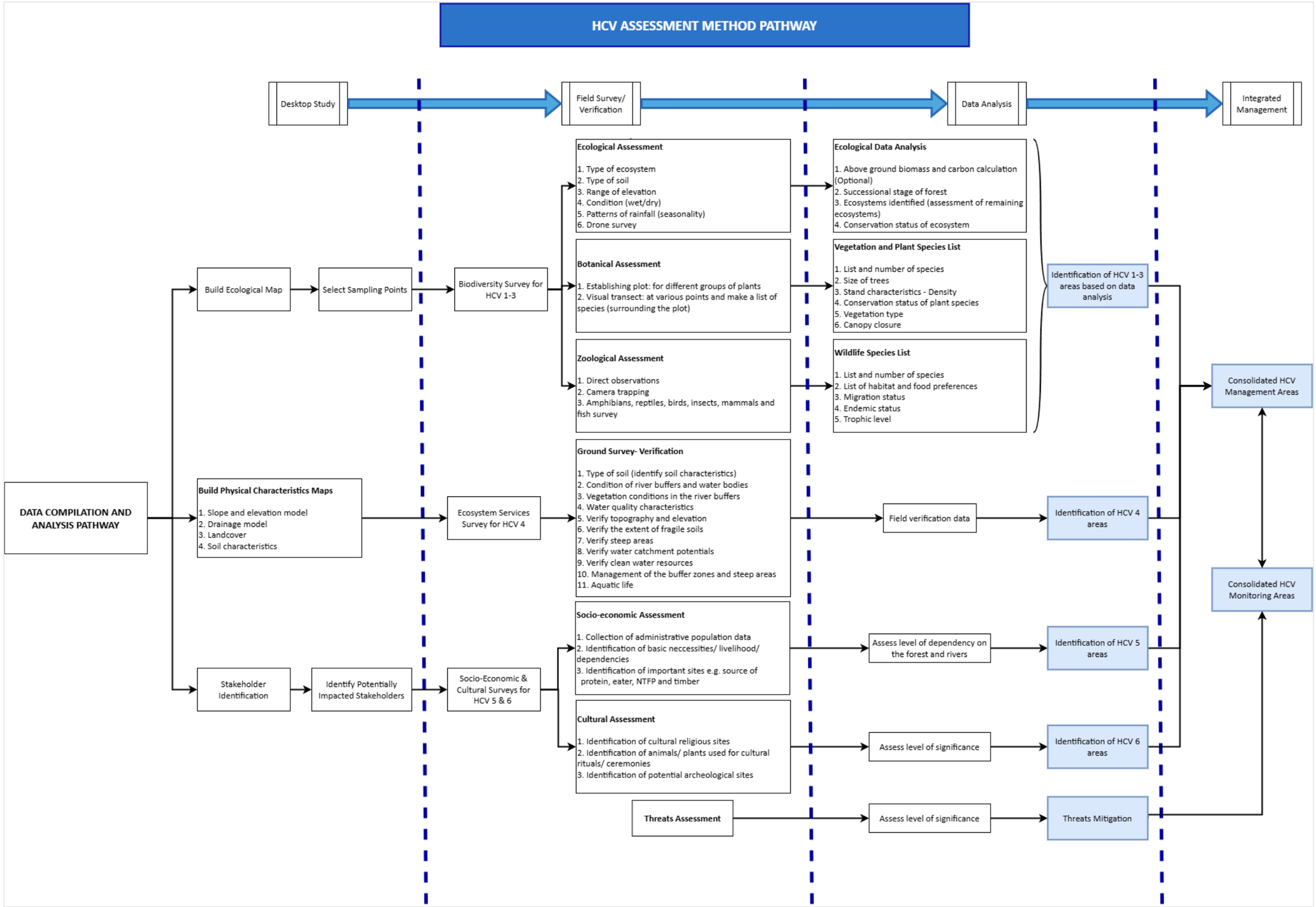

Chart 5.1: HCV Assessment Method Pathway

5.2 Field Assessment for HCV 1, 2 and 3

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Field surveys for biodiversity should be conducted to assess the status of ecosystems, flora, and fauna on-site. The field assessment methods should take into account the size of the site where the assessment is undertaken. The practical approach should consider the landscape of the site, whether there are patches or areas of forests nearby and whether there are corridors with natural vegetation (forest trees and pioneer species) which can facilitate the movement of animals and dispersal of seeds into and through the site. A biodiversity survey consists of 3 assessments, namely the ecological, botanical, and zoological assessments. These assessments are interrelated in terms of identifying the presence of HCVs 1, 2 and 3. The methodology to conduct these assessments are elaborated in the following sections.

5.2.1 Ecological Assessment

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The ecological assessment is conducted in 3 phases. In the first phase, a desktop study is undertaken to obtain available published reports and papers related to the area to determine what is present in the area and its landscape (AOI) and also any other information related to historical, current, and potential changes in the land use. There should be a general description of the site; location (district or state), area, topography and terrain, altitude range, soil type and condition, presence of streams and rivers, 'age' of crop(s) planted previously (if any) and historical land use.

The second phase is to conduct a field survey to verify what is currently on the ground, and to confirm information derived from the desktop study. It is also to obtain additional information such as existing land use, ecosystems remaining in the area, plants and animals still found naturally in the area, changes to rivers and streams, natural forest and their condition. Current and potential threats to the ecosystem should be identified in the field or gathered from interviews.

The third phase is data analysis. This involves the compilation of information collected from the desktop study and field survey(s) to provide the latest condition(s) found in the AOI; this must be related to the existing land use and to identify any potential areas for conservation of HCVs. This phase would include an evaluation of the findings and comparisons with recorded or published information on conservation status of species (plants, animals, and ecosystems) to determine the presence of HCVs in the AOI.

Ecological assessments are in the form of identifying any fragments of ecosystems present in the assessment sites, and the descriptions of these ecosystems are based on edaphic factors, hydrological regimes, state of disturbance, and most importantly, the flora and fauna presence. Ecological assessments are undertaken concurrently with both botanical and wildlife assessments. These form the descriptors of the habitat and ultimately the biodiversity of the sites.

5.2.2 Botanical Assessment

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Using the information gathered from the scoping field survey and desktop study, the field sampling sites can be selected to ensure that all present ecological model types are represented and surveyed. Additional sampling points can be identified should there be any access constraints during fieldwork.

The three practical approaches applicable are:

- establishing sample plots and detailed enumeration,
- a visual transect walkabout/ trekking with regular stops for notes and spot sampling, and
- interviews with surrounding local communities and residents.

Current and potential threats to the ecosystem should be identified in the field or gathered from interviews. The number of sampling points may vary according to the variability of the vegetation types found in the location. The starting point of sampling lines or transects are selected using the maps generated from the preliminary land cover analysis. Photographic records should be taken when/wherever possible. The height of the vegetation will then be determined using a clinometer. Table 5.1 shows the proposed plot size and the data collection required. In established plantings, the number of sites that need to be sampled depends on the spatial distribution of the vegetation fragments and river buffers. For instance, in established plantings, if there is only one site that is vegetated, then it is probable that only one plot is required. The number of plots to sample is left to the discretion of the HCV assessors. Decisions should reflect the size, geometry, degradation and distribution of vegetated fragments in established plantings. **When the HCV assessors choose any alternative sampling method, details of the method must be submitted to the MSPO Secretariat for verification and acceptance.** Failure to do so could result in the HCV assessment report being declared invalid and rejected. **Biomass and carbon stock measurements are optional and not required in the HCV assessment.**

Table 5.1: Proposed plot size and the data collection required for botanical assessment

Items	HCV Assessment Scale			
	40.46 – 100 ha	101 – 500 ha	501 – 1,000 ha	≥ 1,001 ha
Sample Plot size (m)	20x20 m	20x20 m	30x30 m	30x30 m
Nested Subplots	10x10 m	10x10 m	10x10 m	10x10 m
No. of sample plots	The number of sample plots should be based on the size, geometry, degradation and distribution of vegetated fragments in established plantings.			
Enumeration data of trees	Detailed plot enumeration: • Identify family and species, • DBH of all trees (>10 cm DBH within 20m x 20m plots.	Detailed plot enumeration: • Identify family and species, • DBH of all trees (>10 cm DBH) within 20 m x 2m plots.	Detailed plot enumeration: • Identify family and species, • DBH of all trees (>10 cm DBH) within	Detailed plot enumeration: • Identify family and species, • DBH of all trees (>10 cm DBH) within 30 m x 30 m plots.

Items	HCV Assessment Scale			
	40.46 – 100 ha	101 – 500 ha	501 – 1,000 ha	≥ 1,001 ha
	Detailed subplot enumeration: • Identify family and species, • DBH of all trees (5.0 – 9.9 cm DBH) within 10 m x10 m subplots.	Detailed subplot enumeration: • Identify family and species, • DBH of all trees (5.0 – 9.9 cm DBH) within 10 m x10 m subplots.	30 m x 30 m plots. Detailed subplot enumeration: • Identify family and species, • DBH of all trees (5.0 – 9.9 cm DBH) within 10 m x10 m subplots.	Detailed subplot enumeration: • Identify family and species, • DBH of all trees (5.0 – 9.9 cm DBH) within 10 m x10 m subplots.
Listing of non-tree vegetation:	Listing of palms, bananas, gingers, pandans, epiphytes, ferns, shrubs, and herbs.	Listing of palms, bananas, gingers, pandans, epiphytes, ferns, shrubs, and herbs.	Listing of palms, bananas, gingers, pandans, epiphytes, ferns, shrubs, and herbs.	Listing of palms, bananas, gingers, pandans, epiphytes, ferns, shrubs, and herbs.
Results:	Species list with conservation and protection status. Plot results: stand density, basal area, **biomass (AGB- Above Ground Biomass)***, and **carbon stock***.	Species list with conservation and protection status. Plot results: stand density, basal area, **biomass (AGB- Above Ground Biomass)***, and **carbon stock***.	Species list with conservation and protection status. Plot results: stand density, basal area, **biomass (AGB- Above Ground Biomass)***, and **carbon stock***.	Species list with conservation and protection status. Plot results: stand density, basal area, **biomass (AGB- Above Ground Biomass)***, and **carbon stock***.

Biomass and carbon stock measurements are optional and not required in the HCV assessment.

5.2.2.1 Details on Field Methods

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A. Size of Plots to use

A1. Plot of 20m x 20m for sampling in HCV Assessment Scale: 40.46 – 100 ha

-Refer to Figure 5.1 below for the 20m x 20m plot.

- Obtain the GPS location (Red Dot in *Figure 5.1: 20m x 20m Plot* with *4 10m x 10m subplots*) of the plot.
- Use the GPS location as the southwestern corner of the plots.
- Establish a plot 20m by 20m with one side facing North and another side facing East. Verify the correct shape by ensuring that the diagonal(s) are 28.28m. Divide the plot into 4 10m x 10m subplots. Verify the correct shape by ensuring that the diagonal(s) of the subplots are 14.14m.
- Mark the corners of each 10m x 10m subplot with survey posts.

A2. Plot of 20m x 20m for sampling in HCV Assessment Scale: 101 – 500 ha

-Refer to Figure 5.1 below for the 20m x 20m plot.

- Obtain the GPS location (Red Dot in *Figure 5.1: 20m x 20m Plot* with *4 10m x 10m subplots*) of the plot.
- Use the GPS location as the southwestern corner of the plots.
- Establish a plot 20m by 20m with one side facing North and another side facing East. Verify the correct shape by ensuring that the diagonal(s) are 28.28m. Divide the plot into 4 10m x 10m subplots. Verify the correct shape by ensuring that the diagonal(s) of the subplots are 14.14m.
- Mark the corners of each 10m x 10m subplot with survey posts.

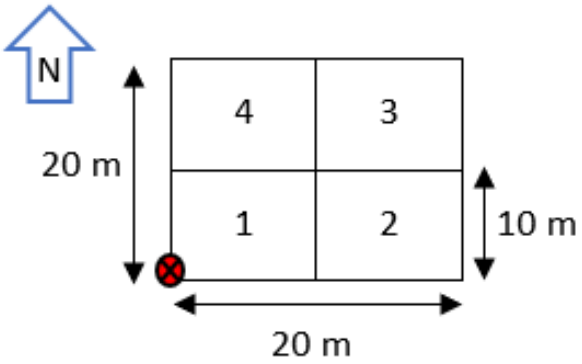

Figure 5.1: 20m x 20m Plot with 4 10m x 10m subplots

A3. Plot of 30m x 30m for sampling in HCV Assessment Scale: 501 – 1,000 ha

-Refer to Figure 5.2 below for the 30m x 30m plot.

- Obtain the GPS location (Red Dot in *Figure 5.2: 30m x 30m Plot with 9 10m x 10m subplots*) of the plot.
- Use the GPS location as the southwestern corner of the plots.
- Establish a plot 30m by 30 m with one side facing North and another side facing East. Verify the correct shape by ensuring that the diagonal(s) are 42.42m. Sub-divide the plot into 9 10m x 10m subplots. Verify the correct shape by ensuring that the diagonal(s) of the subplots are 14.14 m.
- Mark the corners of each 10m x10 m plot/ subplot with survey posts.

A4. Plot of 30m x 30m for sampling in HCV Assessment Scale: ≥1,001 ha

-Refer to Figure 5.2 below for the 30m x 30m plot.

- Obtain the GPS location (Red Dot in *Figure 5.2: 30m x 30m Plot with 9 10m x 10m subplots*) of the plot.
- Use the GPS location as the southwestern corner of the plots.
- Establish a plot 30m by 30 m with one side facing North and another side facing East. Verify the correct shape by ensuring that the diagonal(s) are 42.42 m. Sub-divide the plot into 9 10m x 10m subplots. Verify the correct shape by ensuring that the diagonal(s) of the subplots are 14.14 m.
- Mark the corners of each 10 m x10 m plot/ subplot with survey posts.

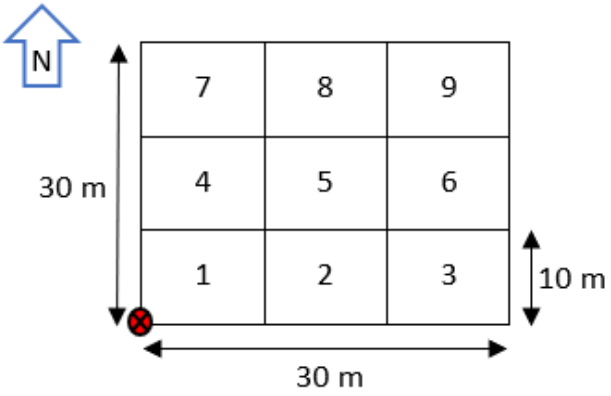

Figure 5.2: 30m x 30m Plot with 9 10m x 10m subplots

B. Enumeration of trees in the plots/ subplots

B1. 20m x 20m plots in HCV Assessment Scale: (40.46 – 100 ha) and (101 – 500 ha)

-Refer to Figure 5.1 for the 20m x 20m plot.

- Systematically identify all trees within the plot(s) with DBH above 10.0 cm.
- Record the scientific name (genus and species), the common name and the DBH to the nearest mm (e.g., the record should show 7.8 cm).
- Enumerate systematically from subplot 1 to subplot 4.
- Select 1 subplot (from the 4) and enumerate all trees with DBH between 5.0 and 9.9 cm – species, common name and DBH. (Note that trees with DBH above 10.0 cm have already been enumerated above).
- Within the same subplot selected, make a list of all non-tree species found (scientific name and common name).

B2. 30m x 30m plots in HCV Assessment Scale: (501 – 1,000 ha) and (≥1,001 ha)

-Refer to Figure 5.2 for the 30m x 30m plot.

- Systematically identify all trees within the plot(s) with DBH above 10.0 cm.
- Record the scientific name (genus and species), the common name and the DBH to the nearest mm (e.g., the record should show 15.8 cm).
- Enumerate systematically from subplot 1 to subplot 9.
- Select 3 subplots (from the 9) and enumerate all trees with DBH between 5.0 and 9.9 cm – species, common name and DBH. (Note that trees with DBH above 10.0 cm have already been enumerated above).
- Within these same subplots selected, make a list of all non-tree species found (scientific name and common name).

C. Compilation of results from the field surveys

C1. Set up a database of the field records, preferably using a spreadsheet. Information that should be recorded includes the name of site, size of site, organisation class; location by state and GPS of 'Centroid' of the assessment site. For all plots, transfer field data into a spreadsheet and verify.

C2. For each record of plant names, include the 'family' of the plant, which can be reliably obtained from published books. Also establish conservation status (IUCN), CITES, Protection status of the species as well as the endemicity of the plants (whether local, migrant, or invasive). Create a separate list of species with RTE status (Red List categories of CR, EN and VU, CITES I and II, and Nationally Protected Species) which confers the species and the area as HCV species and area.

C3. Further processing of the data involves:

- Estimating the density of trees in each category, (converted to number of trees/ha),
- Mean DBH of all the trees in the plot(s),
- Basal area of the trees in the stand/ plot (converted to m^2/ha),
- Biomass of trees in the plot (converted to t/ha) (**Optional**), and
- Carbon content in the plot (tC/ha) (**Optional**).

These stand characteristics will provide a 'picture' of the stand/ plot by indicating the form and structure of the vegetation found and whether the area is early, mid or late succession and its recovery after any previous disturbance.

The data analysed must be listed and prioritised according to IUCN's Red List (of RTE species), CITES and national protection status and then according in alphabetical order of families, genera, and species. The Red List must follow the order of CR, EN and VU and CITES (Appendices I and II). The complete listing of species must be placed in the appendix of the HCV assessment report, and the following format could be adopted (Table 5.2):

Table 5.2: List of plant species recorded in the assessment area

No.	Family	Genus	Species	IUCN Red List category	CITES	National protection	Endemicity

(Source: MEC)

A summary table could be provided in the main report as shown in Table 5.3.

Table 5.3: Numbers of plant species based on conservation status found in the assessment area

No.	Category	Conservation Status	Species Count
1	IUCN Red List	Critically Endangered - CR	
2		Endangered – EN	
3		Vulnerable - VU	
4	CITES	Appendix I	
		Appendix II	
5	Protected under National Legislation	*<Insert legislation reference>*	
6	Endemic species	*<Endemic to country/island/ or any specific area>*	
Total			

(Source: MEC)

Stand/ plot characteristics results can be tabulated as shown in Table 5.4 below (values standardised to per ha basis).

Table 5.4: Density, basal area, biomass (AGB) and carbon content of plots surveyed in the assessment area

No	Plot ID	Density (no/ha)			Basal Area (m^2/ha)			Biomass (t/ha)*			Carbon (t/ha)
		DBH >10 cm	DBH 5 -10 cm	Total	DBH >10 cm	DBH 5 - 10 cm	Total	DBH >10 cm	DBH 5 - 10 cm	Total	
1											
2											

(Source: MEC)

Biomass measurement is optional and not required in the HCV assessment.

Data Analysis

Compilation of vegetation types and species list for different vegetation types; dominant tree families and species, and common herb and shrub species will indicate the vegetation types of the area surveyed. Stand characteristics, obtained from detailed enumeration of 30m x 30m plots, include density of trees, basal area, etc. will indicate the state or condition of the stand, whether in an early or late succession stage as well as the state of disturbance of the area. Conservation status of plant species identified can be obtained from references to determine RTE species present in the area. Current and potential threats should be analysed.

5.2.3 Zoological Assessment

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A zoological assessment must be conducted in conjunction with the ecological and botanical assessments. This assessment will also be conducted by visiting each of the sampling points and recording the presence of any wildlife species within and around the site through a variety of observation methods. Table 5.5 below displays the methods of data collection and the considerations that should be taken while conducting this assessment.

Table 5.5 Methods of Data Collection and its Considerations

Method	Data Collection	Considerations
Direct Observation	Species presence can be recorded through the following activities: • Direct observations and photographs. • Calls. • Tracks and signs (i.e., nesting grounds, prints, droppings, food residue, markings). • Threats Identification.	• The survey should be conducted during daytime, and the day active vertebrates and invertebrates should be recorded. • A few surveys should be conducted at night to assess nocturnal species in the area.
Camera traps (optional)	• Photographic records.	Species captured by camera traps is an assessment option for large sites and forested areas. The photographs of species captured should be included in the HCV assessment report.
Interviews	• Salt lick sites. • Sightings of wildlife. • Hunting activities for recreation and consumption. • Illegal activities: poaching and trading. • Threats observed by locals and residents.	Interviews with the landowners, field personnel and even the local community/ indigenous peoples can provide insight into additional ecological factors that cannot be procured by direct observations.

The species list should provide baseline data for which future monitoring can quantify changes in species richness, and model changes in species and ecological equilibrium levels. The results give a baseline list for the animal species present and allow the team to build a model of the current biological community and identify the habitat conditions on which this community depends on. Since any alteration in habitat will have an effect on the dependent animal communities, the task for this assessment is also to address stakeholder expectations for conservation and develop a management and monitoring plan minimising the significance of future impacts from plantation development.

Data Analysis

Compile a list of wildlife according to main taxa – fishes, amphibians and reptiles, birds, and mammals. The list shall include information regarding:

- List and number of species
- Listing of habitat and food preferences
- Migration status
- Endemic status
- Conservation status of wildlife species

This listing should be placed in the appendix of the HCV assessment report, and the following format can be adopted (Table 5.6):

Table 5.6: List of fauna species recorded in the assessment area

No.	Class	Family	Scientific Name	Common Name	CITES	IUCN Red List category	National Protection	Endemicity	Resident /Migrant
1									
2									

(Source: MEC)

A summary table could be provided in the main report as shown in Table 5.7:

Table 5.7: Numbers of fauna species based on conservation status found in the assessment area

No.	Category	Conservation Status	Amphibian	Bird	Fishes	Mammals	Reptile	Total
1	**IUCN Red List**	Critically Endangered – CR						
		Endangered – EN						
		Vulnerable – VU						
2	**CITES**	Appendix I						
		Appendix II						
3	**Protected under National Legislation**	*<Insert legislation reference>*						
4	**Endemic species**	*<Endemic to country/island/ or any specific area>*						
5	**Migrant species**	*<Migrant to specific area>*						

(Source: MEC)

Table 5.8 summarises the 3 phases required for site description and HCV identification. It incorporates not only ecological assessments, but also the supporting botanical and zoological data, and analysis required for HCV assessments. Details for botanical and zoological assessments are provided in the following pages.

Table 5.8 Data Required According to Assessment Phases

Desktop study	Field Survey	Data Analysis
Site physical description: 1. The climatic conditions. 2. Geomorphology and soil types. 3. Rainfall and hydrology. 4. Patterns of rainfall (seasonality). 5. Current land cover. 6. Preliminary selection of sampling points for field surveys. 7. Range of elevation and topography. 8. Type of soil, terrain, altitude range. 9. Analysis of most recent satellite imagery. 10. Establishing chrono-sequence of change through satellite imagery.	Determine sampling plot locations and procedure: 1. Type of ecosystems found, short description of each, with photos. 2. Condition (wet/ dry). 3. Condition of slopes. 4. Establish plots or sampling points for botanical survey based on locations selected from desktop study; can be replaced if the point selected cannot be sampled. 5. Enumeration: listing for small assessment sites and complete enumeration of large assessment sites. 6. Zoological Survey: use of transects. Record observations from footprints, droppings, feathers, marks on trees and on ground, calls of animals and birds, nests, and breeding areas, etc. 7. Camera Trapping. 8. Drone Survey. 9. Information collected from interviews.	1. List of plant species, DBH (where required). 2. List of animal species; cross referenced with published sources habitat and food preferences which can provide information on the type of habitat. 3. Conservation status and protection status of species. 4. Calculation of mean DBH, stand basal area, above ground biomass (AGB), carbon content (Optional). 5. Assessment of forest types; succession stage of vegetation. 6. Ecosystems identified (assessment of the remaining ecosystems). 7. Conservation status of ecosystem. 8. Presence of HCVs 1-3 and conservation status of area.

5.3 Ecosystem Services for HCV 4

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5.3.1 Data Collection Methodology

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In assessing the presence of HCV 4, a holistic approach should be undertaken by analysing both primary and secondary data to determine the ecosystem services present at the AOI. This includes the generation of slope and elevation models from Digital Elevation Model (DEM), as well as cross-checking this analysis through a map overlay exercise and ground-truthing (Refer to Table 5.9).

For HCV 4 assessment, mapping of hydrology, topography, elevation, land cover, and soil should be done at the preliminary stage and revised after the field verification. The existence of ecosystem services (which include the utilisation of water sources, fire prevention, and vulnerable soils) can be verified through the desktop analysis, and information gathered during the field survey and interviews. Information on the condition of water sources, buffer zones and water quality characteristics should also be collected. Climatic data of the area, the ability of ecosystems to act as firebreaks and their protection functions should be analysed for ecosystem services consideration. Erosion-prone locations or steep slopes, as well as soil conditions may be identified.

Table 5.9: Data required to identify ecosystem services (HCV 4)

Desktop Study	Field Survey/ Verification
1. Generate the following maps: a. Slope and elevation model b. Drainage model c. Land cover d. Soil characteristics	1. Type of soil (identify soil characteristics) 2. Condition of river buffers and water bodies 3. Vegetation condition in river buffers 4. Water quality characteristics 5. Verify topography and elevation 6. Verify extent of fragile soils 7. Verify steep areas 8. Verify water catchments potentials 9. Verify clean water resources 10. Management of the buffer zones and steep areas 11. Aquatic life

Data analysis

Mapping of slope and elevation model, drainage model, water catchments, land cover and soil characteristics should be revised after the field verification, if any discrepancies are present.

5.4 Socio-Economic and Cultural Surveys for HCV 5 and 6

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5.4.1 Data Collection Methodology

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The socio-economic and cultural assessment should be conducted through interviews of local communities/ indigenous peoples and stakeholders within the area of interest (AOI). The assessment should include their dependence on the forest and rivers for their livelihood. Data collection should include village administration, their livelihood pattern, identifying the local communities' and/or indigenous people's dependency on forest for their basic needs and identifying sustainable uses of natural resources within the AOI. Current and potential threats to the HCV 5 and 6 resources should be identified in the field or gathered from interviews.

This assessment should involve various field survey techniques such as:

- field observations,
- transect walks, and
- in-depth interviews with key informants and focus group discussions.

Table 5.10 shows a summary of the data collection method to assess the presence of HCV 5 and 6.

Table 5.10 HCVs 5 and 6 Data Collection Method

HCV	Assessment	Data Required	Data Collection Method
HCV 5	Socio-economic assessment	1. Village administrative/ population data 2. Ethnicity, religion, and beliefs 3. Local culture and traditions 4. Socio-economy of local communities 5. Livelihood patterns 6. Land ownership 7. Dependency on natural resources (e.g.: water sources, forests, or other natural ecosystems) 8. Presence of indigenous hunter-gatherers 9. Identification of basic necessities/ livelihood/ dependencies 10. Identification of important sites e.g., source of protein, NTFP and timber. 11. Threats to the natural resources	1. Focus Group Discussion (FGD) with local communities and indigenous people 2. In-depth interviews with key informants 3. Field observation 4. Transect walks 5. Document sites by recording the GPS coordinates and taking photographs
HCV 6	Cultural Assessment	1. Local community ethnicity, religion, and beliefs	1. Focus Group Discussion (FGD) with local

HCV	Assessment	Data Required	Data Collection Method
		2. Local cultures, traditions, and practices 3. Socio-economy of local communities 4. Land ownership 5. Cultures and traditions practiced by local communities 6. Natural resources needed to carry out religious or spiritual resources 7. Significant historical sites according to local communities 8. Sites with official designation by national or an international agency 9. Identification of cultural or religious sites 10. Identification of animals and plants used for cultural rituals or ceremonies 11. Threats to the sites	communities and indigenous peoples 2. In-depth interviews with key informants 3. Field observation 4. Transect walks 5. Document sites by recording the GPS coordinates and taking photographs

Data Analysis

Data analysis should also include the level of dependency and significance to the local community. All data collected and analysed from the survey should be verified in a public consultation and targeted focus group discussion with relevant internal and external stakeholders.

6 HCV Attributes and its Relevancy

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In the Malaysian oil palm landscape, HCV attributes relevancy has been summarised in Table 2.4, Section 2.2. This provides guidelines for HCV identification and field verification. There is a potential of identifying internationally recognised HCV attributes in existing oil palm plantings, especially secondary and logged forest conversion. Assessors are advised to be familiar with the content of Table 2.4 before proceeding with the field assessment and analysis.

Note: Smallholders or Growers (with less than 100 ha) are only required to undertake the Rapid HCV Assessment and therefore, the relevancy of HCV attributes for 2-1 (A), 2-1 (B), 2-2 (A.i), 2-2 (A.ii) and 3-1 (A) were not taken into consideration in the HCV relevancy tables in the following section.

6.1 HCV 1: Species Diversity

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Adapted HCV 1 Definition from HCVN
Concentrations of biological diversity including endemic species, and Rare, Threatened or Endangered (RTE) species that are significant at global, regional, or national levels.

HCV 1 focuses on species richness and diversity. Most HCV 1 areas are forested areas that provide essential habitats for these species. To assess the presence of HCV 1 within the concession, the following considerations should be analysed and justified in the HCV assessment report. Table 6.1 shows the attributes for Assessment of HCV 1 identification.

Table 6.1: Attribute consideration for HCV 1 presence.

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
1.1	High species richness, diversity or uniqueness within a defined area when compared with other sites within the same biogeographic area.	Species Richness / Diversity	In developed areas, species richness and diversity may be low and, in most cases, may prove to be irrelevant. Low relevance for existing oil palm planting scenarios.
1.2	Populations of multiple endemics or RTE species.	Population of endemic and RTE species.	Concentrations of population of RTE species are unlikely to be found in existing oil palm planting areas. Assessment of population of any species is difficult and time-consuming and therefore may not be relevant in established oil palm

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
			plantings. It should be considered, only if the organisation can afford the population study. Low relevance for existing oil palm planting scenarios.
1.3	Important populations or a great abundance of individual endemic or RTE species, representing a substantial proportion of the regional, national, or global population which are needed to maintain viable populations (e.g., seasonal, migratory species)	Viable populations of endemic or RTE species (including migratory species).	Concentrations of population biodiversity can prove to be low in existing oil palm planting areas. Assessment of population of any species is difficult and time-consuming and therefore may not be relevant in established oil palm plantings. It should be considered, only if the organisation can afford the population study. Low relevance for existing oil palm planting scenarios.
1.4	Small populations of endemic or RTE species, where the national, regional, or global survival of that species is critically dependent on the area	Areas that small populations of endemic or RTE species are critically dependent on.	The forest fragments potentially found in established oil palm plantings are relatively small and would not be likely to viably support small populations of endemic and RTE species. Critical dependency would be unlikely or rare. Low relevance for existing oil palm planting scenarios.
1.5	Sites with significant RTE species richness, or populations of priority species approaching those of key protected areas or other priority sites within the same biogeographic boundary	Key protected areas or priority sites for RTE species	The forest fragments potentially found in established oil palm plantings are relatively small and would not be likely to viably support small populations of endemic and RTE species. Critical dependency would be unlikely or rare. Low relevance for existing oil palm planting scenarios.
1.6	Important genetic variants, subspecies, or varieties.	Genetic variants	The occurrence of genetic variants within forest fragments in existing oil palm plantings is unlikely. Low relevance for existing oil palm planting scenarios.

For the justification of HCV 1 presence or absence in the concession, the following elements must be considered and discussed with supporting data:

1.1 Protected areas – Low Relevance

Discussion should include proximity to protected areas, range of species, tolerance of species to disturbed environment and humans, hunting pressures, and threats to species due to human populations.

1.2 RTE species – Low Relevance

From the field assessment, the conservation status of each species must be identified through reference to published records. Studies are usually done in larger areas, less disturbed environments, and better-known sites. The presence of species with RTE status will confer HCV 1 status to an area and thus their habitats should be conserved as HCV 1.

1.3 Endemic species – Low Relevance

The species list should be checked with published records of endemism in the AOI or defined regions. These species would have HCV 1 status, and their habitat proxies should also be managed as HCV 1.

1.4 Areas of temporal use – Low Relevance

Species identified should be cross-referenced with migratory species list, seasonal breeding species list and feeding grounds to ascertain temporal use. These species would have HCV 1 status and their temporary habitats as well as feeding grounds should be earmarked as having HCV 1 status.

Photo 6.1 to Photo 6.4 shows the example of potential HCV 1 present and refer to Appendix C (Section 15.3) for more examples. Section 6.1.1 presents the list of data sources that are relevant for HCV 1 identification.

Photo 6.1: An example of HCV 1 presence (Forest) Credits: MEC

Photo 6.2: An example of HCV 1 presence (Rhinoceros Hornbill – RTE species) Credits: MEC

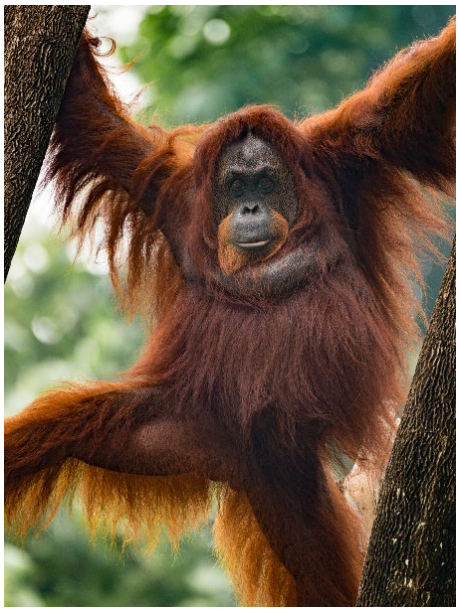

Photo 6.3: An example of HCV 1 presence (Orangutan – RTE species) Credits: MEC

Photo 6.4: An example of HCV 1 presence (Dusky leaf monkey – RTE species) Credits: MEC

Due to the varying numbers of grower and production categories present in Malaysia, there is a high possibility of HCV 1 attributes being present as shown in Table 6.1. To indicate this, a relevancy table has been prepared (see Table 6.2), detailing the level of relevancy these attributes may have on the grower and production categories. A guide to this table is displayed below, describing the relevancy rankings as well as their descriptions. It should be noted that these rankings may not be applicable in special cases, which are predicted to be relatively rare.

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

Table 6.2: Relevancy Table for HCV 1 attributes

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
1.1	High species richness, diversity or uniqueness within a defined area when compared with other sites within the same biogeographic area.	Species Richness / Diversity.	1	1	1	1	1	1	1	1	1	1	1	1	1
1.2	Populations of multiple endemic or RTE species.	Population of endemic and RTE species.	1	1	1	1	1	1	1	1	1	1	1	1	1
1.3	Important populations or a great abundance of individual endemic or RTE species, representing a substantial proportion of the regional, national, or global population which are needed to maintain viable populations (e.g., seasonal, migratory species).	Viable populations of endemic or RTE species (including migratory species).	1	1	1	1	1	1	1	1	1	1	1	1	1
1.4	Small populations of endemic or RTE species, where the national, regional, or global survival of that species is critically dependent on the area.	Areas that small populations of endemic or RTE species are critically dependent on.	1	1	1	1	1	1	1	1	1	1	1	1	1
1.5	Sites with significant RTE species richness, or populations of priority species approaching those of key protected areas or other priority sites within the same biogeographic boundary.	Approximating key protected areas or priority sites for RTE species.	1	1	1	1	1	1	1	1	1	1	1	1	1
1.6	Important genetic variants, subspecies, or varieties.	Genetic variance.	1	1	1	1	1	1	1	1	1	1	1	1	1

6.1.1 List of Data Sources for HCV 1

Back to Quick Reference

A list of data sources is provided as a reference for assessors. The references will guide the assessors to make informed decisions and are complementary and not exhaustive.

6.1.1.1 Legislation

Back to Quick Reference

Table 6.3: List of Legislation Sources for HCV 1

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Protected area laws as listed in the Master List of Protected Areas in Malaysia	Available for viewing here: Explore | Protected Areas | Malaysia Biodiversity Information System (MyBIS)	Click the link provided to view the information.	Malaysia	The list of protected area names is in the link provided. However, further research is required to obtain exact locations and the extent of the protected areas. Note: This reference is also relevant for HCVs 2 & 3 identification.
2.	International Trade in Endangered Species Act 2008 Malaysia (INTESA)	Available for viewing here: https://cites.org/sites/default/files/projects/NLP/Malaysia_wildllife_Act686-5_8_2014.pdf	Click the link provided to download the information.	Malaysia	Refer to the **Third Schedule** for the scheduled species name list.
3.	National Forestry Act 1984	Available for viewing view here: https://www.forestry.gov.my/images/JPSM/wargaperhutanan/AktaAPN_en.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	Refer to Schedule F Species not to be felled under Schedule B, subhead 2.

No.	Reference	Accessible links	Availability	Application	Remarks
4.	Wildlife Conservation Act 2010, as of 1st October 2014	Available for viewing here: Wildlife Conservation Act 2010 Amendment: https://wildlife.gov.my/images/document/penerbitan/akta/ACT%20A1646.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	Refer to the First Schedule for the protected wildlife species and Second Schedule for the totally protected species.
5.	Wildlife Conservation Act 2010: Wildlife Conservation (Hunting Prohibited Areas (Amendment) Order 2020, as of 1st August 2020	Available for viewing here: https://www.wildlife.gov.my/images/document/penerbitan/akta/pua_20200727_PUA213.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	Hunting prohibited areas are listed according to the states in Peninsular Malaysia.
6.	Wildlife Conservation Enactment 1997	Available for viewing here: Wildlife Conservation Enactment 1997	Click the link provided to view and download the information.	Sabah	i. Schedule 1 presents the totally protected species of animals and plants. ii. Schedule 2 presents the protected species of animals and plants -limited hunting and collection under licence. iii. Schedule 3 presents the protected species of animals for which a hunting licence is required.

No.	Reference	Accessible links	Availability	Application	Remarks
7.	Wildlife Protection Ordinance 1998, as of June 2008	Available for viewing here: https://lawnet.sarawak.gov.my/lawnet_file/Ordinance/ORD_CAP.%2026%20watermark.pdf	Click the link provided to view and download the information.	Sarawak	Refer to the following Parts in the First Schedule: i. Part I for totally protected animals list. ii. Part II for protected animal list. iii. Part III for animals which may be imported or exported under licence. Refer to the following Parts in the Second Schedule: i. Part I for totally protected plants. ii. Part II for protected plants. iii. Part III for plants which may be imported or exported under licence.

6.1.1.2 Policy Documents

Back to Quick Reference

Table 6.4: List of Policy Documents for HCV 1

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Chua, L.S.L., M. Suhaida, M. Hamidah & L.G. Saw. 2010. Malaysia Plant Red List: Peninsular Malaysian *Dipterocarpaceae*. FRIM Research Pamphlet No. 129. Forest Research Institute Malaysia (FRIM), Selangor and the Ministry of Natural Resources & Environment (NRE), Putrajaya.	Available for download from: https://www.mybis.gov.my/pb/15	Click the link provided to download the information.	Peninsular Malaysia	Refer for the protected *Dipterocarpaceae* list.
2.	DWNP. 2017. *Red List of Mammals for Peninsular Malaysia* Version 2.0. Department of Wildlife and National Parks (DWNP), Kuala Lumpur, Malaysia.	Available for download from: https://www.wildlife.gov.my/images/document/penerbitan/lainlain/REDLIST_OL%20(M)_2018%20Sept.pdf	Click the link provided to view and download the material.	Peninsular Malaysia	Refer for the list of threat status for mammals in Peninsular.
3.	DWNP. 2013. National Elephant Conservation Action Plan (NECAP): Blueprint to save Malaysian elephants. Department of Wildlife & National Parks	Available for download from: https://www.wildlife.gov.my/images/stories/penerbitan/pelan/NECAP%20all.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	i. According to the reference, there are three major population centres of elephants, namely, Belum-Temengor Complex, Taman Negara and Endau Rompin.

No.	Reference	Accessible links	Availability	Application	Remarks
	Peninsular Malaysia, Kuala Lumpur, Malaysia.				Refer for the distribution of elephants in 2011.
4.	DWNP. 2008. *National Tiger Conservation Action Plan* (NTCAP) 2008-2020. Department of Wildlife & National Parks, Kuala Lumpur, Malaysia.	Available for download from: https://www.wildlife.gov.my/images/stories/penerbitan/pelan/NTCAP.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	i. Refer for three types of tiger habitat in Peninsular Malaysia based on analysis of data collected by the Department of Wildlife and National Parks between 1991 and 2003. ii. Refer for location of Human-Tiger Conflict cases reported to DWNP between 1991 and 2003.
5.	Sabah Wildlife Department 2020. Bornean Elephant Action Plan for Sabah 2020-2029. Kota Kinabalu, Sabah, Malaysia.	Available for download from: DGFC_Bornean Elephant Action Plan_Booklet_Perfect Binding_48 pages (p.2) (asesg.org)	Click the link provided to view and download the information.	Sabah	Refer for distribution of Bornean Elephant and its ecology.
6.	Pelan Induk Rangkaian Ekologi Central Forest Spine (PIRECFS) 2022	Available for viewing here: Pelan Induk Rangkaian Ekologi Central Forest Spine (PIRECFS) 2022	Click the link provided to view and download the information.	Peninsular Malaysia	Refer for the distribution of habitats that could potentially support HCV 1 species.

6.1.1.3 Publications

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Table 6.5: List of Publications for HCV 1

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Saaban, S., N.B. Othman, M.N. Yasak, B.M. Nor, A. Zafir, & A. Campos-Arceiz. 2011. Current Status of Asian Elephants in Peninsular Malaysia. Gajah 35: 67-75.	Available here: (PDF) Current status of Asian elephants in Peninsular Malaysia (researchgate.net)	Click the link provided to view and download the information.	Peninsular Malaysia	Refer to identify the survival of elephants in Peninsular and for better understanding of human-elephant conflict.
2.	Saw, L.G., L.S. Chua, M. Suhaida, W.S. Yong, A.M. Hamidah. 2010. Conservation of some rare and endangered plants from Peninsular Malaysia. Kew Bulletin 65(4): 681-689.	Available online at: https://www.researchgate.net/publication/225988826_Conservation_of_some_rare_and_endangered_plants_from_Peninsular_Malaysia	Click the link provided to view and download the information.	Peninsular Malaysia	Refer to identify Dipterocarp species which are on IUCN.
3.	WWF. Undated. Borneo's new world – newly discovered species in the Heart of Borneo. WWF Malaysia, Sabah, Malaysia.	Available for download from: hob_new_species_report_web_version_16april20101.pdf (panda.org)	Click the link provided to view and download the information.	Sabah & Sarawak	Refer for the exhaustive record of new discovered species in the Heart of Borneo.
4.	MNS Bird Conservation Council. 2015. A checklist of birds of Malaysia 2nd edition. MNS Conservation	Bird species can be found in the link below: https://www.mybis.gov.my/pb/645	Click the link and search for bird species.	Malaysia	Refer for bird species of Malaysia.

No.	Reference	Accessible links	Availability	Application	Remarks
	Publication no. 14. Malaysian Nature Society (MNS), Kuala Lumpur, Malaysia.				
5.	Ng, F.S.P., C.M. Low & N.S. Mat Asri. 1990. Endemic trees of the Malay Peninsula. Research Pamphlet No. 106. Forest Research Institute Malaysia, Kuala Lumpur, Malaysia.	Available for purchase from: Forest Research Institute Malaysia. Tel: +603-6279 7489/91 Fax: +603-6273 1076 Email: FRIM_Publications@frim.gov.my Website: https://webopac.lgm.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11316	Must be purchased.	Peninsular Malaysia	Refer for endemic trees of Malaysia.
6.	Yeap, C. Y., A.C. Sebastian & G.W.H. Davison (eds.). 2007. Directory of Important Bird Areas in Malaysia: key sites for conservation. MNS Conservation Publication 8. Malaysian Nature Society, Kuala Lumpur.	Contact the Malaysian Nature Society: Email: mns@mns.org.my Tel: +603 22879422 Website: https://www.mns.my Book: https://www.nhbs.com/directory-of-important-bird-areas-in-malaysia-book	Must be purchased.	Malaysia	Refer for Important Bird Areas (IBA) in Malaysia.
7.	Wells, D.R. 1999. The birds of the Thai-Malay Peninsula (Volume 1): Non-Passerines. Academic Press, London, UK. Wells, D.R. 2007. The birds of the Thai-Malay Peninsula	Available for download from: • https://www.researchgate.net/publication/261648930_The_bird_of_the_Thai-Malay_Peninsula_Volume_1_Non-passerines **(Volume 1)** • https://www.researchgate.net/publication/250068951_The_Birds_of_the_Thai-Malay_Peninsula_Volume_Two_Passerines **(Volume 2)**	Must be purchased.	Peninsular Malaysia	Contains information on the conservation status of birds of the Thai-Malay Peninsula based on the author's in-depth knowledge of Peninsular Malaysian birds.

No.	Reference	Accessible links	Availability	Application	Remarks
	(Volume 2): Passerines. A&C Black, London, UK.				
8.	WWF, FDS, SFC and STA. 2022. High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs). First Edition. Kuching, Sarawak, Malaysia.	Available for download from here: High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs)	Click the link provided to view and download the information.	Sarawak	Refer for HCV training pertaining to Sarawak.

6.1.1.4 Web Resources

Back to Quick Reference

Table 6.6: List of Web Resources for HCV 1

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Alliance for Zero Extinction (AZE)	AZE site criteria | Alliance for Zero Extinction	Click the link provided to view the information.	Malaysia	Refer to identify the Alliance for Zero Extinction (AZE) sites.
2.	ASEAN Heritage Parks	ASEAN DECLARATION ON HERITAGE PARKS - ASEAN	Click the link provided to view the information.	Malaysia	The Governments of the Member States of the Association of the Southeast Asian Nations (ASEAN) have declared the following as heritage parks: a) Kinabalu National Park. b) Mulu National Park. c) Taman Negara National Park.

No.	Reference	Accessible links	Availability	Application	Remarks
3.	Biodiversity A-Z. United Nations Environment & World Conservation Monitoring Centre.	https://www.biodiversitya-z.org/content/malaysia	Click the link provided to view the information.	Malaysia	Refer to identify important region which consists of biological uniqueness or the high threat that they face.
4.	CITES Appendices I, II & III	CITES Appendices I, II and III valid from 14.02.2021	Click the link provided to view and download the information.	Malaysia	Refer to identify the international trade in endangered species.
5.	Global IUCN Red List of threatened species	https://www.iucnredlist.org/	Click the link provided to view the information.	Malaysia	Refer to identify the threatened species.
6.	Important Bird and Biodiversity Areas (IBAs)	BirdLife Data Zone	Click the link provided to view the information.	Malaysia	Refer for the Important Bird and Biodiversity Areas.
7.	Key Biodiversity Areas (KBA)	KBA Data (keybiodiversityareas.org)	Click the link provided to view the information.	Malaysia	Refer to identify key biodiversity areas.
8.	Malaysia Biodiversity Information System (MyBIS)	www.mybis.gov.my	Click the link provided to view the information.	Malaysia	Refer to search databases on animal, plant, and fungal species as well as protected areas.
9.	Ramsar sites: list of wetlands of international importance	https://rsis.ramsar.org/ris-search/?f[0]=regionCountry_en_ss%3AMalaysia	Click the link provided to view the information.	Malaysia	Refer for the location of wetlands of international importance.
10.	UNESCO Man and Biosphere Reserves	https://en.unesco.org/biosphere/aspac	Click the link provided to view the information.	Malaysia	UNESCO biosphere reserves in Malaysia are: i. Tasik Chini.

No.	Reference	Accessible links	Availability	Application	Remarks
					ii. Crocker Range. iii. Penang Hill.
11.	UNESCO World Heritage Sites	http://whc.unesco.org/en/statesparties/my	Click the link provided to view the information.	Malaysia	Refer for UNESCO World Heritage Sites.

6.1.1.5 Other Data Sources

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Table 6.7: List of Other Data Sources for HCV 1

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Species information sheets by Department of Wildlife & National Parks, Peninsular Malaysia.	Available for download from: https://www.wildlife.gov.my/index.php/penerbitan/101-kertas-maklumat	Click the link provided to view and download material.	Peninsular Malaysia	The link will show a list of species information sheets. The listed species are as follows: *1.* Lesser adjutant *(Botak Kecil).* 2. Tiger *(Harimau Belang)* 3. Tapir. 4. Sumatran rhinoceros *(Badak sumatera).* 5. Elephant *(Gajah)* 6. Milky Stork *(Burung Botak Upeh).* 7. Gaur (Seladang).

6.2 HCV 2: Landscape-Level Ecosystems and Mosaics

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Adapted HCV 2 Definition from HCVN
Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL), that are significant at global, regional, or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.

The main concern for the HCV 2 identification is to maintain connectivity and allow the resident wildlife to interact with the rest of their regional population in the adjacent forested areas. This may include IFL, protected forest areas, and forest corridors linking forest mosaics. To assess the presence of HCV 2 within the concession, the following considerations should be analysed and justified in the HCV assessment report. Table 6.8 shows the attributes for Assessment for HCV 2 identification.

Table 6.8: Attribute consideration for HCV 2 presence

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
2.1	Large areas (e.g. > 50,000 ha), that are relatively far from human settlements, roads, or other access.	Intact forest landscape.	In the oil palm context, IFL overlaps will rarely be applicable to the existing oil palm planting area. Low relevance for existing oil palm planting scenarios.
2.2	Smaller areas that provide key landscape functions such as connectivity and buffering.	Vegetated areas that provide connectivity and buffering.	This is potentially identifiable especially for fragment connectivity through riparian vegetation. Low to moderate relevance for existing oil palm planting scenarios.
2.3	Large areas that are more natural and intact than most other such areas and which provide habitats of top predators or species with large range requirements.	Forest mosaic.	In the oil palm context, presence of forest mosaic is unlikely in existing oil palm planting areas. Low relevance for existing oil palm planting scenarios.

Map 6.1 to Map 6.3 show the locations and distribution of both Forest Reserves and Protected Areas. Photo 6.5 and Photo 6.6 show examples of potential presence of HCV 2. Refer to Appendix C (Section 15.3) for more examples. Section 6.2.1 presents the list of data sources that may be relevant for HCV 2 identification. For the justification of HCV 2 presence or absence in the concession, the following elements must be considered and discussed with supporting data.

Natural sites in the concession that are in close proximity (overlapping or adjacent) to Intact Forest Landscape, Protected Areas, Permanent Forest Reserves, gazetted and degazetted Forest Reserves,

Central Forest Spine with Primary and Secondary linkages, Heart of Borneo, Wildlife Sanctuaries, Ramsar Sites, and Protected Peatlands should be considered as having HCV 2 status. Additionally, natural landscapes that are sufficient to maintain ecological processes and dynamic functions should be HCV 2, this should include interphase or ecotone of two or more ecosystems as these areas serve as refugia for viable populations of species.

Photo 6.5: An example of HCV 2 presence (Forest Landscape) *Credits: MEC*

Photo 6.6: An example of HCV 2 presence (Forest landscape) *Credits: MEC*

Due to the varying amounts of grower and production categories present in Malaysia, there is a low to moderate possibility of the presence of HCV 2 attributes as shown in Table 6.8. To indicate this, a relevancy table has been prepared (see Table 6.9), detailing the level of relevancy these attributes may have on the grower and production categories. A guide to this table is displayed below, describing the relevancy rankings as well as their descriptions. It should be noted that these rankings may not be applicable in special cases, which are predicted to be relatively rare.

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

Table 6.9: Relevancy Table for HCV 2 attributes

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
2.1	Large areas (e.g. >50,000 ha), that are relatively far from human settlement, roads, or other access.	Intact forest landscape	1	1	1	1	1	1	1	1	1	1	1	1	1
2.2	Smaller areas that provide key landscape functions such as connectivity and buffering.	Areas that provide connectivity and buffering	1	1	1	1	2	2	2	2	2	2	2	2	2
2.3	Large areas that are more natural and intact than most other such areas and which provide habitats of top predators or species with large range requirements.	Forest mosaic	1	1	1	1	1	1	1	1	1	1	1	1	1

6.2.1 List of Data Sources for HCV 2

Back to Quick Reference

A list of data sources is provided as a reference for assessors. The references will guide the assessors to make informed decisions and are complementary and not exhaustive.

6.2.1.1 Publications

Back to Quick Reference

Table 6.10: List of Publications for HCV 2

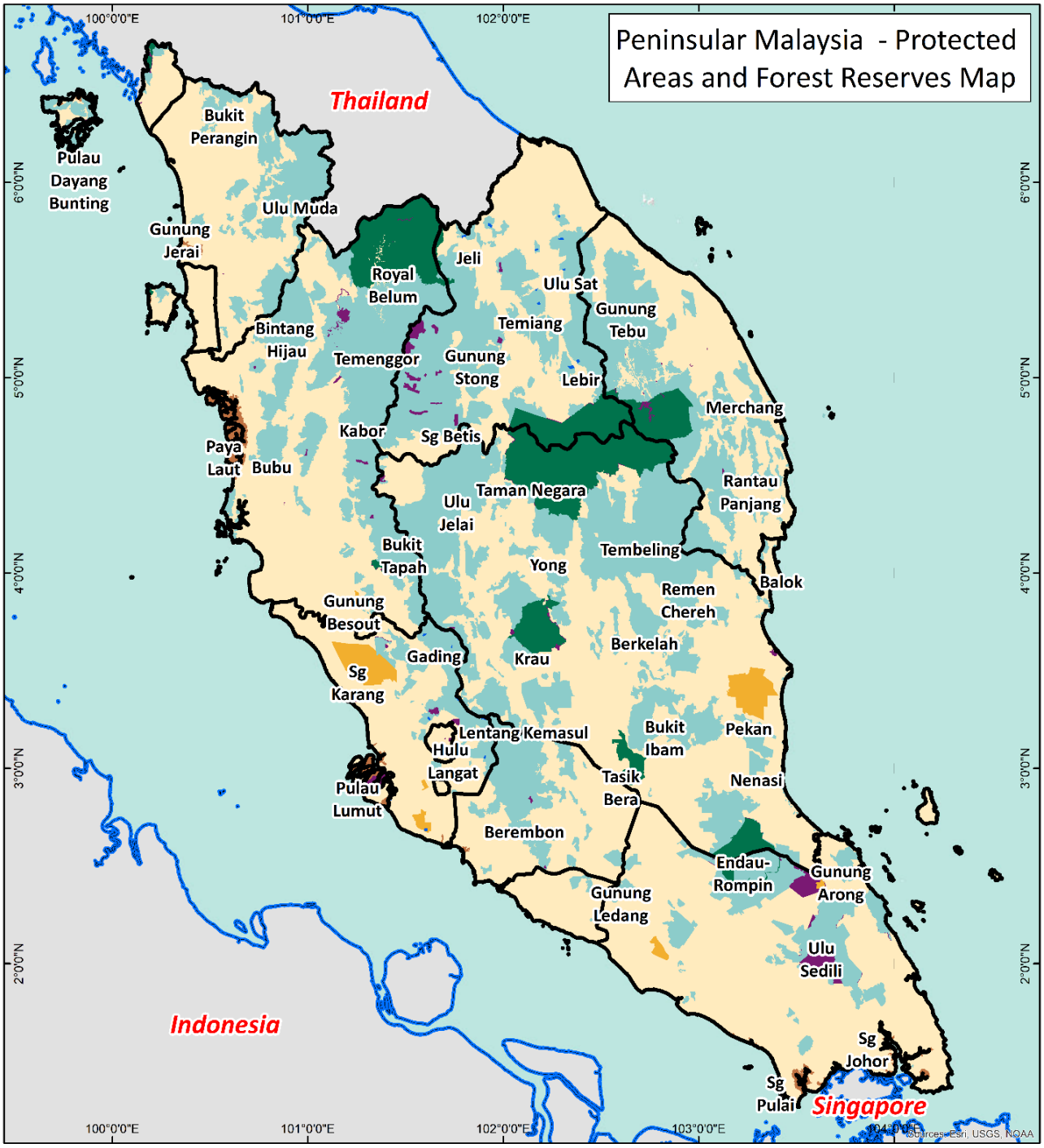
No.	Reference	Accessible links	Availability	Application	Remarks
1.	WWF. 2017. The environmental status of Borneo 2016. Heart of Borneo Programme, Jakarta and Kuala Lumpur, Indonesia, and Malaysia.	Available for download from: https://wwfint.awsassets.panda.org/downloads/isi_full_report_hob_2016_rev__12_higres_compressed.pdf	Click the link provided to view and download the information.	Sabah & Sarawak	Refer to maps regarding different types of forest ecosystems in the Borneo landscape and historical mapping.
2.	WWF. 2017. Updates on Heart of Borneo Programme.	Available for download from: https://wwfint.awsassets.panda.org/downloads/updates_on_hob_programme_fa_desktop_.pdf	Click the link provided to view and download the information.	Sabah & Sarawak	Refer to the WWF priority landscapes and protected areas of Borneo.
3.	WWF, FDS, SFC and STA. 2022. High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs). First Edition. Kuching, Sarawak, Malaysia.	Available for download from here: High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs)	Click the link provided to view and download the information.	Sarawak	Refer for HCV training pertaining to Sarawak.

6.2.1.2 Web Resources

Back to Quick Reference

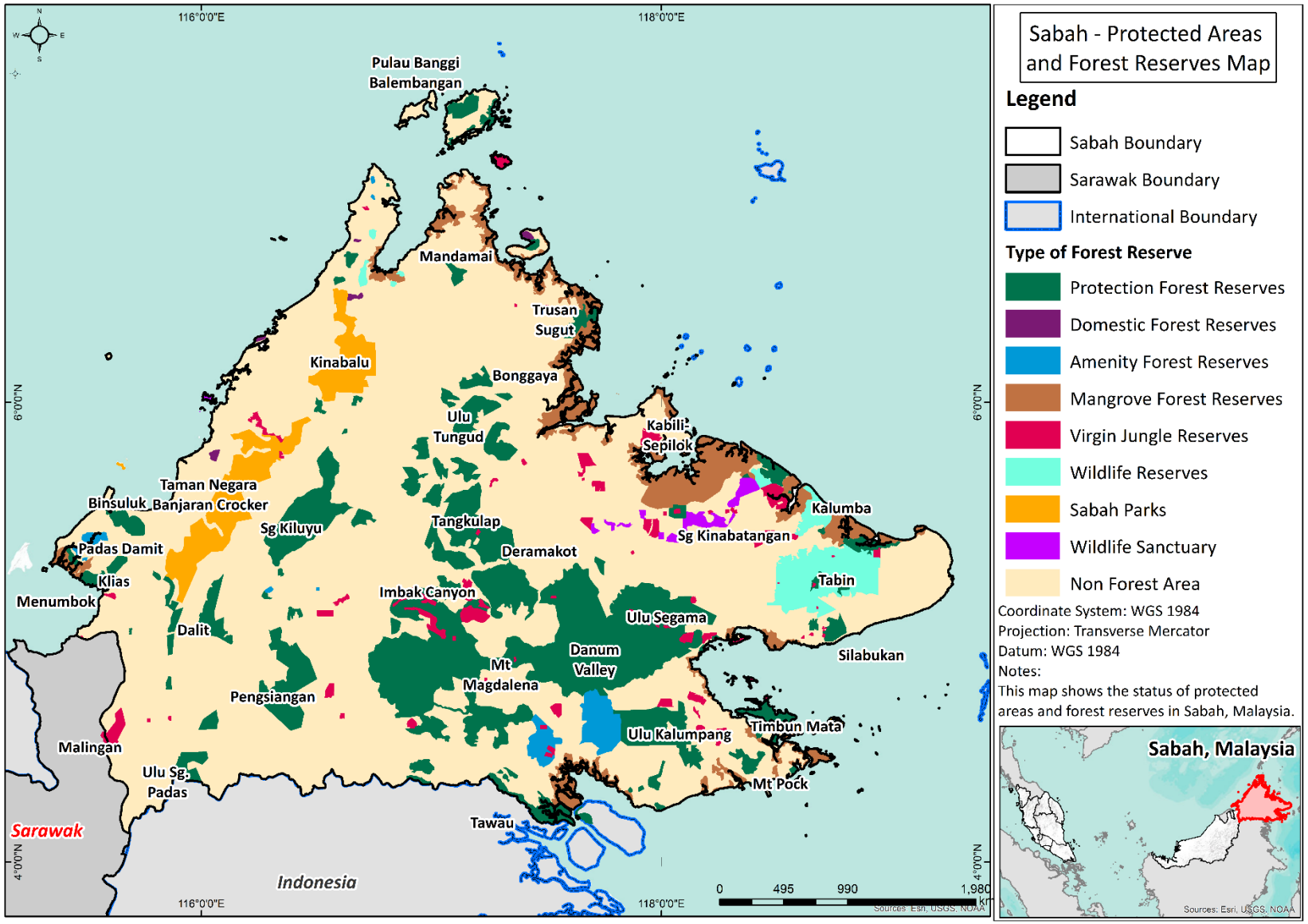
Table 6.11: List of Web Resources for HCV 2

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Global Forest Watch Malaysia	http://www.globalforestwatch.org/	Click the link provided to view the information.	Malaysia	Refer to monitor the current data on the forest landscapes.
2.	Intact Forest Landscape (IFL)	http://www.intactforests.org/world.map.html	Click the link provided to view the information.	Malaysia	Refer to identify where the intact forests are located.



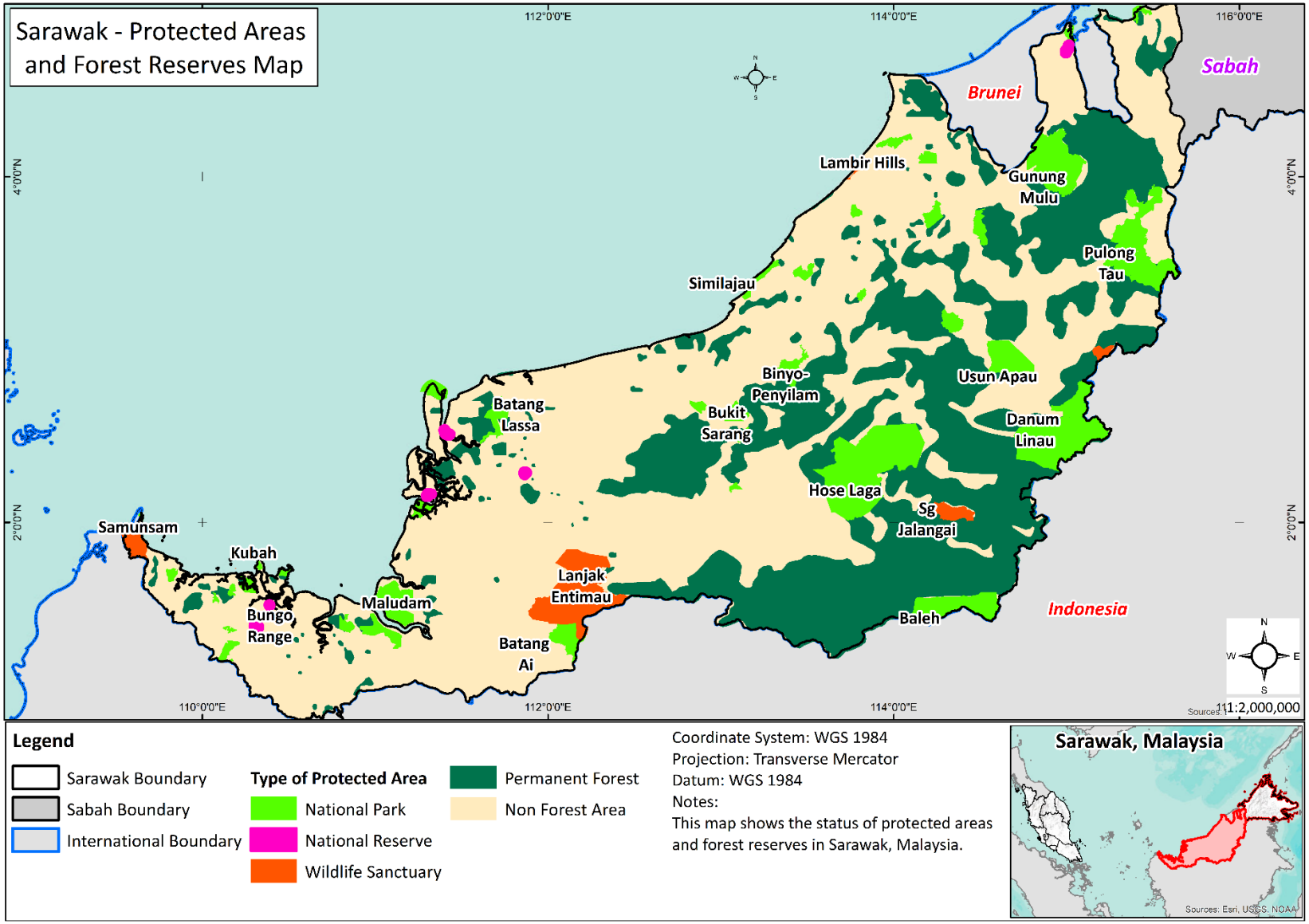
Map 6.1: Forest Reserves and Protected Areas in Peninsular Malaysia.

Credits: MEC



Map 6.2: Forest Reserves and Protected Areas in Sabah, Malaysia.

Credits: MEC



Map 6.3: Forest Reserves and Protected Areas in Sarawak, Malaysia.

Credits: MEC

6.3 HCV 3: Ecosystems and Habitat

Back to Quick Reference

Adapted HCV 3 Definition from HCVN
Rare, threatened, or endangered ecosystems, habitats or refugia

The approach taken in HCV 3 is identifying existing ecosystems within the concession that can be classified as Rare, Threatened or Endangered (RTE). To assess the presence of HCV 3 within the concession, the following considerations should be analysed and justified in the HCV assessment report. Table 6.12 shows the attributes for Assessment for HCV 3 identification.

Table 6.12: Attribute consideration for HCV 3 presence

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
3.1	Ecosystems that are naturally rare because they depend on highly localised soil types, locations, hydrology or other climatic or physical features.	Rare intact ecosystems (natural) - Peat, Limestone, Mangrove Ecosystem	In existing oil palm landscapes, these can be found in areas with intact or moderately disturbed states and are present as insignificant patches. Low relevance for existing oil palm planting scenarios.
3.2	Ecosystems that are anthropogenically rare, because the extent of the ecosystem has been greatly reduced by human activities compared to their historic extent.	Anthropogenically rare ecosystems (due to human activities)	This is a rarity in established oil palm plantings. The probability of identifying this is low within a remnant intact landscape that has planned development. Low relevance for existing oil palm planting scenarios.
3.3	Ecosystems that are threatened or endangered due to current or proposed operations.	Threatened or endangered ecosystems	Only forest fragments patches can be identified in established oil palm plantings, and it will be in a highly disturbed state. Low relevance for existing oil palm planting scenarios.
3.4	Ecosystems that are classified as threatened in national or international systems	Nationally or internationally threatened ecosystem - Peat, Limestone, Mangrove Ecosystem	In established oil palm plantings, only the lowland dipterocarp forest/peat/wetland ecosystems are of relevance. Low relevance for existing oil palm planting scenarios.

Photo 6.7 and Photo 6.8 show examples of potential presence of HCV 3. Refer to Appendix C (Section 15.3) for more examples. Section 6.3.1 presents the list of data sources that may be relevant for HCV 3 identification.

The justification of HCV 3 presence or absence in the concession must be discussed with supporting data. The following existing ecosystems within the concession should be considered as having HCV 3. This should be irrespective of ecosystem condition. Even moderately degraded sites should be considered as having HCV 3. The following are examples of HCV 3 ecosystems present in the Malaysian oil palm landscape:

- Remnant lowland dipterocarp forest patches
- Forest in limestone areas
- Mangrove forests
- Brackish water ecosystem
- Peat swamp forests
- Fresh-water swamp forests
- Seasonal swamp forests

Credits: MEC

Photo 6.7: An example of HCV 3 presence (Limestone)

Credits: MEC

Photo 6.8: An example of HCV 3 presence (Mangrove Forest)

Due to the varying amounts of grower and production categories present in Malaysia, there is a low possibility of HCV 3 attributes being present as shown in Table 6.12. To indicate this, a relevancy table has been prepared (see Table 6.13), detailing the level of relevancy these attributes may have on the grower and production categories. A guide to this table is displayed below, describing the relevancy rankings as well as their descriptions. It should be noted that these rankings may not apply in special cases, which are predicted to be relatively rare.

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

Table 6.13: Relevancy Table for HCV 3 attributes

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-2 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
3.1	Ecosystems that are naturally rare because they depend on highly localised soil types, locations, hydrology or other climatic or physical features.	Rare intact ecosystems (natural) - Peat, Limestone, Mangrove Ecosystem	1	1	1	1	1	1	1	1	1	1	1	1	1
3.2	Ecosystems that are anthropogenically rare, because the extent of the ecosystem has been greatly reduced by human activities compared to their historic extent.	Anthropogenically rare ecosystems (due to human activities)	1	1	1	1	1	1	1	1	1	1	1	1	1
3.3	Ecosystems that are threatened or endangered due to current or proposed operations.	Threatened or endangered ecosystems	1	1	1	1	1	1	1	1	1	1	1	1	1
3.4	Ecosystems that are classified as threatened in national or international systems	Nationally or internationally threatened ecosystem - Peat, Limestone, Mangrove Ecosystem	1	1	1	1	1	1	1	1	1	1	1	1	1

6.3.1 List of Data Sources for HCV 3

Back to Quick Reference

A list of data sources is provided as a reference for assessors. The references will guide the assessors to make informed decisions and are complementary and not exhaustive.

6.3.1.1 Publications

Back to Quick Reference

Table 6.14: List of Publications for HCV 3

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Soepadmo, E. & K.M. Wong (eds.). 1995. *Tree Flora of Sabah and Sarawak Vol.1.* Sabah Forestry Department, Forest Research Institute Malaysia & Sarawak Forestry Department, Malaysia.	Available for online viewing at: • https://www.yumpu.com/en/document/read/28523346/tree-flora-of-sabah-and-sarawak-volume-i-itto • https://www.mybis.gov.my/pb/83	Must be purchased.	Sabah and Sarawak	Refer for identification keys, illustration for families treated and descriptions of all species that grow to a significant size, usually taken as at least 10 cm diameter or 5m high. Although in many cases, a complete treatment of all species in a group will be found.
2.	Kiew, R., R.C.K. Chung, L.G. Saw, E. Soepadmo & P.C. Boyce (eds.). 2010. Flora of Peninsular Malaysia Series II: Seed Plants, Vol. 1. Malayan Forest Records no. 49(1). Forest Research Institute Malaysia (FRIM).	Available for purchase from: Forest Research Institute Malaysia Tel: +603-6279 7489/91 Fax: +603-6273 1076 Email: FRIM_Publications@frim.gov.my Website: https://www.frim.gov.my/ Book: https://webopac.lgm.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11316	Must be purchased.	Peninsular Malaysia	Includes a description of the vegetation/ecosystem types in Peninsular Malaysia.

No.	Reference	Accessible links	Availability	Application	Remarks
3.	Malaysian Wetland Working Group. 1987. *Malaysia Wetland Directory.* Department of Wildlife and National Parks, Kuala Lumpur, Malaysia.	Available at the PERHILITAN library: Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN) Semenanjung Malaysia/Department of Wildlife and National Parks (DWNP). Tel: 03-90866800 Fax: 03-90752873 Email: webmaster@wildlife.gov.my Website: http://www.wildlife.gov.my	Out of print. Available at the PERHILITAN Library.	Malaysia	Refer for the wetlands of Malaysia.
4.	Symington, C.F., Revised by P.S. Ashton & S. Appanah. 2004. Foresters Manual of Dipterocarps - Malayan Forest Record vol. 16, Forest Research Institute Malaysia & Malayan Nature Society, Kuala Lumpur, Malaysia.	Available for purchase from: Forest Research Institute Malaysia Tel: +603-6279 7489/91 Fax: +603-6273 1076 Website: https://www.frim.gov.my/	Must be purchased.	Peninsular Malaysia	Includes a description of forest formations/vegetation types in Peninsular Malaysia.
5.	Wyatt-Smith, J. & B.A. Mitchell. 1995. Manual of Malayan Silviculture for Inland Forest Vols. 1 & 2, Malayan Forest Records No. 23. (2nd edition by Wyatt-Smith, J. & W.P. Panton). Forest Research Institute Malaysia (FRIM), Kuala Lumpur, Malaysia.	Available at the FRIM library: Forest Research Institute Malaysia Tel: +603-62797532 Website: https://fred.frim.gov.my/Home/Index_v3	Out of print. Available at the FRIM Library.	Peninsular Malaysia	Contains a description of the major vegetation types found in Peninsular Malaysia.

No.	Reference	Accessible links	Availability	Application	Remarks
6.	DWNP. 2004. *Using an ecological model to assess the performance of a protected areas system at conserving biodiversity at the ecosystems level. Review of biodiversity in protected areas in Peninsular Malaysia.* A report prepared by the Malaysian Environmental Consultants (MEC) for Department of Wildlife and National Parks (DWNP), Kuala Lumpur, Malaysia.	Contact PERHILITAN: Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN) Semenanjung Malaysia/Department of Wildlife and National Parks (DWNP) Tel: 03-90866800 Fax: 03-90752873 Email: webmaster@wildlife.gov.my Website: http://www.wildlife.gov.my		Peninsular Malaysia	Refer to Appendix 1 for the list of protected areas and maps in Appendix 2 for the location of protected areas in Peninsular Malaysia.
7.	WWF, FDS, SFC and STA. 2022. High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs). First Edition. Kuching, Sarawak, Malaysia.	Available for download from here: High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs)	Click the link provided to view and download the information.	Sarawak	Refer for HCV training pertaining to Sarawak.

6.3.1.2 Web Resources

Back to Quick Reference

Table 6.15: List of Web Resources for HCV 3

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Key Biodiversity Areas	https://www.keybiodiversityareas.org/sites/search	Click the link provided to view the information.	Malaysia	Refer to the interactive map for key biodiversity areas. Note: This reference is also relevant for HCV 1 identification.
2.	Malaysia Biodiversity Information System (MyBIS)	https://www.mybis.gov.my/one/ The database on protected areas includes an interactive map of protected areas: https://www.mybis.gov.my/one/pamaps.php	Click the link provided to view the information.	Malaysia	The protected area names are listed in the link provided. However, further research is required to obtain the exact locations and the extent of the protected areas. Note: This reference is also relevant for HCV 1 identification.
3.	Ramsar sites: list of wetlands of international importance in Malaysia	This dataset is incomplete at the time of writing but is expected to be updated from time to time. Information on Ramsar-designated wetlands in Malaysia may be obtained from: https://rsis.ramsar.org/	Click the link provided to view the information.	Malaysia	Refer to the interactive map for the location of wetlands of international importance. Note: This reference is also relevant for HCV 1 identification.

6.4 HCV 4: Ecosystem Services

Back to Quick Reference

Adapted HCV 4 Definition from HCVN
Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes.

In general, HCV 4 covers the environmental issues that are a part of best management practices for a plantation involving soil, nutrient, and water conservation. It is related to the management of streams and slopes. To assess the presence of HCV 4 within the concession, the following considerations should be analysed and justified in the HCV assessment report. Table 6.16 shows the attributes for Assessment for HCV 4 identification.

Table 6.16: Attribute consideration for HCV 4 presence

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
4.1	Managing extreme flow events, including vegetated riparian buffer zones or intact floodplains	Extreme flow events	In oil palm plantings, this is only relevant if vegetated river buffers have been maintained. If this is not the case, extreme flow management events may not need to be considered. High relevance for existing oil palm planting scenarios.
4.2	Maintaining downstream flow regimes	Downstream flow regimes	Maintaining downstream flow regimes is a natural occurrence irrespective of its conservation value. High relevance for existing oil palm planting scenarios.
4.3	Maintaining water quality characteristics	Water quality	This attribute would be present especially if the rivers flowing along continuous blocks of oil palm concessions are vegetated and managed. High relevance for existing oil palm planting scenarios.
4.4	Fire prevention and protection	Fire	This is especially relevant for peat areas. Low relevance for existing oil palm planting scenarios.
4.5	Protection of vulnerable soils, aquifers, and fisheries	Vulnerable soils, aquifers, and fisheries	This attribute would be present. High relevance for existing oil palm planting scenarios.

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
4.6	Provision of clean water, for example, where local communities depend on natural rivers and springs for drinking water, or where natural ecosystems play an important role in stabilising steep slopes. These two values frequently occur together and the area which provides the critical services (water provision and erosion control) may overlap partially or completely.	Clean water, slope stability	This attribute would be present in the planted matrix as well as naturally vegetated river buffers. High relevance for existing oil palm planting scenarios.

Photo 6.9 to Photo 6.12 show examples of the potential presence of HCV 4. Refer to Appendix C (Section .3) for more examples. Section 6.4.1 presents the list of data sources that may be relevant for HCV 4 identification.

The justification of HCV 4 presence or absence in the concession must be discussed with supporting data such as:

4.1. Areas as water catchments,

4.2 Areas that are critical for erosion control, especially steep areas,

4.3 Areas providing critical barriers to destructive fires, especially regions that are drought prone due to prolonged dry seasons, and

4.4. Areas with rivers to fulfil the local's basic consumption such as drinking, washing, and cleaning. These are areas that also support aquatic life.

Credits: MEC

Photo 6.9: An example of HCV 4 presence (River)

Credits: MEC

Photo 6.10: An example of HCV 4 presence (Steep slope)

Credits: MEC

Photo 6.11: An example of HCV 4 presence (River)

Credits: MEC

Photo 6.12: An example of HCV 4 presence (Steep slope)

Due to the varying numbers of grower and production categories present in Malaysia, there is a low and high possibility of HCV 4 attributes being present as shown in Table 6.16. To indicate this, a relevancy table has been prepared (see Table 6.17), detailing the level of relevancy these attributes may have on the grower and production categories. A guide to this table is displayed below, describing the relevancy rankings as well as their descriptions. It should be noted that these rankings may not apply in special cases, which are predicted to be relatively rare.

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

Table 6.17: Relevancy Table for HCV 4 attributes

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
4.1	Managing extreme flow events, including vegetated riparian buffer zones or intact floodplains	Extreme flow events	3	3	3	3	3	3	3	3	3	3	3	3	3
4.2	Maintaining downstream flow regimes	Downstream flow regimes	3	3	3	3	3	3	3	3	3	3	3	3	3
4.3	Maintaining water quality characteristics	Water quality	3	3	3	3	3	3	3	3	3	3	3	3	3
4.4	Fire prevention and protection	Fire	1	1	1	1	1	1	1	1	1	1	1	1	1
4.5	Protection of vulnerable soils, aquifers, and fisheries	Vulnerable soils, aquifers, and fisheries	3	3	3	3	3	3	3	3	3	3	3	3	3
4.6	Provision of clean water, for example where local communities depend on natural rivers and springs for drinking water, or where natural ecosystems play an important role in stabilising steep slopes. These two values frequently occur together and the area which provides the critical services (water provision and erosion control) may overlap partially or completely.	Clean water, slope stability	3	3	3	3	3	3	3	3	3	3	3	3	3

6.4.1 List of Data Sources for HCV 4

Back to Quick Reference

A list of data sources is provided as a reference for assessors. The references will guide the assessors to make informed decisions and are complementary and not exhaustive.

6.4.1.1 Legislation

Back to Quick Reference

Table 6.18: List of Legislation Sources for HCV 4

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Environmental Quality Act 1974	Available for download from: • https://enviro2.doe.gov.my/ekmc/wp-content/uploads/2016/08/1380076142-Environmental_Quality_Act_1974_-_ACT_127.pdf • https://ewaste.doe.gov.my/wp-content/uploads/2020/12/Environmental_Quality_Act_1974_-_ACT_127.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	Legislation focused on preventing, abating, controlling pollution, and enhancing the environment.
2.	Land Conservation Act 1960	Available for download from: Act 385 BI (instun.gov.my)	Click the link provided to view and download the information.	Peninsular Malaysia	Legislation focused on conserving hill land and preventing soil erosion and siltation.
3.	Waters Act 1920	Available for download from: https://faolex.fao.org/docs/pdf/mal2505.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	Legislation to provide for the control of rivers and streams.
4.	Environment Protection Enactment 2002	Available for viewing here: https://sagc.sabah.gov.my/?q=en/content/environment-protection-enactment-2002	Click the link provided to view and download the information.	Sabah	Legislation focused on protecting the state's environment and natural resources.

No.	Reference	Accessible links	Availability	Application	Remarks
5.	Sabah Water Resources Enactment 1998	Available for viewing here: Sabah Water Resources Enactment 1998 | Official Website of The State Attorney-General's Chambers	Click the link provided to view and download the information.	Sabah	Legislation focused on the sustainable management of Sabah's water resources.
6.	Sarawak Rivers Ordinance 1993	Available for viewing here: ORD_CHAPT4hwm.pdf (sarawak.gov.my)	Click the link provided to view and download the information.	Sarawak	Legislation focused on the regulation and control of water traffic on rivers and in ports and harbours within Sarawak.
7.	Water Ordinance 1994	Available for viewing here: ORD_CAP.13hwm.pdf (sarawak.gov.my)	Click the link provided to view and download the information.	Sarawak	Legislation to regulate the conservation, protection, development and management of water resources of Sarawak and the supply and distribution of water.
8.	WWF, FDS, SFC and STA. 2022. High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs). First Edition. Kuching, Sarawak, Malaysia.	Available for download from here: High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs)	Click the link provided to view and download the information.	Sarawak	Refer for HCV training pertaining to Sarawak.

6.4.1.2 Policy Documents

Back to Quick Reference

Table 6.19: List of Policy Documents for HCV 4

No.	Reference	Accessible links	Availability	Application	Remarks
1.	DID. 2011. Guideline for: the development related to river and reserve. Department of Irrigation and Drainage (DID), Government of Malaysia.	Available for download from: Guideline for the development related to reiver and reserve **(Malay version)**	Click the link provided to view and download the information.	Peninsular Malaysia	Framework to regulate and guide land development activities near rivers and their reserves.
2.	Goh, K.S. 1974. Surface Water Resources Map (Provisional) of Peninsular Malaysia and Explanatory Notes. Ministry of Agriculture and Fisheries, Kuala Lumpur, Malaysia	Available for viewing here: SURFACE WATER RESOURCES MAP (PROVISIONAL)OF PENINSULAR MALAYSIA.	Click the link provided to view and download the information.	Peninsular Malaysia	Refer for the surface water resources map of Peninsular Malaysia.
3.	Ranhill Consulting Sdn. Bhd. 2011. Review of the National Water (2000-2050) and Formulation of National Water Resources Policy, Final Report, August 2011. Report prepared by Ranhill for the Department of Irrigation and Drainage, Kuala Lumpur, Malaysia	Available for viewing here: REVIEW OF NATIONAL WATER RESOURCES STUDY (2000-2050) AND FORMULATION OF NATIONAL WATER RESOURCES POLICY	Click the link provided to view and download the information.	Peninsular Malaysia	Review of Water Resources (2000-2050): Evaluating the availability, distribution and demand for water resources across Malaysia. Formulation of National Water Resources Policy: Developing a policy framework to ensure sustainable water resource management.

6.4.1.3 Publications

Back to Quick Reference

Table 6.20: List of Publications for HCV 4

No.	Reference	Accessible links	Availability	Application	Remarks
1.	DID. 2011. Guideline for: the development related to river and reserve. Department of Irrigation and Drainage (DID), Government of Malaysia.	Available for download from: Guideline for the development related to reiver and reserve **(Malay version)**	Click the link provided to view and download the information.	Peninsular Malaysia	Framework to regulate and guide land development activities near rivers and their reserves.
2.	Goh, K.S. 1974. Surface Water Resources Map (Provisional) of Peninsular Malaysia and Explanatory Notes. Ministry of Agriculture and Fisheries, Kuala Lumpur, Malaysia	Available for viewing here: SURFACE WATER RESOURCES MAP (PROVISIONAL)OF PENINSULAR MALAYSIA.	Click the link provided to view and download the information.	Peninsular Malaysia	Refer for the surface water resources map of Peninsular Malaysia.
3.	Ranhill Consulting Sdn. Bhd. 2011. Review of the National Water (2000-2050) and Formulation of National Water Resources Policy, Final Report, August 2011. Report prepared by Ranhill for the Department of Irrigation and Drainage, Kuala Lumpur, Malaysia	Available for viewing here: REVIEW OF NATIONAL WATER RESOURCES STUDY (2000-2050) AND FORMULATION OF NATIONAL WATER RESOURCES POLICY	Click the link provided to view and download the information.	Peninsular Malaysia	Review of Water Resources (2000-2050): Evaluating the availability, distribution and demand for water resources across Malaysia. Formulation of National Water Resources Policy: Developing a policy framework to ensure sustainable water resource management.

6.4.1.4 Web Resources

Back to Quick Reference

Table 6.21: List of Web Resources for HCV 4

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Department of Survey and Mapping Malaysia's database of map resources	https://www.jupem.gov.my/en/orang-awam	Must be purchased.	Malaysia	Map resources include unrestricted and restricted topographical maps, rivers, digital terrain model and thematic maps.
2.	European Digital Archive of Soil Maps (EuDASM)	https://esdac.jrc.ec.europa.eu/resource-type/national-soil-maps-eudasm	Click the link provided to view and download the information.	Malaysia	Maps include semi-detailed, generalised, and reconnaissance soil maps.
3.	United States Geological Survey (USGS)	https://glovis.usgs.gov/	Click the link provided to view and download the information.	Malaysia	Open source of terrain model.
4.	Open Street Map	https://www.openstreetmap.org/#map=7/4.116/109.455	Click the link provided to view and download the information	Malaysia	Open source of river model.

6.4.1.5 Other Data Sources

Back to Quick Reference

Table 6.22: List of Other Data Sources for HCV 4

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Location of water catchment areas	Available for download at: Environmental_Quality_2009_	Click the link provided to view and download the information.	Malaysia	Refer to the 6th schedule for the list of catchment areas
2.	List of Water Catchment Forests	A partial dataset is available in an interactive map of protected areas on the MyBIS portal: https://www.mybis.gov.my/one/pamaps.php	Click the link provided to view the information.	Peninsular Malaysia	List of protected areas in Malaysia.

6.5 HCV 5: Community Needs

Back to Quick Reference

Adapted HCV 5 Definition from HCVN
Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.

To verify the presence of HCV 5 in the concession, data should be gathered using the following methods, where applicable:

- Consultation with:
  i. local communities and indigenous peoples to determine their dependence on natural resources, and potential environmental impacts from the proposed activity in the management unit.
  ii. relevant organisations working on community development with the communities involved (or other similar communities in the area).

Field observations of local communities' and indigenous peoples' use of natural resources (hunting, fishing, harvesting of NTFPs etc.). Table 6.23 shows the attributes for Assessment of HCV 5 identification.

Table 6.23 Attribute consideration for HCV 5 presence

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian Oil Palm Landscape
5.1	Hunting and trapping grounds (for game, skin, and furs)	Hunting	Potentially present only if the forest patches are within the oil palm plantings scenarios. Low to moderate relevance for existing oil palm planting scenarios.
5.2	NTFPs such as nuts, berries, mushrooms medicinal plants, rattan	NTFP	Potentially present only if the forest patches are within the oil palm plantings scenarios. Low to moderate relevance for existing oil palm planting scenarios.
5.3	Fuel for household cooking, lighting, and heating	Fuel for household consumption	Potentially present only if the forest patches are within the oil palm plantings scenarios. Low to moderate relevance for existing oil palm planting scenarios.

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian Oil Palm Landscape
5.4	Fish (as essential sources of proteins) and other freshwater species relied on by local communities	Source of proteins in rivers	Potentially present only if riverine system is within the oil palm plantings scenarios. Low to moderate relevance for existing oil palm planting scenarios.
5.5	Building materials (poles, thatching, timber)	Building materials	Potentially present only if the forest patches are within oil palm plantings scenarios. Low to moderate relevance for existing oil palm planting scenarios.
5.6	Fodder for livestock and seasonal grazing	Fodder	Low to moderate relevance for existing oil palm planting scenarios.
5.7	Water sources necessary for drinking water and sanitation	Water consumption	Potentially present only if riverine system is within oil palm plantings scenarios. Low to moderate relevance for existing oil palm planting scenarios.
5.8	Items which are bartered in exchange for other essential goods, or sold for cash which is then used to buy essentials	Resources for barter or livelihood or natural resources for cash income	Not relevant for existing oil palm planting scenarios.

Photo 6.13 to Photo 6.17 show examples of potential HCV 5 present. Section 6.5.1 presents the list of data sources that may be relevant for HCV 5 identification.

The justification of HCV 5 presence or absence in the concession must be discussed with supporting data such as:

- Identity of groups that still harvest and depend on the forests or rivers.
- Identity of locations of groups and their rights to use the land.
- Identity of products harvested and degree of dependency on forest / patches.
- Identify sources of livelihood that are dependent on forest and river resources; and
- Findings of focused group discussions and consultations with local community and indigenous peoples (if applicable).

Photo 6.13: An example of HCV 5 presence (Local community's orchard) Credits: MEC

Photo 6.14: An example of HCV 5 presence (Local community's net for fishing) Credits: MEC

Photo 6.15: An example of HCV 5 presence (Local community's use rivers as a mode of transportation)

Credits: MEC

Photo 6.16: An example of HCV 5 presence (Local community's fishing equipment) Credits: MEC

Photo 6.17: Example of HCV 5 presence (Local community's fishing equipment) Credits: MEC

Due to the varying numbers of grower and production categories present in Malaysia, there is a low to moderate possibility of HCV 5 attributes being present as shown in Table 6.23. To indicate this, a relevancy table has been prepared (see Table 6.24), detailing the level of relevancy these attributes may have on the grower and production categories. A guide to this table is displayed below, describing the relevancy rankings as well as their descriptions. It should be noted that these rankings may not apply in special cases, which are predicted to be relatively rare.

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

Table 6.24: Relevancy Table for HCV 5 attributes

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2			Part 4	
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)	4-1	4-2
5.1	Hunting and trapping grounds (for game, skin, and furs)	Hunting	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.2	NTFPs such as nuts, berries, mushrooms medicinal plants, rattan	NTFP	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.3	Fuel for household cooking, lighting, and heating	Fuel for household consumption	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.4	Fish (as essential sources of proteins) and other freshwater species relied on by local communities	Source of proteins in rivers	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.5	Building materials (poles, thatching, timber)	Building materials	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.6	Fodder for livestock and seasonal grazing	Fodder	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.7	Water sources necessary for drinking water and sanitation	Water consumption	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
5.8	Items which are bartered in exchange for other essential goods, or sold for cash which is then used to buy essentials	Resources for barter or livelihood or natural resources for cash income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5.1 List of Data Sources for HCV 5

Back to Quick Reference

A list of data sources is provided as a reference for assessors. The references will guide the assessors to make informed decisions and are complementary and not exhaustive.

6.5.1.1 Legislation

Back to Quick Reference

Table 6.25: List of Legislation Sources for HCV 5

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Wildlife Conservation Act 2010, as of 1st October 2014	Available to download from: • https://www.mybis.gov.my/pb/675 • https://www.wildlife.gov.my/images/document/penerbitan/akta/AKTA%20716%20AKTA%20PEMULIHARAAN%20HIDUPAN%20LIAR%202010.pdf **(Bahasa Version)** • https://storage.unitedwebnetwork.com/files/478/2bcd898fbf196a7cc36b99572fbc3a70.pdf **(English version with 2014 amendment)**	Click the link provided to view and download the information.	Peninsular Malaysia	Refer to the 6th schedule for the list of wildlife for aborigine peoples' consumption.
2.	Aboriginal Peoples Act 1954, (Revised 1974)	Available for viewing here: https://www.jkptg.gov.my/images/pdf/perundangan-tanah/Act_134-Oboriginal_Peoples_Act.pdf	Click the link provided to view and download the information.	Malaysia	Refer for rights of occupancy of aborigine peoples in Malaysia.
3.	Native Courts Enactment 1992	Available for viewing here: • NATIVE COURTS ENACTMENT 1992 (sabah.gov.my) https://sagc.sabah.gov.my/sites/default/files/law/NativeCourtsEnactment1992.pdf	Click the link provided to view and download the information.	Sabah	Refer to Sabah indigenous peoples' customary law.

6.5.1.2 Policy Documents

Back to Quick Reference

Table 6.26: List of Policy Documents for HCV 5

No.	Reference	Accessible links	Availability	Application	Remarks
1.	NRE. 2016. *National Policy on Biological Diversity 2016-2025*. Ministry of Natural Resources and Environment (NRE), Putrajaya, Malaysia.	Available for download from: • https://www.mybis.gov.my/pb/590	Click the link provided to download the information.	Malaysia	Framework aimed at conserving biodiversity, promoting sustainable use, and ensuring fair and equitable sharing of benefits from biological resources.

6.5.1.3 Publications

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Table 6.27: List of Publications for HCV 5

No.	Reference	Accessible links	Availability	Application	Remarks
1.	AIPP. 2014. Training manual for indigenous peoples on Free, Prior and Informed Consent (FPIC). Asia Indigenous Peoples Pact (AIPP), Chiang Mai, Thailand.	Available for viewing from: • fpic-manual-web21.pdf (forestpeoples.org) • https://aippnet.org/wp-content/uploads/2020/02/10.-FPIC_Manual-Small.pdf	Click the link provided to view and download the information.	Malaysia	Resource to empower Indigenous communities with knowledge and tools to assert their rights.
2.	Kardooni, R., Fatimah Binti Kari, Siti Rohani Binti Yahaya & Siti Hajar Yusup. 2014. Traditional knowledge of Orang Asli on forests in Peninsular Malaysia.	Available at: Traditional Knowledge of orang asli on forests in Peninsular Malaysia	Click the link provided to view and download the information.	Peninsular Malaysia	Refer for the map of *Orang Asli* groups.

No.	Reference	Accessible links	Availability	Application	Remarks
	Indian Journal of Traditional Knowledge 13(2): 283-291.				
3.	Tarmiji Masron, M. Fujimaki, & Norhasimah Ismail. 2013. *Orang Asli* in Peninsular Malaysia: Population, Spatial Distribution and Socio-Economic Condition. Ritsumeikan Journal of Social Sciences and Humanities 6: 75-115	Available at: • (PDF) Orang Asli in Peninsular Malaysia: population, spatial distribution, and socio-economic condition (researchgate.net) • http://www.ritsumei.ac.jp/acd/re/k-rsc/hss/book/pdf/vol06_07.pdf	Click the link provided to view and download the information.	Peninsular Malaysia	Refer for the categories and maps of *Orang Asli* in Peninsular Malaysia.
4.	Nicholas, C. & J. Lasimbang (eds.). 2004. Deliberations at the National Roundtable on Biodiversity and indigenous knowledge systems in Malaysia. Centre for *Orang Asli* Concern (COAC) for Jaringan *Orang Asli* SeMalaysia (JOAS), Subang Jaya, Malaysia.	Available for purchase from: Centre for *Orang Asli* Concerns (COAC) Tel: +603-80116259 Mobile: +6013-3508058 Email: colin.coac@gmail.com Website: https://www.coac.org.my/ Article: https://mylib-webopac.ekonomi.gov.my/webopac/Record/0000021988	Must be purchased.	Malaysia	Discussion on the integration of Indigenous Knowledge, empowerment of communities and an evaluation on laws and policies concerning the indigenous people.
5.	Ab. Halim, A., N. Othman, S.R. Ismail, J.A. Jawan & N.N. Ibrahim. 2012. Indigenous knowledge and biodiversity conservation in Sabah. *Int. Journal of Social Science and Humanity* Vol. 2(2): 159-163.	Available for download from: (PDF) Indigenous Knowledge and Biodiversity Conservation in Sabah, Malaysia (researchgate.net)	Click the link provided to view and download the information.	Sabah	Refer for the indigenous peoples' knowledge system.

No.	Reference	Accessible links	Availability	Application	Remarks
6.	Ramy Bulan & A. Locklear. 2008. Legal Perspectives on Native Customary Land Rights in Sarawak. Human Rights Commission of Malaysia (SUHAKAM), Kuala Lumpur, Malaysia.	Available for download from: Legal-Perspectives.pdf (suhakam.org.my)	Click the link provided to view and download the information.	Sarawak	An analysis of the legal frameworks governing Native Customary Rights (NCR) in Sarawak.
7.	WWF, FDS, SFC and STA. 2022. High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs). First Edition. Kuching, Sarawak, Malaysia.	Available for download from here: High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs)	Click the link provided to view and download the information.	Sarawak	Refer for HCV training pertaining to Sarawak.

6.5.1.4 Web Resources

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Table 6.28: List of Web Resources for HCV 5

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Malaysia (DOSM), official portal Malaysia's open data portal	http://www.data.gov.my/	Click the link provided to view the information.	Malaysia	Contains a wide range of datasets including on socioeconomics, national statistics and many more.

6.5.1.5 Other Data Sources

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Table 6.29: List of Other Data Sources for HCV 5

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Jabatan Kemajuan *Orang Asli*/Department of *Orang Asli* Development (JAKOA)	Available for viewing from: • www.jakoa.gov.my • https://www.jakoa.gov.my/orang-asli/jadual-taburan-etnik-orang-asli-mengikut-negeri/ • https://www.jakoa.gov.my/orang-asli/taburan-etnik-orang-asli-mengikut-etnik-sub-etnik-mengikut-negeri/	Click the link provided to view the information.	Peninsular Malaysia	Refer for Ethnic Distribution of Indigenous Peoples by Ethnicity/Sub Ethnicity by State.
2.	Centre for *Orang Asli* Concerns (COAC)	Available for viewing from: https://staging.coac.org.my/	Click the link provided to view the information.	Peninsular Malaysia	NGO that advocates for the rights and welfare of the Orang Asli.
3.	Kadazan Dusun Cultural Association (KDCA)	Available for viewing from: • http://www.kdca.org.my/ https://www.facebook.com/kdcahq/?locale=ms_MY	Click the link provided to view the information.	Sabah	NGO dedicated to the preservation, development, and promotion of the Kadazandusun people's cultural heritage.
4.	Majlis Adat Istiadat Sarawak/Council for Customs and Traditions:	Available for viewing from: https://nativecustoms.sarawak.gov.my/	Click the link provided to view the information.	Sarawak	Statutory body established to oversee, preserve, and promote the customary laws (*adat*), traditions, and cultural heritage of Sarawak's indigenous communities.
5.	Borneo Resources Institute (BRIMAS)	Available for viewing from: http://brimas.www1.50megs.com/	Click the link provided to view the information.	Sabah	NGO established in response to the challenges faced by indigenous Dayak communities.
6.	Sabah Cultural Board	Available for viewing from: Sabah Cultural Board	Click the link provided to view the information.	Sabah	Statutory body tasked with preserving, promoting, and developing the diverse cultural heritage of Sabah's indigenous communities.
7.	Sarawak Dayak Iban Association (SADIA)	Available for viewing from: • SADIA	Click the link provided to view the information.	Sarawak	NGO that represents the Iban community and advocates for the rights and welfare of Indigenous peoples in the region.

6.6 HCV 6: Cultural Values

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HCV 6 are areas where important cultural and traditional functions such as rituals and tributes to the ancestors of the local community and indigenous peoples are held. Directly or indirectly, these areas could supply natural materials for these rituals. Table 6.30 shows the attributes for Assessment of HCV 6 identification.

Adapted HCV 6 Definition from HCVN
Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance, and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

Table 6.30: Attribute consideration for HCV 6 presence

No.	Attributes of HCVs adopted from HCVN	Descriptor	Relevance in the Malaysian oil palm landscape
6.1	Sites recognised as having high cultural value within national policy and legislation.	Nationally recognised high cultural value	Potentially present. Low to moderate relevance for existing oil palm planting scenarios.
6.2	Sites with official designation by national government and/or an international agency like UNESCO.	Nationally or internationally recognised historical, cultural, or religious site	Potentially present. Low to moderate relevance for existing oil palm planting scenarios.
6.3	Religious or sacred sites, burial grounds, or sites at which traditional ceremonies take place that have importance to local or indigenous people.	Religious or sacred sites, burial grounds, and sites for traditional ceremonies	Potentially present. Low to moderate relevance for existing oil palm planting scenarios.
6.4	Plant or animal resources with totemic values or used in traditional ceremonies.	Plant and animal resources for rituals	Potentially present. Low to moderate relevance for existing oil palm planting scenarios.

Photo 6.18 to Photo 6.23 show the examples of potential HCV 6 present. Section 6.6.1 presents the list of data sources that may be relevant for HCV 6 identification.

The justification of HCV 6 presence or absence in the concession must be discussed with supporting data such as:

- Identity of groups that have significant cultural or religious sites within the concession.
- Identity of sacred sites and burial grounds within the concession.
- Identity of resources that are used in any rituals by the local communities and indigenous peoples, originating from the concession.
- Identity of international and nationally recognised cultural and religious sites.
- Identity of products harvested and degree of dependency on forest / patches.
- Identify sources of livelihood that are dependent on forest and river resources.
- Findings of focused group discussions and consultations with local community and indigenous peoples (compulsory).

Credits: MEC

Photo 6.18: Example of HCV 6 presence (Historical Coal Mining Site)

Credits: MEC

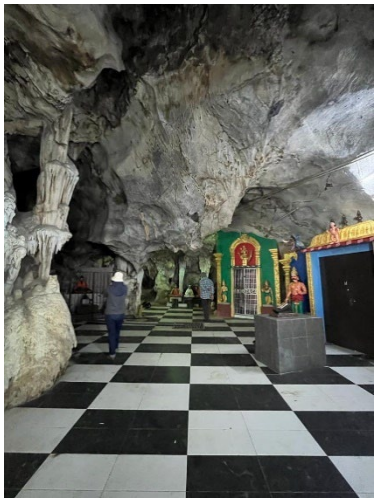
Photo 6.19: Example of HCV 6 presence (Graveyard in Sabah)

Credits: MEC

Photo 6.20: Example of HCV 6 presence A (Graveyard in Johor)

Credits: MEC

Photo 6.21: Example of HCV 6 presence (Temple within an oil palm plantation in Johor)



Credits: MEC

Photo 6.22: Example of HCV 6 presence (Temple in a limestone cave within an oil palm plantation in Peninsular)

Credits: MEC

Photo 6.23: Example of HCV 6 presence (Old burial site within an oil palm plantation in Sabah)

Due to the varying numbers of grower and production categories present in Malaysia, there is a low to moderate possibility of HCV 6 attributes being present as shown in Table 6.11. To indicate this, a relevancy table has been prepared (see Table 6.12), detailing the level of relevancy these attributes may have on the grower and production categories. A guide to this table is displayed below, describing the relevancy rankings as well as their descriptions. It should be noted that these rankings may not apply in special cases, which are predicted to be relatively rare.

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

Table 6.31: Relevancy Table for HCV 6 attributes

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2			Part 4	
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)	4-1	4-2
6.1	Sites recognised as having high cultural value within national policy and legislation.	Nationally recognised high cultural value	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
6.2	Sites with official designation by national government and/or an international agency like UNESCO.	Nationally or internationally recognised historical, cultural, or religious site	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
6.3	Religious or sacred sites, burial grounds, or sites at which traditional ceremonies take place that have importance to local or indigenous people.	Religious or sacred sites, burial grounds, and sites for traditional ceremonies	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2
6.4	Plant or animal resources with totemic values or used in traditional ceremonies.	Plant and animal resources for rituals	1	1	1	1	2	2	1	2	2	2	2	2	2	2	2

6.6.1 List of Data Sources for HCV 6

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A list of data sources is provided as a reference for assessors. The references will guide the assessors to make informed decisions, and are complementary and not exhaustive.

6.6.1.1 Legislation

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Table 6.32: List of Legislation Sources for HCV 6

No.	Reference	Accessible links	Availability	Application	Remarks
1.	National Heritage Act 2005	Available for viewing from: https://gtwhi.com.my/wp-content/uploads/2020/12/National-Heritage-Act-2005.pdf	Click the link provided to view and download the information.	Malaysia	Legislation enacted to safeguard and promote the nation's rich cultural and natural heritage.
2.	Cultural Heritage (Conservation) Enactment 1997	Available for download from: STATE OF SABAH	Click the link provided to view and download the information.	Sabah	Legislation aimed at conserving and protecting the Sabah's cultural heritage.
3.	Native Customs (Declaration) Ordinance 1996	Available for viewing from: Revision of Law Ordinance, 1992 (sarawak.gov.my)	Click the link provided to view and download the information.	Sarawak	Legislation aimed at formally recognizing and codifying the customary laws (Adat) of various indigenous communities.
4.	Native Courts Ordinance 1992	Available for viewing from: THE NATIVE COURTS ORDINANCE, 1992 (sarawak.gov.my) Amendments: https://lawnet.sarawak.gov.my/lawnet_file/Ordinance/ORD_NATIVE%20LAWNET.pdf	Click the link provided to view and download the information.	Sarawak	Including subsidiary legislation such as: • Adat Bidayuh Order 1994. • Adat Iban Order 1993. Dayak Adat Law Second Division 1963

6.6.1.2 Policy Documents

Back to Quick Reference

Table 6.33: List of Policy Documents for HCV 6

No.	Reference	Accessible links	Availability	Application	Remarks
1.	MOTAC. 2016. *National Ecotourism Plan 2016-2025* (3 volumes). Ministry of Tourism and Culture Malaysia (MOTAC), Putrajaya, Malaysia.	Available for download from: https://www.motac.gov.my/en/download/category/86-pelan-eko-pelancongan-kebangsaan-2016-2025	Click the link provided to download the information.	Malaysia	Strategic blueprint for developing a sustainable ecotourism sector that balances environmental conservation, economic growth, and community empowerment.
2.	MOTAC. 2021. *Dasar Kebudayaan Negara 2021*. Ministry of Tourism and Culture Malaysia (MOTAC), Putrajaya, Malaysia.	Available for download from: https://www.motac.gov.my/muat-turun/category/123-dasar-kebudayaan-negara-2021 **(MALAY VERSION)**	Click the link provided to download the information.	Malaysia	Cultural policy aimed to strengthen the development of arts, culture, and heritage in line with Malaysia's vision of becoming a "Developed Nation with a Cultured Society.

6.6.1.3 Publications

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Table 6.34: List of Publications for HCV 6

No.	Reference	Accessible links	Availability	Application	Remarks
1.	Lasimbang, A. 2004. Community Mapping in Malaysia: The use of community maps in resources management and protecting rights over indigenous peoples' territory. Paper presented at the Regional Community Mapping Network Workshop, Nov. 8-10, 2004, Quezon City, Philippines.	Available for download from: http://www.iapad.org/wp-content/uploads/2015/07/pacos.pdf	Click the link provided to view and download the information.	Malaysia	The paper explores how indigenous communities employ participatory mapping to assert their customary land rights, manage natural resources, and safeguard their territories from external threats.
2.	Erni, C. 2008. The Concept of Indigenous Peoples in Asia: A Resource Book. International Work Group for Indigenous Affairs (IWGIA). Asia Indigenous Peoples Pact Foundation (AIPP).	Available for download from: https://www.iwgia.org/images/publications/Concept_of_Indigenous_Peoples_in_Asia_-_Digital.pdf	Click the link provided to view and download the information.	Malaysia	Refer to page 403 for the list of indigenous people in Malaysia.
3.	Mustafa, S. & Saleh, Y. 2017. An Overview on Intangible Cultural Heritage in Malaysia. Department of Environment and Geography, Faculty of Human Sciences, Universiti Pendidikan Sultan Idris, Malaysia.	Available for download from: https://hrmars.com/papers_submitted/2914/An_Overview_on_Intangible_Cultural_Heritage_In_Malaysia.pdf	Click the link provided to view and download the information.	Malaysia	An academic article that delves into the various forms of intangible cultural heritage present in Malaysia.
4.	WWF, FDS, SFC and STA. 2022. High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs). First Edition. Kuching, Sarawak, Malaysia.	Available for download from here: High Conservation Values (HCVs) Training Modules for Sarawak Forest Management Units (FMUs)	Click the link provided to view and download the information.	Sarawak	Refer for HCV training pertaining to Sarawak.

6.6.1.4 Web Resources

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Table 6.35: List of Web Resources for HCV 6

No.	Reference	Accessible links	Availability	Application	Remarks
1.	List of UNESCO World Heritage sites in Malaysia	Available for viewing from: http://whc.unesco.org/en/statesparties/my	Click the link provided to view the information.	Malaysia	Refer for locations and areas classified as UNESCO World Heritage sites.
2.	List of Sites on the UNESCO Tentative List	Available for viewing from: http://whc.unesco.org/en/statesparties/my	Click the link provided to view the information.	Malaysia	Areas are nominated by State Parties to be listed in the UNESCO World Heritage List.
3.	List of National Heritage Sites (National based)	Available for viewing from: https://www.heritage.gov.my/	Click the link provided to view the information.	Malaysia	Refer for locations and areas classified as national heritage sites.

6.6.1.5 Other Data Sources

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Table 6.36: List of Other Data Sources for HCV 6

No.	Reference	Accessible links	Availability	Application	Remarks
1.	*Jabatan Kemajuan Orang Asli (JAKOA)* (Department for *Orang Asli* Development)	Available for viewing from: • www.jakoa.gov.my • https://www.jakoa.gov.my/orang-asli/jadual-taburan-etnik-orang-asli-mengikut-negeri/ • https://www.jakoa.gov.my/orang-asli/taburan-etnik-orang-asli-mengikut-etnik-sub-etnik-mengikut-negeri/	Click the links provided to view the information.	Peninsular Malaysia	Refer for Ethnic Distribution of Indigenous Peoples by Ethnicity/Sub Ethnicity by State.

No.	Reference	Accessible links	Availability	Application	Remarks
2.	Centre for *Orang Asli* Concerns (COAC)	Available for viewing from: https://staging.coac.org.my/	Click the link provided to view the information.	Peninsular Malaysia	NGO that advocates for the rights and welfare of the Orang Asli.
3.	*Kadazan Dusun Cultural Association* (KDCA)	Available for viewing from: • http://www.kdca.org.my/ • https://www.facebook.com/kdcahq/?locale=ms_MY	Click the links provided to view the information.	Sabah	NGO dedicated to the preservation, development, and promotion of the Kadazandusun people's cultural heritage.
4.	*Majlis Adat Istiadat Sarawak* (Council for Customs and Traditions)	Available for viewing from: https://nativecustoms.sarawak.gov.my/	Click the link provided to view the information.	Sarawak	Statutory body established to oversee, preserve, and promote the customary laws (*adat*), traditions, and cultural heritage of Sarawak's indigenous communities.
5.	Borneo Resources Institute (BRIMAS)	Available for viewing from: http://brimas.www1.50megs.com/	Click the link provided to view the information.	Sabah	NGO established in response to the challenges faced by indigenous Dayak communities.
6.	Sabah Cultural Board	Available for viewing from: Sabah Cultural Board	Click the link provided to view the information.	Sabah	Statutory body tasked with preserving, promoting, and developing the diverse cultural heritage of Sabah's indigenous communities.
7.	Sarawak Dayak Iban Association (SADIA)	Available for viewing from: SADIA	Click the link provided to view the information.	Sarawak	NGO that represents the Iban community and advocates for the rights and welfare of Indigenous peoples in the region.

6.7 Stakeholder Dialogue

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The dialogue session is the culmination of all data and information collected from the HCV assessment exercise. The findings of the assessment must be presented to the whole range of stakeholders for scrutiny and acceptance. Stakeholders' involvement in the assessment and post assessment process is a crucial consultative requirement. The HCV assessment is a rapid undertaking and has the potential to miss out key elements that require consideration. A dialogue session is a forum where informed stakeholders can verify findings and add on to the accuracy and validity of the assessment findings. Acceptance of the findings by stakeholders is crucial as if this is not received, the report cannot be accepted. The HCV map must be presented, finalised, and formally accepted.

The minimum list of relevant stakeholders are as follows:

- Local communities and indigenous people involved,
- NGOs and other organisations representing local communities,
- Neighbouring estates, and adjacent industrial operators,
- Mills and processing plants within the AOI,
- Contractors and suppliers,
- Environmental and social NGOs at national and district level,
- Government and administrative representative (district administration),
- Wildlife and forestry department representative,
- Academic institutions representative,
- Security forces representative (police and armed forces), and
- Any other organisations and individuals deemed necessary.

Below is the list of information to be presented to the stakeholder and local communities. This is the minimum requirement for the Dialogue Session.

1. Summary and key points of the MSPO Revised Standard.
2. Six HCV concepts and the presence of each HCV in the area.
3. Findings of HCV assessment; List of fauna and flora species (with field photos) with IUCN/RTE status, types of ecosystems identified, extent of species diversity (aided with visual presentation).
4. Final draft maps of HCV areas, maps related to the AOI and ecology models, locations of villages, GPS points of assessments.
5. Stakeholders' and the local communities' role in co-managing HCV areas being discussed comprehensively.

There are two significant points concerning stakeholders that the assessment team and the organisation should take note of:

- The first is that with a diversity of stakeholder interests, it is inevitable that some of the expectations will be in conflict. The HCV design and management plan should be able to minimise the effects of some of these conflicting demands, but not necessarily all.
- In addition, the second is that stakeholders may not be aware of what they actually value, and what they may want to be conserved at the time of consultation. Stakeholders often become more aware of what they value after it has been lost. HCV managers will need to have the patience and forbearance to give stakeholders, especially local community stakeholders, the freedom to reach decisions slowly and then later to change their minds.

A record of the dialogue session proceedings and findings must be included in the HCV assessment report with the proof of incorporation of stakeholder requests clearly marked. Attendance records and photographs of the dialogue session must be embedded in the final HCV Assessment report.

7 HCV Integrated Management

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Post-identification of HCV sites requires management and monitoring to enable the maintenance and enhancement of the values. Management and monitoring of HCVs requires a framework that identifies key actions, either direct or indirect, that would conserve these sites. Chart 7.1 demonstrates the flow of elements that need to be considered to enable the formulation of an effective management and monitoring plan that takes into consideration monitoring data to ensure that the process of adaptive management is practised.

7.1 Threats Assessment

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The identification of threats and its incorporation into the entire HCV management and monitoring is a crucial component. In most cases, the approach taken will be one of benign management if threats are not identified. The inclusion of threats into the management framework will ensure that threats are minimised and mitigated because in most cases, the threats are anthropogenic in nature. The very first component in Chart 7.1, following HCV identification, is the threats assessment. The source of threats could either be internal, external or both. Threats can also be classified as current and potential, and this is relevant for existing oil palm planting scenarios. This being the case, management of HCVs needs to incorporate threat mitigation measures and in addition, a frequency of monitoring must be established if apparent threats are identified. The social component for threats, needs to be analysed and regular communication with stakeholders who are identified as sources of threats should be initiated and maintained.

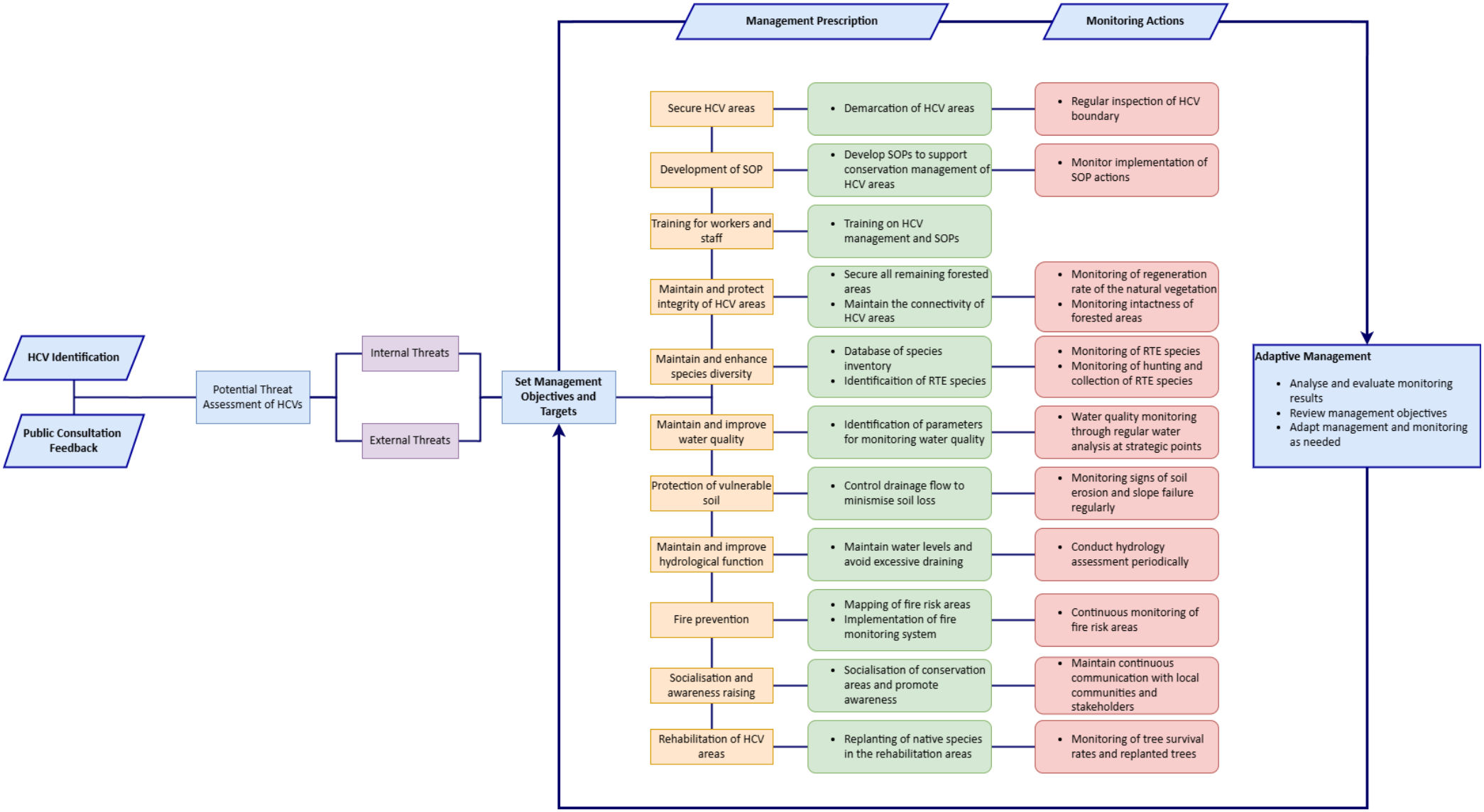

Chart 7.1: Formulation of an effective management and monitoring frame

7.2 HCV Management and Monitoring Recommendations

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Based on the summary of HCVs identified within the oil palm concession boundary, the recommendations for management and monitoring must be reported. The organisation should use the content of Table 7.1 to develop a simple HCV management and monitoring plan. The management and monitoring plan should be a brief document that lists the HCVs present and state the following:

- Management and monitoring actions according to each HCV present,
- Person-in-charge (PIC) to carry out the management and monitoring actions,
- To include the timeline or duration to implement the management actions, and
- To specify the frequency of monitoring.

Appendix F (Section 15.6) provides a template for an HCV management and monitoring report for these organisations.

Table 7.1 Recommended Minimum Management and Monitoring Action

Type of HCVs	Recommended Minimum Management Action	Recommended Minimum Monitoring Action
HCV 1: Species Diversity	• Mark and label boundaries of HCV 1 areas. • Secure all remaining natural forest areas and allow degraded areas to return to a mid-successional state. • Restriction of types and quantity of agrochemicals used and method of application. • Minimise the risk of persistent accumulation of chemicals in local wildlife consumed as food, especially by predators and humans. • Socialisation with local communities regarding the importance of RTE species. • Socialisation of the importance of conservation areas and sustainable utilisation of plant and animal resources in HCV 1 areas. • Promote awareness to stop activities such as forest disturbance and hunting in all conservation areas. • Develop SOPs to support the conservation management of HCV 1 areas.	• Inspection and maintenance of boundary markers. • Monitoring of RTE species. • Monitoring of biodiversity indicators. • Monitoring of hunting and collection of RTE species. • Regular enforcement of best practices SOPs and biological controls.

Type of HCVs	Recommended Minimum Management Action	Recommended Minimum Monitoring Action
	• Support awareness-raising among local stakeholders, including regional gun-owners of wildlife proscriptions in and around the forest reserve.	
HCV 2: Landscape-Level Ecosystems and Mosaics	• Mark and label boundaries of HCV 2 areas. • Ensure patches of HCV areas and buffers within and around plantations remain, so that movement of wildlife can occur (especially during replanting). • Socialise with local communities and control encroachment by local communities in the HCV areas. • Avoid construction of new roads that can fragment the continuity of forest. • Encourage forest and land agencies to be transparent on land use. • Encourage forestry agencies to maintain the boundaries and integrity of the remaining areas of forest reserves.	• Inspection and maintenance of boundary markers. • Monitor encroachment and activities outside that can be detrimental to HCV 2 areas. • Monitor effectiveness of socialisation on conservation areas and sustainable utilisation of resources in HCV 2 areas. • Monitor activities of development and new road building or land clearing to avoid fragmentation of HCV 2 areas (especially during replanting).
HCV 3: Ecosystems and Habitat	• Mark and label boundaries of HCV 3 areas. • Ensure HCV areas within and around plantation areas remain intact. • Socialise with local communities and control encroachment by local communities in the HCV 3 areas. • Avoid construction of new roads that can fragment the continuity of forest. • Maintain communication with the management of adjacent development to reduce transboundary impacts.	• Regular inspection and patrolling of HCV boundaries. • Monitor encroachment and activities outside that can be detrimental to HCV 3 areas. • Monitor local communities' interests and activities in the HCV 3 area. • Monitor effectiveness of socialisation and provide sustainable projects to offset the need of local communities' encroachment in HCV 3 areas. • Monitor activities of development and road building/ land clearing contractors to avoid fragmentation of HCV 3 areas (especially during replanting). • Review monitoring results to change or modify management prescriptions.
HCV 4: Ecosystem services	• Mark and label the boundaries of HCV 4 areas in both planted and not planted areas.	• Monitor flooding period. • Monitor drainage flow and soil loss.

Type of HCVs	Recommended Minimum Management Action	Recommended Minimum Monitoring Action
	• Maintain riparian buffers to attenuate flooding. • Demarcate physical river buffers, steep slopes, and fragile slopes. • Develop appropriate SOP to manage riparian buffers and establish strict enforcement (including replanting in these areas). • Develop SOP for the prevention of chemical spraying and fertiliser application in areas close to the river buffer. • Develop SOPs for replanting and preparation of hilly areas (contouring). • Develop SOPs for road and drain design to minimise erosion. • Control drainage as above, and close supervision to optimise/ minimise the nutrient application. • Establish proper drainage of sewage and household wastewater (ensure that this is not discharged into rivers with downstream settlements that uses the water for their basic needs). • Enforce containment procedures of oil and chemical spillage to prevent leaking / flowing into rivers. • Develop SOP for managing steep areas (including oil palm areas) – the main focus should be on preventing slope failure and unmitigated erosion. Considerations for replanting must be included.	• Monitor effectiveness of various HCV 4 SOPs. • Monitor activities of development and road and bridge building/ land clearing in hilly areas and river buffers. • Monitor density of drains built to prevent over-draining. • Monitoring intactness of riparian reserves. • Monitor effectiveness of socialisation with local communities with various HCV 4 activities including the importance of maintaining riparian reserves and biological connectivity. • Monitor signs of soil erosion and slope failure (especially areas to be planted with oil palm) systematically and regularly. • Water quality monitoring through regular water analysis at strategic points. • Monitor management activities such as spraying and manuring in riparian buffers within areas identified for oil palm planting.
HCV 5: Community Needs	• Mark boundaries and tag using signboards in HCV 5 planted and not planted areas. • Manage or assess consumption of food resources from the forest including hunting and collection of animals. • Co-management plan with local community to ensure sustainable extraction of forest resources (NTFP).	• Monitor the use of forest resources within management extent by the local communities and workers through a consultative process. • Monitor entry of outsiders into management extent. • Monitor encroachment and activities outside that can be detrimental to HCV 5 areas and deplete NTFP resources.

Type of HCVs	Recommended Minimum Management Action	Recommended Minimum Monitoring Action
	• Create a mechanism to manage and resolve encroachments. • Control entry to prevent outsider exploitation of forest resources. • Develop riparian reserve SOP for monitoring water quality and riparian buffers (including replanting in these areas). Considerations for replanting must be included. • Develop SOP to monitor the quality of incoming and outgoing water resources. • Educate and socialise with local communities on the importance of maintaining water quality. • Water treatment facilities for all wastewater. Locating facilities away from the supply sources of other settlements. • Establish proper drainage of sewage and household wastewater, ensuring that this is not discharged into rivers with downstream settlements that use the water for their basic needs. • Enforce containment procedures of oil and chemical spillage so it does not leak / flow into rivers.	• Monitor local communities' interest and activities in the HCV 5 area. • Regular review of the effectiveness of SOPs. • Monitoring the intactness of riparian reserves. • Monitor management activities such as spraying and manuring in riparian buffers. • Regular monitoring to ensure water quality parameters such as *E. coli*, Total Dissolved Solids (TDS) levels, Total Suspended Solids (TSS), etc. are of an acceptable level. This is applicable for larger estates. For smallholdings and small plantations, visual observation can be used to monitor the water turbidity. • Water quality monitoring through regular water analysis at strategic points, especially upstream and downstream. • Review monitoring results to change management prescriptions.
HCV 6: Cultural Values	• Mark and install signage for each HCV 6 site. • Co-management with the local community to ensure the preservation of HCV 6 within and outside development areas. • Maintain communication with local communities to ensure their active participation in co-management. • Conduct an on-going exercise to identify HCV 6 sites that are yet to be identified. • Develop an SOP to maintain the sites.	• Inspection and patrolling of HCV boundaries. • Monitor encroachment activities in HCV 6 sites. • Monitor on-going newly identified HCV 6 sites and manage them appropriately. • Monitoring of socialisation and awareness-raising efforts. • Review monitoring results to change management prescriptions.

8 HCV Assessment Reporting Guide

Back to Quick Reference

This section provides guidance on the structure and content of the HCV assessment report. The following sections are designed to facilitate reporting by the assessors. The report must strictly follow the order (e.g., of subheadings) and content presented in Table 8.1 below, while the numbering may change:

Table 8.1 General Contents of the HCV Assessment Report

No.	Headings	Sub-headings	Content
1.	Cover page	-	• Date of report • Name of Lead HCV Assessor • Contact information of Lead HCV Assessor • Organisation commissioning HCV assessment • Location of assessment • Date of assessment • Size of assessment area
2.	Table of contents	List of Tables	E.g.: • HCV assessment timeline • Extent of HCV 1 found in the assessment area • Extent of HCV 2 found in the assessment area • Extent of HCV 3 found in the assessment area • Extent of HCV 4 found in the assessment area • Extent of HCV 5 found in the assessment area • Extent of HCV 6 found in the assessment area • List of plant species in the assessment area • List of wildlife species in the assessment area
3.		List of Maps	E.g.: • Location of the assessment area • Land cover of the assessment area • Location of sampling sites for social and ecology survey in the assessment area • HCV 1 presence in the assessment area • HCV 2 presence in the assessment area • HCV 3 presence in the assessment area • HCV 4 presence in the assessment area • HCV 5 presence in the assessment area
4.		List of Figures	Graphs and images
5.		List of Abbreviations	E.g.: • AOI: Area of Interest • CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora

No.	Headings	Sub-headings	Content
			• FFB: Fresh Fruit Bunches
6.	Executive summary	Summary of key findings and recommendation	• Clear and concise while maintaining factual accuracy. • Self-contained, requiring no external references. • Briefly addresses all key issues and essential project details.
7.	Introduction	Objective of the HCV Assessment	• Outline the purpose and background of the assessment. • Provide detailed information about the assessment area, including its name, location, size, and coordinates. • Include maps showing the assessment area. • Offer a comprehensive description of the AOI. • Highlight the social and biological features of the AOI.
8.		Background of Study Area	
9.		Description of the site	
10.		Description of the AOI	
11.	Overview of the HCV Assessment	HCV Assessment Team	• Present the assessment team briefly, including their name, institution, role, expertise, email address, and contact information. • Attach brief CVs of team members in the appendix.
12.		HCV Assessment Timeline	• Provide an overview of the assessment timeline and methods. • Detail the steps involved in the preassessment, scoping study and full assessment phases. • Highlight key dates for major events and milestones in the assessment chronology.
13.	Methods	Desktop study	• Compile available data (reports, maps, legal and administrative documents) into a GIS database. • Generate information layers and maps for sample point selection in field surveys. • Develop an ecological map model. • Identify ecological types affected by development and areas unsuitable for it.
14.		Biodiversity Survey for HCVs 1, 2 and 3	• Describe environmental methods in the assessment. • Justify field methods. • Type of studies: Botanical and faunal assessment
15.		Ecosystem services survey for HCV 4	• Outline methods for gathering primary data and secondary data. • Create a preliminary mapping and update the maps using insights from field verification
16.		Socio-economic & cultural surveys for HCVs 5 and 6	• Describe social methods used in the assessment. • Justify the choice of method and sampling.

No.	Headings	Sub-headings	Content
			• Detailed methods should be in the appendix, including copies of the interview. • Example social methods: field observations, in-depth interviews and focus group discussions.
17.		Data Analysis	• Describe the methods used for biodiversity data compilation. • Outline the approach for analysing social data. • Discuss the limitations of the methods.
18.	HCV Identification and its Justification	HCV 1: Species diversity	• Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 1. • Clearly state whether HCV 1 is present or absent in the management unit, supported by evidence from the assessment. • Include a summary table listing all identified HCV 1 species. • Incorporate a detailed HCV 1 map and summary table of their extent within the management unit. If no HCV 1 is identified during the assessment, a map showing no presence of HCV 1 is still required.
19.		HCV 2: Landscape-level ecosystems and mosaics	• Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 2. • Clearly state whether HCV 2 is present or absent in the management unit, supported by evidence from the assessment. • Incorporate a detailed HCV 2 map and summary table of their extent within the management unit. If no HCV 2 is identified during the assessment, a map showing no presence of HCV 2 is still required.
20.		HCV 3: Ecosystems and Habitats	• Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 3. • Clearly state whether HCV 3 is present or absent in the management unit, supported by evidence from the assessment. • Incorporate a detailed HCV 3 map and summary table of their extent within the management unit. If no HCV 3 is identified during the assessment, a map showing no presence of HCV 3 is still required.

No.	Headings	Sub-headings	Content
21.		HCV 4: Ecosystem Services	• Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 4. • Clearly state whether HCV 4 is present or absent in the management unit, supported by evidence from the assessment. • Incorporate a detailed HCV 4 map and summary table of their extent within the management unit. If no HCV 4 is identified during the assessment, a map showing no presence of HCV 4 is still required.
22.		HCV 5: Community Needs	• Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 5. • Clearly state whether HCV 5 is present or absent in the management unit, supported by evidence from the assessment. • Present an overview of focus group discussion and stakeholder consultation. • Incorporate a detailed HCV 5 map and summary table of their extent within the management unit. f no HCV 5 is identified during the assessment, a map showing no presence of HCV 5 is still required.
23.		HCV 6: Cultural values	• Provide explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 6. • Clearly state whether HCV 6 is present or absent in the management unit, supported by evidence from the assessment. • Incorporate a detailed HCV 6 map and summary table of their extent within the management unit. f no HCV 6 is identified during the assessment, a map showing no presence of HCV 6 is still required.
24.	Management and Monitoring Recommendations	Threat Assessment	• Explain the approach used for conducting the threat assessment. • Identify and describe the current and potential threats to all identified HCVs.
25.		Overlapping HCV Management Area	• Provide a map illustrating the designated HCV management areas. • Describe how the management areas are designed. • Include the extent of the management areas.
26.		HCV Management and Monitoring Action Plan	• Outline a management and monitoring plan based on the identified HCVs.

No.	Headings	Sub-headings	Content
			• Specify the individual or team responsible for implementing each management action, along with a timeline for completion. • Include the frequency at which monitoring will take place.
27.	Dialogue Session	-	• Provide a summary outcome of the dialogue session. • Attach the detailed documentation of dialogue session in the appendix.
28.	Conclusion	-	• Provide a summary of the key findings and presence of HCVs. • Emphasize the integrated management recommendations.
29.	References	-	• Provide a comprehensive list of sources referenced in the HCV assessment report. • Ensure that all information sources are properly cited according to the appropriate citation format.
30.	Appendices	-	Example of the appendices: • Full list of species • Summary of field data • Photos of the species • CV of the assessment team

Table 8.2 shows the maps required for the HCV assessment report. The maps should have the information listed in the table below.

Table 8.2: List of maps and details required

No.	Map	Description	GIS Data (Shapefiles) - *Recommended*
1	Location of the site in Malaysia	• Map showing the location of the site in Malaysia.	1. Concession Boundary 2. Malaysia State Boundary
2	Administrative map of the site	• Map showing the district location of the site. • Map showing the nearest town surrounding the site.	1. Concession Boundary 2. Malaysia State Boundary 3. Malaysia Division/District Boundary
3	Year of Planting	• Map showing the year of planting for each oil palm block of the site. • The information can be provided by the estate.	1. Site Boundary 2. Estate's Year of Planting 3. Oil Palm Planting Block
4	Roads, Rivers, and Villages	• Maps should show roads, rivers and villages surrounding the site and its AOI. • AOI extent must be included in the map. • The rivers and villages that were used in HCV analysis must be included in the map.	1. Concession Boundary 2. River 3. Road 4. Village 5. AOI

No.	Map	Description	GIS Data (Shapefiles) - *Recommended*
5	Original Ecology/Ecosystem	• Map showing the original ecology of the site and its AOI before the oil palm development. • AOI extent must be included in the map.	1. Concession Boundary 2. Ecosystem 3. AOI
6	Soil	• Map showing the type of soils in the site.	1. Concession Boundary 2. Soil 3. AOI
7	Elevation	• Map showing the general elevation of the site and its AOI. • AOI extent must be included in the map.	1. Concession Boundary 2. Digital Elevation Model (DEM) 3. AOI
8	Slope	• Map showing the general slope of the site and its AOI. • AOI extent must be included in the map.	1. Concession Boundary 2. Slope 3. AOI
9	National and Regional Protected Area - Forested Area	• Map showing the nearest protected area found adjacent to the site and within the AOI. • Wider landscape extent must be included in the map. • The information must include a national list of the protected areas (refer to Section 14.5).	1. Concession Boundary 2. Protected Areas 3. AOI
10	Latest Satellite Image	• Map showing the ground condition of the site using satellite imagery. • The date of the satellite imagery used must be updated (within 6 months) before the date of HCV assessment. • Cloud cover must be less than 25% of the assessment site. • AOI extent must be included in the map.	1. Concession Boundary 2. Current Satellite Image 3. AOI
11	Social Visit	• Map showing the locations of social visits done by the HCV assessors in the site and its AOI. • AOI extent must be included in the map.	1. Concession Boundary 2. Social Points Visited 3. Social Tracks 4. Villages 5. River 6. AOI
12	Ecology Visit	• Map showing the locations of ecology survey done by HCV assessors in the site and its AOI. • AOI extent must be included in the map.	1. Concession Boundary 2. Ecology Plots (Botany and Zoological) 3. Location of Camera Trap 4. Ecology Tracks 5. River 6. AOI
13	Land Cover/Land Use	• Map showing the updated land cover/land use of the site. • The land cover/land use must be updated indicating the month and year the HCV assessment was undertaken.	1. Concession Boundary 2. Satellite Image 3. River 4. AOI
14	HCV 1	• Map showing the HCV 1 presence in the site. • HCV must be within the site only.	1. Concession Boundary 2. HCV 1
15	HCV 2	• Map showing the HCV 2 presence in the site. • HCV must be within the site only.	1. Concession Boundary 2. HCV 2

No.	Map	Description	GIS Data (Shapefiles) - *Recommended*
16	HCV 3	• Map showing the HCV 3 presence in the site. • HCV must be within the site only.	1. Concession Boundary 2. HCV 3
17	HCV 4	• Map showing the HCV 4 presence in the site. • HCV must be within the site only.	1. Concession Boundary 2. HCV 4 3. River (If necessary) 4. Peat (If necessary) 5. Steep slope (If available)
18	HCV 5	• Map showing the HCV 5 presence in the site. • HCV must be within the site only.	1. Concession Boundary 2. HCV 5
19	HCV 6	• Map showing the HCV 6 presence in the site. • HCV must be within the site only.	1. Concession Boundary 2. HCV 6
20	HCVMA	• Map showing the HCV management area in the site. • HCVMA must be within the site only.	1. Concession Boundary 2. HCVMA

Table 8.3 presents the list of shapefiles and/or maps that must be provided by the organisation to the either internal or external HCV assessors. **Provision of shapefiles is only an option based on the capacity of the management unit involved. In case of smaller management units, paper maps will be sufficient.** The table also includes a list of secondary GIS data that should be acquired by the HCV assessors to successfully undertake a spatial analysis of the AOI. Spatial analysis is not restricted to GIS software. Manual overlays and the production of non-digital maps are also possible. In case the organisations choose to provide the HCV assessors with shapefiles or physical/digital maps, documents such as land titles and/or year of planting maps can be used to generate the GIS shapefiles required.

Table 8.3: Pre-assessment GIS data required

Maps or Shapefiles to be provided by the organisation to the HCV Assessors (Pre-Assessment)		
Related Maps/ Shapefile (if applicable)	**Information Needed within Shapefile/ Maps**	**Remarks**
Concession boundary	Division Name, Estate Name, Hectarage	Must be verified with land title
Year of Planting	Block Number, Year of Planting, Division Name	
Secondary GIS data to be obtained by the HCV Assessors (Pre-Assessment)		
Related Maps/Shapefile (if applicable)	**Information Needed within Shapefile/ Maps**	**Remarks**
River	River Name	
Road		
Village	Name of Villages, X and Y Coordinates	
Soil	Type of Soil, Hectarage	
DEM	DEM Classes	It may be provided in Raster or Vector format
Slope	Slope Classes	It may be provided in Raster or Vector format

Table 7.4 displays the list of required maps or shapefiles that the HCV assessors must acquire/produce as deliverables along with the HCV assessment report. These maps/shapefiles shall be made available to MSPO when required.

Table 8.4: Post-assessment GIS data required

Maps or Shapefiles to be provided by the HCV assessors to the organisation (Post-Assessment)		
Related Maps/Shapefiles	**Information Needed within Shapefile**	**Remarks**
HCV	HCV 1, HCV 2, HCV 3, HCV 4, HCV 5, HCV 6, Hectarage	
HCVMA	Overlapping HCV Area, HCV Management Area, Hectarage	
Updated River (if applicable)	Name of Villages, X and Y Coordinates	
Updated Slope (if applicable)	DEM Classes	
Updated DEM (if applicable)	Slope Classes	

9 Reporting Template for HCV Assessment (Applicable for Existing Plantings Greater than 100 Hectares)

Back to Quick Reference

This section serves to guide the HCV assessors on the content of the final HCV Assessment report. It is not exhaustive, but it is provided to ensure that the authors have a systematic approach in reporting and information presentation. It serves as a checklist. Variations to the arrangements may be possible, **as long as the minimum content requirements are adhered to**.

COVER PAGE

Date of Report	
Contact Information (Company)	
MSPO Grower Category	
Estate Name	
Organisation Commissioning	
Address	
GPS Coordinates	
Assessment Date	
Size of Assessment Area (ha)	
Total number of hectares allocated as HCV management areas (ha)	
Lead HCV Assessor's Names	
Lead HCV Assessor's ID	
Number of Pages	

Table of Contents

<List of contents in the report>

List of Tables

<List of tables in the report>

List of Maps

<List of maps in the report>

List of Figures

<List of figures in the report>

List of Abbreviations

<List of abbreviations in the report>

EXECUTIVE SUMMARY

<Summarise all key findings and essential project details throughout the document>

<Include management and monitoring>

1 INTRODUCTION AND BACKGROUND

1.1 Objective of the HCV Assessment

<Outline the purpose and background of the assessment>

1.2 Description of the Site

<Provide detailed information about the assessment area, including its name, location, size, and coordinates>

<Include the following maps>

- *Location of the site in Malaysia*
- *Map of the area to be assessed with current land use/satellite image*

1.3 Description of the AOI

<Provide a comprehensive description of the AOI (Refer to Section 4.1.2)>

The description should include the following topics:

- ***Land Use and Land Cover Identification of the AOI***

  <Include the following maps>

  - *AOI Extent*
  - *Land Cover/Land Use*

- ***Physical and Environmental Characteristics***
  - *Climate*
  - *Rainfall*
  - *Topography (Elevation and Slope analysis)*
  - *Soil types*
  - *Riverine System (Watershed)*

  <Include the following maps>

  - *Elevation*
  - *Slope*
  - *Soils*
  - *Riverine System (Watershed)*

- ***Biological and Ecological Characteristics***
  - *Types of present ecosystems*
  - *Protected areas (Permanent Forest Reserves, Gazetted and Degazetted Forest Reserves, Wildlife Sanctuaries, Ramsar Sites, Peatland, etc.)*
  - *Key Biodiversity Areas (KBA)*
  - *Intact Forest Landscape (IFL)*
  - *Terrestrial Ecosystems of the World (TEOW)*

<Include the following maps>

- *Ecosystems*
- *Protected Areas*
- *KBA*
- *IFL*
- *TEOW*

- ***Social, Cultural and Economic Characteristics***
  - *District Population Information (Gender distribution, Age Distribution, etc.)*
  - *Social setting of the areas (Socioeconomic consideration and resources of the land for basic livelihood)*
  - *UNESCO sites*
  - *Indigenous / Orang Asli Reserves, Native Customary Rights (NCR) Land*

<Include the following maps>

- *Surrounding Villages*

2 OVERVIEW OF HCV ASSESSMENT

2.1 HCV Assessment Team

<Present the assessment team briefly, including their name, institution, role, expertise, email address, and contact information>

2.2 Assessment Timeline

<Provide an overview of the assessment timeline and methods>

3 METHODS

3.1 Desktop Study

<Compile available data (reports, maps, legal and administrative documents) into a GIS database>

<Generate information layers and maps for sample point selection in field surveys>

3.2 Biodiversity Survey (HCV 1, 2 and 3)

<Describe environmental methods in the assessment>

3.3 Ecosystem Services Survey (HCV 4)

<Outline methods for gathering primary data and secondary data>

<Create a preliminary mapping and update the maps using insights from field verifications>

3.4 Socia-Economic & Cultural Survey (HCV 5 and 6)

<Describe social methods used in the assessment>

<Include the following map>

- Locations of ecology and social visit (Points and tracks)

4 HCV IDENTIFICATION AND ITS JUSTIFICATION

4.1 HCV 1: Species Diversity

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 1>

<Clearly state whether HCV 1 is present or absent in the management unit, supported by evidence from the assessment>

> *HCV 1 Definition*: ***Concentrations of biological diversity including endemic species, and rare, threatened or endangered (RTE) species that are significant at global, regional or national levels.***

No.	Attributes that would qualify as HCV 1	Justification for the identification in the management extent
1	High species richness, diversity or uniqueness within a defined area when compared with other sites within the same biogeographic area.	
2	Populations of multiple endemics or RTE species.	
3	Important populations or a great abundance of individual endemic or RTE species, representing a substantial proportion of the regional, national, or global population which are needed to maintain viable populations (e.g., seasonal, migratory species)	
4	Small populations of endemic or RTE species, where the national, regional, or global survival of that species is critically dependent on the area	
5	Sites with significant RTE species richness, or populations of priority species approaching those of key protected areas or other priority sites within the same biogeographic boundary	
6	Important genetic variants, subspecies, or varieties.	

<Provide a short description of HCV 1 field findings>

<Include a summary table listing all identified HCV 1 species>

No.	Class	Family	Scientific Name	Common Name	CITES	IUCN Red List category	National Protection	Endemicity	Resident /Migrant

<Incorporate a summary table of all the recorded species and a table displaying the extent of HCV 1 areas within the management unit>

No.	Category	Conservation Status	Amphibian	Bird	Fishes	Mammals	Reptile	Total
1	**IUCN Red List**	Critically Endangered – CR						
		Endangered – EN						
		Vulnerable – VU						
2	**CITES**	Appendix I						
		Appendix II						
3	**Protected under National Legislation**	*<Insert legislation reference>*						
4	**Endemic species**	*<Endemic to country/island/ or any specific area>*						
5	**Migrant species**	*<Migrant to specific area>*						

HCV 1	HCV 1 Is Present (ha)	Percentage (%)	HCV 1 Is Absent (ha)	Total Area (ha)
<Management Unit>				
Total Areal (ha)				

<Include the following map>

- *HCV 1 presence in the management unit*

3.2 HCV 2: Landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 2>

<Clearly state whether HCV 2 is present or absent in the management unit, supported by evidence from the assessment>

HCV 2 Definition: **Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL), that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.**

No.	Attributes that would qualify as HCV 2	Justification for the identification in the management extent
1	Large areas (e.g. > 50,000 ha), that are relatively far from human settlements, roads, or other access.	
2	Smaller areas that provide key landscape functions such as connectivity and buffering.	
3	Large areas that are more natural and intact than most other such areas and which provide habitats of top predators or species with large range requirements.	

<Incorporate a summary table listing all identified HCV 2 indicators and the assessment findings and a table displaying the extent of HCV 2 areas within the management unit>

HCV 2 Guideline Indicator	Findings
Ramsar sites	
IFL	
WDPA	
KBA	
Protected Areas	

<Provide a short description of HCV 2 field findings>

HCV 2	HCV 2 Is Present (ha)	Percentage (%)	HCV 2 Is Absent (ha)	Total Area (ha)
<Management Unit>				
Total Areal (ha)				

<Include the following map>

- *HCV 2 presence in the management unit*

4.3 HCV 3: Ecosystems and habitats

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 3>

<Clearly state whether HCV 3 is present or absent in the management unit, supported by evidence from the assessment>

HCV 3 Definition: ***Rare, threatened or endangered ecosystems, habitats or refugia.***

No.	Attributes that would qualify as HCV 3	Justification for the identification in the management extent
1	Ecosystems that are naturally rare because they depend on highly localised soil types, locations, hydrology or other climatic or physical features.	
2	Ecosystems that are anthropogenically rare, because the extent of the ecosystem has been greatly reduced by human activities compared to their historic extent.	
3	Ecosystems that are threatened or endangered due to current or proposed operations.	
4	Ecosystems that are classified as threatened in national or international systems	

<Provide a short description of HCV 3 field findings and a table displaying the extent of HCV 3 areas within the management unit >

HCV 3	HCV 3 Is Present (ha)	Percentage (%)	HCV 3 Is Absent (ha)	Total Area (ha)
<Management Unit>				
Total Areal (ha)				

<Include the following map>

- *HCV 3 presence in the management unit*

4.4 HCV 4: Ecosystem services

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 4>

<Clearly state whether HCV 4 is present or absent in the management unit, supported by evidence from the assessment>

> *HCV 4 Definition*: ***Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes.***

No.	Attributes that would qualify as HCV 4	Justification for the identification in the management extent
1	Managing extreme flow events, including vegetated riparian buffer zones or intact floodplains	
2	Maintaining downstream flow regimes	
3	Maintaining water quality characteristics	
4	Fire prevention and protection	
5	Protection of vulnerable soils, aquifers, and fisheries	
6	Provision of clean water, for example, where local communities depend on natural rivers and springs for drinking water, or where natural ecosystems play an important role in stabilising steep slopes. These two values frequently occur together and the area which provides the critical services (water provision and erosion control) may overlap partially or completely.	

<Provide a short description of HCV 4 field findings>

<Provide a table displaying the rivers/streams identified during the assessment, including the average width of the river/stream and the resulting riparian buffer>

Management Unit	River/Stream	Average Width (m)	Buffer (m)

<Provide a table displaying the extent of HCV 4 areas within the management unit>

HCV 4 Status	Area (ha)	Percentage (%)
HCV 4 Riparian Reserve		
HCV 4 Steep Slope		
HCV 4 Peat		
HCV 4 Riparian Reserve and Steep Slope		
HCV 4 Riparian Reserve and Peat		
HCV 4 Riparian Reserve Planted with Oil Palm		
HCV 4 Steep Slope Planted with Oil Palm		
HCV 4 Peat Planted with Oil Palm		
Total HCV 4 (ha)		
Non-HCV 4 Area		
Grand Total (ha)		

<Include the following map>

- *HCV 4 presence in the management unit*

4.5 HCV 5: Community needs

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 5>

<Clearly state whether HCV 5 is present or absent in the management unit, supported by evidence from the assessment>

> *HCV 5 Definition:* ***Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.***

No.	Attributes that would qualify as HCV 5	Justification for the identification in the management extent
1	Hunting and trapping grounds (for game, skin, and furs)	
2	NTFPs such as nuts, berries, mushrooms medicinal plants, rattan	
3	Fuel for household cooking, lighting, and heating	
4	Fish (as essential sources of proteins) and other freshwater species relied on by local communities	
5	Building materials (poles, thatching, timber)	
6	Fodder for livestock and seasonal grazing	
7	Water sources necessary for drinking water and sanitation	
8	Items which are bartered in exchange for other essential goods, or sold for cash which is then used to buy essentials	

<Provide a short description of HCV 5 field findings>
<Provide a table displaying the extent of HCV 5 areas within the management unit>

HCV 5	HCV 5 Is Present (ha)	Percentage (%)	HCV 5 Is Absent (ha)	Total Area (ha)
<Management Unit>				
Total Areal (ha)				

<Include the following map>

- *HCV 5 presence in the management unit*

4.6 HCV 6: Cultural values

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 6>

<Clearly state whether HCV 6 is present or absent in the management unit, supported by evidence from the assessment>

> *HCV 6 Definition**: Sites, resources, habitats, and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.***

No.	Attributes that would qualify as HCV 6	Justification for the identification in the management extent
1	Sites recognised as having high cultural value within national policy and legislation.	
2	Sites with official designation by national government and/or an international agency like UNESCO.	
3	Religious or sacred sites, burial grounds, or sites at which traditional ceremonies take place that have importance to local or indigenous people.	
4	Plant or animal resources with totemic values or used in traditional ceremonies.	

<Provide a short description of HCV 6 field findings>

<Provide a table displaying the name and location of the HCV 6 areas within the management unit>

HCV 6 Site Name	GPS Coordinates (X and Y)
Total Areal (ha)	

<Provide a table displaying the extent of HCV 6 areas within the management unit>

HCV 6	HCV 6 Is Present (ha)	Percentage (%)	HCV 6 Is Absent (ha)	Total Area (ha)
<Management Unit>				
Total Areal (ha)				

<Include the following map>

- *HCV 6 presence in the management unit*

5 RECOMMENDATIONS

5.1 Threats Assessment

<Identify and describe the current and potential threats to all identified HCVs>

HCV	Area of Concern	Threats Assessment
1	**Species diversity**	
2	**Landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes**	
3	**Ecosystems and habitats**	
4	**Ecosystem services**	
5	**Community needs**	
6	**Cultural values**	

5.2 HCV Management Areas

<Based on the findings, state whether the HCV values are present or absent in the management unit>

HCV	Common Guidance HCV Definitions	Threats Assessment
1	**Species diversity.** Concentrations of biological diversity including endemic species, and Rare, Threatened or Endangered (RTE) species that are significant at global, regional, or national levels.	Present/Absent
2	**Landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes.** Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL) that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.	Present/Absent
3	**Ecosystems and habitats.** Rare, threatened or endangered ecosystems, habitats or refugia.	Present/Absent
4	**Ecosystem services.** Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes.	Present/Absent
5	**Community needs.** Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.	Present/Absent
6	**Cultural values.** Sites, resources, habitats, and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.	Present/Absent

<Describe how the management areas are designated>

<Include the extent of the management areas in a table, including the overlapping and non-overlapping classes>

HCV Management Area (HCVMA)	Overlapping/Non-Overlapping HCV	Total HCV Area in management unit	Percentage (%)
<Classes designated for the identified HCV areas>			
Overlapping HCV (ha)			
Non-HCV Area (ha)			
Grand Total Area (ha)			

<Provide a map illustrating the designated HCV management areas>

5.3 HCV Management and Monitoring Action Plan

<Outline a management and monitoring plan based on the identified HCVs>

HCV	Management actions based on threats	Monitoring management actions
HCV 1: Species Diversity		
HCV 2: Landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes		
HCV 3: Ecosystems and Habitats		
HCV 4: Ecosystem services		
HCV 5: Community Needs		
HCV 6: Cultural values		

6 DIALOGUE SESSION

<Provide a summary of the key findings and presence of HCVs focusing on the importance of preserving these areas. Emphasis should be on the integrated management recommendations>

7 CONCLUSIONS

<Provide a summary of the key findings and presence of HCVs focusing on the importance of preserving these areas. Emphasis should be on the integrated management recommendations>
<Provide a guidance map to show the potential HCV areas within the existing oil palm planting extent with the details of extent in hectares>

6 REFERENCES

<Provide a list of sources referenced in the HCV assessment report>

<Ensure that all information sources are properly cited according to the appropriate citation format>

7 APPENDICES

<Full vegetation and wildlife species list>

<Photographs of encountered species>

Part 3 Guidance for Rapid HCV Assessment

Part 2-1: Independent Smallholders
Part 2-2: Organised Smallholders (Less than 100 hectares)
Part 3-1: Oil Palm Plantations (Less than 100 hectares)

10 Introduction to Rapid HCV Assessment Approach

Back to Quick Reference

To accommodate existing oil palm development in areas extending less than 100 hectares, a Rapid HCV Assessment approach has been developed. The rapid approach outlined in this section is to facilitate smallholders, small growers and small estates intending to undertake HCV assessment in established plantings in Malaysia. The cost of undertaking a Full HCV Assessment will financially burden small growers and therefore, MSPO has decided to accept a rapid approach to ensure that HCV areas in established plantings are protected.

A Full HCV Assessment would require a number of experts to integrate their efforts to produce an assessment report that would typically take 6 months to finalise. A rapid approach, however, should take, at maximum 30 days to finalise. The call for using external expertise is substantiated to maintain the integrity of the exercise. An internal HCV assessment should be avoided, and an MSPO Lead HCV Assessor with a minimum of two field experts with the ability to identify flora and fauna species are required to undertake this rapid approach. The Lead HCV Assessor should be cognisant of any social and ecological issues arising.

The details of the Rapid HCV Assessment approach and reporting template are presented in the following sections.

10.1 Growers Eligible for Rapid HCV Assessment

Back to Quick Reference

There are 5 categories of growers that are eligible to undertake the Rapid HCV Assessment Approach. The categories being:

1. 2-1(A) SPOC
2. 2-1(B) Non-SPOC
3. 2-2 (A.i) Dispersed organised smallholder group (⩽100 ha)
4. 2-2 (A.ii) Consolidated cluster of organised smallholders' group (⩽ 100 ha)
5. 3-1 (A) Single management unit (40.46 – 100 ha)

For a detailed description of the categories above, please refer to Table 1.5 and Section 3.1.

10.2 Prerequisite for Rapid HCV Assessment

Back to Quick Reference

Prior to conducting a Rapid HCV Assessment, small growers and assessors are required to conduct a pre-assessment exercise. This process involves preliminary information gathering and planning the assessment study (Refer to Chart 10.1).

1. To start, the small growers must ensure it has legal rights to develop oil palm plantations. The Rapid HCV Assessment scope must be conducted for the declared legal extent of the small growers. Any increase in the extent must be declared and the HCV assessment must be expanded to the additional areas.

2. The small growers shall commit to undertaking an HCV assessment prior to new oil palm planting or development within its legal boundary. At the point of commissioning the HCV assessment, the organisation shall halt all forms of on-going land clearing activities and/or oil palm planting. Any form of land clearing shall only commence after the HCV assessment report has been finalised and accepted. The moratorium on land clearing is subject to the duration of the HCV assessment and its acceptance.

3. Prior to conducting the Rapid HCV Assessment, both the small growers and the HCV Assessors are required to declare any forest presence to MSPO. The small growers and HCV assessors must declare whether the assessment site is a degazetted forest reserve, logged state land forest, or undergoing rubber conversion. The definition of forest in the MSPO Scheme is characterised as the following: "*Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 30 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use*." (Source: Ministry of Energy and Natural Resources, Malaysia). Any new oil palm planting or development on the following shall also be prohibited **unless permitted by the state authorities that have jurisdiction over land matters**:

   i) steep terrain exceeding 25°,
   ii) areas located 300 m above sea level (asl);
   iii) fragile and marginal soils;
   iv) peat land; and
   v) riparian zones.

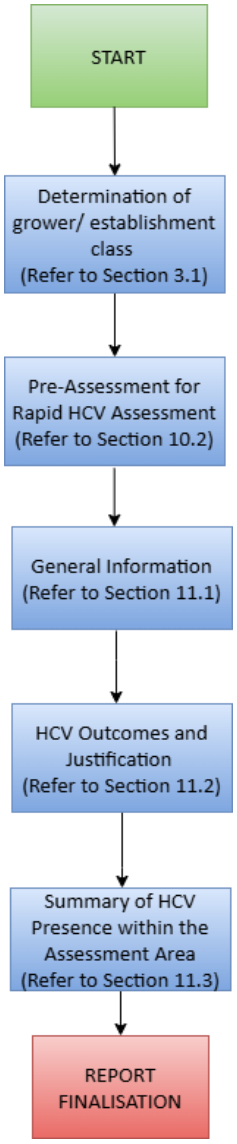

Chart 10.1: General Flow of the Rapid HCV Assessment

11 Rapid HCV Assessment Approach

Back to Quick Reference

The Rapid HCV Assessments approach for smallholders (Parts 2-1 and 2-2) and single management units (from 40.46 – 100 ha, Part 3-1) involves the approach described in sections 11.1 to 11.3. This Rapid HCV Assessment was designed for the assessors to collect all relevant information pertaining to the presence of potential HCVs and potential threats to said HCVs within the assessment area. This Rapid HCV process ensures compliance with necessary MSPO standards and facilitates the identification of critical environmental and social values.

While this process is not as intensive and detailed as conducting a Full HCV Assessment, the assessors should still be cognisant of the procedures undertaken to identify potential HCVs and threats. The Rapid HCV procedure must be conducted by an individual who has undergone and completed the Lead HCV Assessor course by MSPO. The lack of knowledge of the assessment procedures will jeopardise the possibility of collecting all relevant information during an assessment.

This Rapid HCV Assessment has been deliberately structured to ease the process of collecting all relevant HCV information. The assessment should been arranged in the following manner:

1. General Information
    - Profile Information
    - Required Background Information
    - Area of Interest (AOI) Information
    - Physical and Environmental Characteristics
    - Biological and Ecological Characteristics
    - Social, Cultural and Economic Characteristics

2. HCV Outcomes and Justification
    - HCV 1
    - HCV 2
    - HCV 3
    - HCV 4
    - HCV 5
    - HCV 6
    - Threats

3. Summary of HCV Presence within the Assessment Area

The following sections will be dedicated to describing the structure and content of the Rapid HCV Assessment.

11.1 General Information

Back to Quick Reference

This section of the Rapid HCV Assessment focuses on collecting vital preliminary information that would assist the assessors in the HCV outcomes and justification section further on in the document. This section will include basic information relating to the owner of the assessment area, the legality of the area, supply-chain information, the AOI, as well as some basic environmental and social characteristics of the area. This section can be broken down into the following subsections:

1. Profile Information

This subsection is short, but it is a major requirement of the Rapid HCV procedure. Before the assessors can begin questioning the owner of the assessment area, they must first provide basic details including the assessor's name, ID and contact details (contact number and/or email address). The assessors would also have to include the owner's name and contact details in case further information is required at a later time and as confirmation of the ownership of the assessment area.

Subsequently, the location (sub-district, district, division and state) and the GPS coordinates of the assessment area must be included in this section. This information will be helpful for the mapping process during reporting. The relevant information from this subsection that will eventually be presented in the reporting template is the full name of the owner, the assessment area's address and its GPS coordinates. The reporting template filled by the HCV Assessors is provided in Table 1.

Table 1: Base information relating to ownership and location
Jadual 1: Maklumat asas berkaitan pemilikan dan lokasi

Profile Information ***Maklumat Profil***	
HCV Assessor's information/*Maklumat Penilai HCV*	
Lead HCV Assessor's Name *Nama ketua penilai HCV*	
Lead HCV Assessor's ID *ID ketua penilai HCV*	
Contact details of the Lead HCV Assessor (Contact number/email) *Butiran hubungan ketua penilai HCV (Nombor telefon/e-mel)*	**Contact number:** *Nombor telefon:* **Email:** *E-mel:*
Owner information/*Maklumat pemilik*	
Owner name *Nama pemilik*	
Contact details of owner (Contact number/email) *Butiran hubungan pemilik (nombor telefon/e-mel)*	**Contact Number:** *Nombor telefon:* **Email:** *E-mel:*
Location of existing planting (sub-district, district, division, state) *Lokasi kawasan tanaman sedia ada (mukim, daerah, bahagian, negeri)*	
GPS Coordinates of existing planting *Koordinat GPS untuk tanaman sedia ada*	**X:** **Y:**

2. Required Background Information

Unlike the previous subsection, this segment of the document relates more to certification, assessment area extent and the supply chain. Information such as the land title number of the assessment area would be required in order to confirm the ownership of the area. Additional information stated within the land title (date of acquisition, grantor information, etc.) should also be stated in this subsection. The reporting template filled by the HCV Assessors is presented in Table 2.

Table 2: Information related to existing certifications, legality of the site and mill/ramp information
Jadual 2: Maklumat berkaitan pensijilan sedia ada, kesahihan tapak dan maklumat kilang/ramp

Required Background Information ***Maklumat Latar Belakang yang Diperlukan***	
Land Title Information and Planting Extent ***Maklumat Hakmilik/Pemilikan Tanah dan Keluasan Tanaman***	
Land title – The small growers must show that they have legal rights to use land for oil palm development *Hakmilik tanah – Pekebun kecil mesti menunjukkan bahawa mereka mempunyai hak dari segi undang-undang untuk menggunakan tanah bagi pembangunan kelapa sawit*	**Land Title Number/*Nombor Lot Tanah*:**
Legal extent stated in land title (ha) *Keluasan yang dinyatakan dalam geran tanah (ha)*	
Date stated in land title *Tarikh yang dinyatakan dalam geran tanah*	
Extent of oil palm planting (ha) *Keluasan kawasan tanaman (ha)*	
Mill/ramp information ***Maklumat kilang kelapa sawit/ramp***	
Name and location of mill where FFB will be sent to *Nama kilang kelapa sawit di mana FFB akan dihantar*	Name: *Nama:* Location/Address: *Lokasi/Alamat:*
Name and location of ramp/collection centre where FFB will be sent to *Nama dan lokasi ramp di mana FFB akan dihantar*	Name: *Nama:* Location/Address: *Lokasi/Alamat:*

3. Area of Interest (AOI) Information

The next subsection is relatively short and simple, requiring information regarding the types of land cover/land use within and surrounding the boundaries of the assessment areas. The AOI for each type of small grower can be identified in Table 4.2. Photo evidence of these land uses would greatly aid further analysis of the presence of HCVs. The types of land cover/land use listed in this subsection should be included in the description section of the reporting template. The presence of certain land cover, such as forested and riverine areas, may be used by the assessors to make decisions and justify the presence/absence of certain HCV attributes within the assessment area. Understanding the current land cover/land use of one's area and its surroundings could influence the owners in determining their planting/replanting extent. The reporting template filled by the HCV Assessors is presented in Table 3.

Table 3: Information related to land cover/land use within and outside of the existing oil palm planting site or boundary
Jadual 3: Maklumat berkaitan keluasan litupan tanah/penggunaan tanah di dalam dan di luar kawasan atau sempadan tanaman sedia ada

Area of Interest (AOI) Information ***Maklumat Sekitar Kawasan Kajian***	
Type of land cover (LC)/land use within the existing oil palm planting boundary ***Jenis litupan tanah / pengunaan tanah di kawasan tanaman sedia ada***	**Evidence (Photos)** ***Bukti (Foto)***
Type of land cover (LC)/land use outside the existing oil palm planting boundary ***Jenis litupan tanah / pengunaan tanah di luar kawasan tanaman sedia ada***	**Evidence (Photos)** ***Bukti (Foto)***

4. Physical and Environmental Characteristics

Understanding the types of land cover/land use within the assessment area is important, but an understanding of the physical and environmental characteristics of the area would greatly assist the process of identifying potential HCV 4 attributes. During an assessment, the assessors will have to try and identify all potential waterways within and adjacent to the assessment area. Any viable rivers/streams will need to have their names and estimated widths listed in the checklist.

In addition to the waterways, areas with slopes greater than 25° within or adjacent to the assessment area's boundary should also be included in the checklist. The angle measurements of the slopes shall be recorded, and photographic evidence of said slopes should be provided. The final segment of this subsection would be a list of the types of soils encountered during the assessment. The assessors do not necessarily need to be aware of the soil composition but should be able to determine the texture of the soil to test the presence of fragile or peaty soils. Photo evidence of the present soils will be useful for further confirmation.

As stated previously, the information in this section would aid the identification and justification of the presence of HCV 4 within the assessment area. Some of the information listed in this subsection will be used in the HCV 4 subsection of the Rapid HCV Assessment document. Likewise, any information pertaining to the presence/absence of rivers/streams, steep slopes and marginal soils will be included in the reporting template. The reporting template for this section filled by the HCV Assessors is presented in Table 4.

Table 4: Information related to rivers, steep slopes, and soils within and adjacent to the existing oil palm planting site or boundary

Jadual 4: Maklumat berkaitan sungai, cerun curam dan jenis tanah di dalam dan bersebelahan kawasana atau sempadan tanaman sedia ada

Physical and environmental characteristics ***Ciri-ciri fizikal dan persekitaran***	
Rivers within the existing oil palm planting site ***Sungai di dalam kawasan tanaman sedia ada***	
River Name ***Nama Sungai***	**River Width** ***Lebar Sungai***
Rivers adjacent or outside the existing oil palm planting site ***Sungai bersebelahan atau di luar kawasan tanaman sedia ada***	
River Name ***Nama Sungai***	**River Width** ***Lebar Sungai***

Steep slope areas within the existing oil palm planting site ***Cerun curam di dalam kawasan tanaman sedia ada***	
Slope (Degrees) ***Kecerunan (Darjah)***	**Evidence (Photos)** ***Bukti (Foto)***
Soils within the existing oil palm planting site ***Tanah di dalam kawasan tanaman sedia ada***	
Type of Soil ***Jenis Tanah***	**Evidence (Photos)** ***Bukti (Foto)***

5. <u>Biological and Ecological Characteristics</u>

While the previous subsection focuses primarily on the HCV 4 attributes, this section pertains more to the identification of HCV 1, 2 and 3 attributes within the assessment area. The first segment of this subsection includes a flora and fauna species list. This species list should be filled out by the assessors during the interview and field process. The assessors are not required to be aware of the species names of each of the encountered species but should be able to reference common floral and faunal species.

In addition to this, the assessors should also have access to basic knowledge of the types of RTE species present in Malaysia. The majority of the listed species may stem from the results of the interview with the owner, but onsite observations are welcome. Depending on the knowledge of the assessors, as well as the type of field methods they decide to employ, the data in this list may differ between assessors, as long as the information stated can be confirmed and backed up by photographic evidence. In addition to the species list, the assessors should also be able to reference and list the types of ecosystems/habitats (only applicable if present) within the assessment areas. Similar to the species list, photographic evidence of the present ecosystems/habitats would aid the HCV justification process. The information stated in this subsection will be used in the HCV 1, 2 and 3 subsections of this document. Additionally, information recorded in this subsection will be expanded on in the ecological description and HCV justification sections of the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Table 5.

Table 5: Information related to present species and ecosystems within the existing oil palm planting site or boundary
Jadual 5: Maklumat berkaitan spesies dan ekosistem semasa di dalam kawasan atau sempadan tanaman sedia ada

Biological and ecological characteristics ***Ciri-ciri biologi dan ekologi***			
Floral and faunal species list ***Senarai species flora dan fauna***			
No.	**Name of animals/plants** ***Nama haiwan/tumbuhan***	**Flora/Fauna**	**Photos (If applicable)** ***Foto (Jika berkenaan)***
Ecosystems/Habitats ***Ekosistem/Habitat***			
Type of ecosystem ***Jenis ekosistem***			**Evidence (Photos)** ***Bukti (Foto)***
Protected Areas within the AOI ***Kawasan Terlindung di dalam AOI***			
Name of Protected Areas ***Nama Kawasan Terlindung***			**Distance** ***Jarak***

6. Social, Cultural and Economic Characteristics

The final subsection of the 'General Information' chapter records data that will aid in the justification for the presence or absence of HCVs 5 and 6 in the assessment area. The first segment involves the listing of any villages/settlements that may be present within or outside the assessment area. In addition to the list, a number of supporting questions have been included in this subsection pertaining to the presence/absence of the related HCV attributes.

Questions regarding potential land claims by local communities or indigenous people, whether these communities are relying on the waterways and forested areas within the assessment areas and whether there are any religious or historical sites present within the study area are just a few examples. Similar to the previous subsection, information recorded here will be repeated in the HCV 5 and HCV 6 subsections of this document and will be used to justify the presence/absence of the HCV

classes in the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Table 6.

Table 6: Information related to settlements within and outside the existing oil palm planting site or boundary, and additional questions

Jadual 6: Maklumat berkaitan penempatan di dalam dan di luar kawasan atau sempadan tanaman sedia ada, dan soalan tambahan

Social, cultural, and economic characteristics ***Ciri-ciri sosial, budaya dan ekonomi***		
Local communities, Indigenous people, and settlements throughout the surrounding areas ***Masyarakat tempatan, orang asli, dan penempatan di sekeliling kawasan***		
No.	**Inside/Outside** *Di dalam/Di luar*	**Name of Villages/ Settlements** *Nama Kampung/Penempatan*
Additional Questions ***Soalan Tambahan***		
Are there known native, or ancestral lands claimed by the local communities and/or indigenous people within the existing oil palm planting area? *Adakah terdapat tanah adat atau tanah leluhur yang diketahui oleh masyarakat tempatan dan/atau orang asli di dalam kawasan tanaman sedia ada?*		
Do you and the local communities and/or indigenous people depend on the rivers as a water source for consumption, domestic use, and source of protein? *Adakah anda dan masyarakat tempatan dan/atau orang asli bergantung pada sungai sebagai sumber air untuk minuman, kegunaan domestik dan sumber protein?*		
Do you and the local communities and/or indigenous people depend on the forest as a source of livelihood? (Hunting, Firewood, NTFP) *Adakah anda dan masyarakat tempatan dan/atau orang asli bergantung kepada hutan sebagai sara hidup atau sumber mata pencarian? (Memburu, kayu api, hasil hutan bukan kayu (NTFP))*		
Are there any sites with religious and cultural values found within the existing oil palm planting area? *Adakah terdapat tapak yang mempunyai nilai agama dan budaya di dalam kawasan tanaman sedia ada?*		
Are there any sites with historical values found within the existing oil palm planting area? *Adakah terdapat tapak dengan nilai sejarah di dalam kawasan tanaman sedia ada?*		

11.2 HCV Outcomes and Justification

Back to Quick Reference

This section of this Rapid HCV Assessment document details the HCV and threat findings of the assessors during the assessment. The subsections of this chapter have been structured in such a way that previous findings can be used to support the presence/absence of the various HCV attributes. In addition to the HCV findings, this chapter also includes a subsection reserved for potential or present threats within or adjacent to the assessment area.

1. HCV 1

This first subsection makes use of information recorded in the section 11.1. The fauna and flora species listed in the biological and ecological characteristics subsection will be used in this subsection. Unlike the previous list, the conservation statuses (IUCN, CITES and national protection standards) of each of the recorded species are expected to be filled in. Based on the conservation statuses, any of the recorded species designated as RTE can serve as justification for the implementation of the HCV 1 classification.

In addition to the conservation statuses, the endemicity of the recorded species must also be taken into account as it is also a major attribute for HCV 1 justification. The final column of this list requires the assessors to identify the migrant/resident classification for each of the recorded species (Note that this classification only applies to faunal species). Photo evidence of the recorded species could serve as further confirmation of the HCV 1 justification but is not a necessity. The next segment of this subsection utilises descriptors of HCV 1 attributes adapted from the HCVN Global Guidance document. This segment pertains to whether the assessment findings could possibly be related to the descriptors of species richness/diversity, endemic/RTE species and migratory species.

The findings will eventually be used to determine the presence or absence of HCV 1 in the reporting template. The final segment includes additional questions on the presence of forest patches within and outside the boundary, as well as the presence of any human-wildlife conflict within the AOI, which will also aid the HCV 1 identification process. The findings in this subsection will subsequently be used in the ecological description and HCV justification segments in the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Tables 7, 8, 9 and 10.

Table 7: HCV 1 (Fauna) affiliated species list, including RTE (Rare, Threatened and Endangered), endemic and migrant species

Jadual 7: Senarai spesies (Fauna) gabungan HCV 1, termasuk spesies RTE (Jarang dan Terancam), spesies endemik dan migran

No.	Name of Animals *Nama Haiwan*	Photos *Foto*	Conservation status *Status pemuliharaan*	Endemicity *Status Endemik*	Migrant / Resident *Migran / Pemastautin*

Table 8: HCV 1 (Flora) affiliated species list, including RTE (Rare, Threatened and Endangered), and endemic species
Jadual 8: Senarai spesies (Flora) gabungan HCV 1, termasuk spesies RTE (Jarang dan Terancam), dan spesies endemik

No.	Name of Plants *Nama Tumbuhan*	Photos *Foto*	Conservation status *Status pemuliharaan*	Endemicity *Status Endemik*

Table 9: Short descriptions of the HCV 1 findings (if present)
Jadual 9: Huraian ringkas tentang penemuan HCV 1 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document *Pemerihal Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
i.	Species Richness / Diversity *Kekayaan / Kepelbagaian Spesies*	
ii.	Endemic and RTE species *Spesies endemik dan RTE*	
iii.	Migratory species *Spesies migran*	

Table 10: Additional HCV 1 questions
Jadual 10: Soalan HCV 1 tambahan

Description *Penerangan*	Status	
	Yes/*Ya*	No/*Tidak*
Forest patches within the boundary *Kawasan hutan di dalam sempadan*		
Are the forest patches within your boundary connecting with any patches in the AOI? *Adakah kawasan hutan di dalam sempadan anda bersambung dengan mana-mana kawasan hutan di dalam AOI?*		
Any recorded human-wildlife conflict within your AOI? *Apakah rancangan kawasan mempunyai sebarang konflik manusia-hidupan liar yang direkodkan dalam AOI?*		

2. HCV 2

This subsection focuses more on the interview with the owners of the assessment areas as well as the field findings of the assessors. The questions in this subsection revolve around the presence of forest patches within and surrounding the assessment area, the potential connectivity of these forests, whether these forests are under protection status, the potential connectivity of riverine areas to forested areas outside the assessment areas and the presence of migratory wildlife that may utilise these forest patches. Any evidence of HCV 2 during the assessment should be backed up with photo evidence as confirmation for its justification. The results of this subsection will later be translated into the ecological description and HCV justification segments of the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Table 11.

Table 11: HCV 2 affiliated questions
Jadual 11: Soalan berkaitan HCV 2

Description *Penerangan*	Status		Evidence/ Photos *Bukti/ Foto*
	Yes/*Ya*	No/*Tidak*	
Are there forest patches found within the existing oil palm planting area? *Adakah terdapat kawasan hutan yang ditemui di dalam sempadan kawasan tanaman sedia ada?*			
Are the forest patches within your boundary connecting with any forest patches in the AOI? *Adakah kawasan hutan ini bersambung dengan mana-mana kawasan hutan di dalam AOI?*			
Are these forest patches connected to any protection status? *Adakah kawasan hutan ini bersambung dengan mana-mana kawasan terlindung?*			
Are there riparian forests and/or naturally vegetated riparian areas within the boundary of the existing oil palm planting area that are connected to forested areas in the wider landscape? *Adakah terdapat hutan riparian dan/atau kawasan riparian dengan tumbuhan semula jadi di dalam kawasan tanaman sedia ada bersambung dengan kawasan hutan di dalam landskap yang lebih luas?*			
Based on your HCV 1 findings, are there migratory animals that use these forest areas as habitats and roam the connecting larger forests outside your boundary? Please record the animals if any. *Berdasarkan penemuan HCV 1 anda, adakah terdapat haiwan migrasi yang menghuni kawasan hutan ini dan berkeliaran di dalam hutan lebih besar yang bersambungan di luar kawasan anda? Sila catatkan haiwan berkenaan jika ada.*			

3. HCV 3

This subsection depends on the assessor's field observations, in order to determine the potential presence of rare and/or threatened ecosystems. The first segment of this subsection is a list of potential rare and threatened ecosystems that occur in Malaysia. This can be done based on the assessor's finding. If any of the ecosystems are encountered during the assessment, pictures of the said ecosystem are a necessity as confirmation for the justification of the HCV 3 classification. Using the descriptors of HCV 3 attributes adapted from the HCVN Global Guidance document, the presence of rare intact ecosystems and nationally or internationally threatened ecosystems such as peat swamp forests, mangrove forests, limestone areas, etc., can be recorded and used for the justification of HCV 3 in the assessment areas. The findings from this subsection will be translated into the ecological description and HCV justification segments of the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Tables 12 and 13.

Table 12: HCV 3 Presence Analysis
Jadual 12: Analisis Kehadiran HCV 3

Description *Penerangan*	**Ecosystems** *Ekosistem*	**Status**		**Evidence/ Photos** *Bukti / Foto*
		Yes/*Ya*	**No/*Tidak***	
The types of ecosystems found in the oil palm boundary *Jenis ekosistem yang terdapat di dalam kawasan tanaman kelapa sawit*	Lowland Dipterocarp Forest *Hutan dipterokarpa pamah*			
	Limestone areas *Kawasan batu kapur*			
	Beach vegetation *Tumbuhan pantai*			
	Mangrove forest *Hutan bakau*			
	Peat swamp forest *Hutan paya gambut*			
	Fresh-water swamp forest *Hutan paya air tawar*			
	Vegetated areas in riverbanks *Kawasan dengan tumbuhan di tebing sungai*			

Table 13: Short descriptions of the HCV 3 findings (if present)
Jadual 13: Penerangan ringkas tentang penemuan HCV 3 (jika ada)

No.	**Descriptor of HCV Attributes adapted from HCVN Global Guidance document** *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	**Findings** *Penemuan*
1.	Rare intact ecosystems (natural) - Peat, Limestone, Mangrove Ecosystem, etc. *Ekosistem dalam keadaan baik yang jarang ditemui (semula jadi) - Ekosistem Gambut, Batu Kapur, Bakau*	
2.	Nationally or internationally threatened ecosystem - Peat, Limestone, Mangrove Ecosystem *Ekosistem yang terancam di peringkat nasional atau antarabangsa - Ekosistem Gambut, Batu Kapur, Bakau*	

D. HCV 4

Similar to the HCV 2 subsection, this subsection relies on the interview with the owner as well as the assessor's field findings. The previous checklist (Tables 3, 4 and 6) includes questions pertaining to the presence of rivers/streams, their location (within or adjacent to the assessment area), the current land use of the riparian areas (planted or unplanted), the use of fertiliser or other chemicals in these reserves and whether there are local communities/indigenous people who rely on these areas. Additionally, the presence/absence of peaty or sandy soils is also part of the interview process to determine the presence of marginal soils.

After the first checklist in Table 4, the river/stream information that was recorded in the physical and environmental characteristics will be repeated. Additional information such as photographic evidence and the GPS coordinates of each of the potential waterways will also have to be provided as confirmation of the HCV's justification. The second checklist in Table 4 records information pertaining to the presence/absence of steep slopes in the assessment area. The questions presented in this segment relate to the presence/absence of steep slope areas and their current land cover/land use.

Like the previous segment, photographic evidence and GPS coordinates of the steep slope areas will be beneficial for HCV justification. The final segment of this subsection uses the descriptors of the HCV 4 attributes adapted from the HCVN Global Guidance document. Some of the descriptors in this subsection are not reliant on previously recorded information and will rely on the observations of the assessor. All the HCV 4 findings must be recorded in this segment, and the results will later be used as ecological description and HCV justification segments of the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Tables 14, 15, 16 and 17.

Table 14: HCV 4 affiliated questions
Jadual 14: Soalan berkaitan HCV 4

Question/ Description *Soalan/ Penerangan*	Status		Evidence/ Photos and GPS coordinate *Bukti/ Foto dan Koordinat GPS*
	Yes/*Ya*	No/*Tidak*	
Do you have rivers or streams flowing through the existing oil palm planting area? *Adakah terdapat sungai atau aliran air yang mengalir melalui kawasan tanaman sedia ada?*			
Do you have rivers along the existing oil palm planting area boundary? *Adakah terdapat sungai di sepanjang sempadan kawasan tanaman sedia ada?*			
Do you have naturally vegetated riparian areas or forest along the rivers or streams within the existing oil palm planting area? *Adakah terdapat kawasan riparian dengan tumbuhan atau hutan semula jadi di sepanjang sungai atau aliran di dalam kawasan tanaman sedia ada?*			
Do you have plans to plant oil palm at the edge of the riverbanks within the existing oil palm planting area? *Adakah anda merancang untuk menanam kelapa sawit di pinggir tebing sungai* di *dalam kawasan tanaman sedia ada?*			

Question/ Description *Soalan/ Penerangan*	Status		Evidence/ Photos and GPS coordinate *Bukti/ Foto dan Koordinat GPS*
	Yes/*Ya*	No/*Tidak*	
Based on the results of your scoping study and dialogue session, do you, local communities, or indigenous people within your AOI depend on rivers, ponds, and wells as a clean water source for consumption and domestic use? *Berdasarkan hasil skop kajian dan sesi dialog anda, adakah anda, masyarakat tempatan atau orang asli di dalam AOI anda bergantung kepada sungai, kolam, dan telaga sebagai sumber air bersih untuk minum dan kegunaan domestik?*			
Are you planning to apply any pesticides and/or fertiliser? If so, what types? *Adakah anda merancang untuk menggunakan racun serangga dan/atau baja? Jika ya, apakah jenisnya?*			
Do you have any peat or sandy soils (vulnerable) within your oil palm boundary? *Adakah terdapat tanah gambut atau berpasir (rentan) di dalam kawasan kelapa?*			

Table 15: List of rivers and streams (if present)
Jadual 15: Senarai sungai dan aliran (jika ada)

River/Stream name *Nama Sungai/aliran*	River/Stream width *Lebar Sungai/aliran*	Evidence/ Photos *Bukti/ Foto*	GPS coordinate *Koordinat GPS*

Table 16: Steep slope presence analysis
Jadual 16: Analisis kehadiran cerun curam

Question/ Description *Soalan/Penerangan*	Status		Evidence/ Photos and GPS coordinate *Bukti/ Foto dan Koordinat GPS*
	Yes/*Ya*	No/*Tidak*	
Are there steep areas within the oil palm boundary? *Adakah terdapat kawasan curam di dalam kawasan kelapa sawit?*			
Are the steep areas above 25° slope? *Adakah kawasan curam tersebut melebihi 25°?*			
Are the steep areas (above 25°) forested or naturally vegetated? *Adakah kawasan curam (melebihi 25°) berhutan atau mempunyai tumbuhan semula jadi?*			
Are the steep areas (above 25°) in the existing oil palm planting area? *Adakah terdapat kawasan curam (melebihi 25°) di dalam kawasan tanaman sedia ada?*			

Table 17: Short descriptions of the HCV 4 findings (if present)
Jadual 17: Penerangan ringkas tentang penemuan HCV 4 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
1.	Downstream flow regimes *Rejim aliran ke hilir*	
2.	Water quality *Kualiti air*	
3.	Fire (Burning) *Api (Kebakaran)*	
4.	Vulnerable soils, aquifers, and fisheries *Tanah, akuifer dan perikanan yang rentan*	
5.	Clean water, slope stability *Air bersih, kestabilan cerun*	

E. HCV 5

The social attributes recorded in this subsection are related to the data recorded in the social, cultural and economic characteristics subsection in the previous chapter and the interview with the owner. The HCV 5 portion of the assessment further expands on the questions directed to the owners of the assessment areas. Questions pertaining to the dependency on rivers/streams, dependency on forest patches within the assessment area for hunting activities, dependency on forest patches within the assessment area for non-timber forest products (NTFP) gathering, dependency on forest patches within the assessment area for timber and the dependency on forest patches within the assessment areas for firewood form the basis of the presence of HCV 5 within these areas.

As seen in the previous subsections, the findings will then be compared to a number of HCV 5 attributes adapted from the HCVN Global Guidance document to justify the presence of the HCV. Any evidence of HCV 5 during the assessment should be backed up by photo evidence and GPS coordinates to confirm its justification. Data compiled in this section will later be translated into the description and HCV justification segments of the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Tables 18, 19 and 20.

Table 18: River and stream dependency analysis
Jadual 18: Analisis kebergantungan kepada sungai dan aliran air

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
Dependency on rivers and streams *Kebergantungan kepada sungai dan aliran air*	Are you heavily dependent on the river as a source of water for consumption and domestic use? Or are the local communities and/or indigenous people dependent on the river resources? *Adakah anda sangat bergantung kepada sungai sebagai sumber air untuk minum dan kegunaan domestik? Atau adakah masyarakat tempatan dan/atau orang asli bergantung kepada sumber sungai?*			
	Is the access to clean water very limited? *Adakah akses kepada air bersih sangat terhad?*			
	Are you dependent on the river for sources of protein (e.g., fish and prawns)? Or are the local communities and/or indigenous people dependent on the river resources? *Adakah anda bergantung kepada sungai untuk sumber protein (contohnya, ikan dan udang)? Atau adakah masyarakat tempatan dan/atau orang asli bergantung kepada sumber sungai?*			
	Is there any dependency on rivers to support livelihood? *Adakah terdapat kebergantungan kepada sungai untuk menampung mata pencarian?*			
	Is there any alternative to obtaining protein sources other than from rivers (e.g., purchasing at local markets)? *Adakah terdapat alternatif untuk memperoleh sumber protein selain daripada sungai (contohnya, pembelian di pasaran tempatan)?*			

Table 19: Forest dependency analysis
Jadual 19: Analisis kebergantungan hutan

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
Dependency on the forest patches found within the oil palm boundary for hunting activities *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan tanaman kelapa sawit untuk kegiatan memburu*	Are there any local communities / indigenous people who have traditional hunting and gathering forest products rights over land within the existing oil palm planting area? *Adakah terdapat masyarakat tempatan / orang asli yang mempunyai hak memburu dan mengumpul hak hasil hutan secara tradisional ke atas tanah di dalam kawasan tanaman sedia ada?*			
Dependency on the forest patches found within the existing oil palm planting area by local communities to gather NTFPs *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan tanaman sedia ada untuk mengumpul produk hutan bukan kayu (NTFP) oleh masyarakat tempatan*	Is there a significant dependency on NTFPs for income generation or livelihood? Examples are Illipe nut (*engkabang*), resin (*damar*), wild honey, rattan, bamboo, *petai*, etc. *Adakah terdapat kebergantungan yang ketara kepada produk hutan bukan kayu (NTFP) untuk penjanaan pendapatan atau mata pencarian? Contohnya ialah kacang Illipe (engkabang), resin (damar), madu liar, rotan, buluh, petai, dan lain-lain.*			
	Is there a significant dependency on NTFPs for house-building materials and kitchen essentials? For example, materials for ceilings, walls, and cooking materials. *Adakah terdapat kebergantungan yang ketara kepada produk hutan bukan kayu (NTFP) untuk bahan binaan rumah dan keperluan dapur? Sebagai contoh, bahan untuk siling, dinding, dan bahan masak.*			
	Is there a significant dependency on traditional medicine due to limited access to medical facilities? *Adakah terdapat kebergantungan yang ketara kepada ubat tradisional kerana akses terhad kepada kemudahan perubatan?*			
	Is there a significant dependency on NTFPs for livestock fodder? *Adakah terdapat kebergantungan yang ketara kepada produk hutan bukan kayu (NTFP) untuk makanan ternakan?*			
Dependency on the forest patches found within the existing oil palm planting area boundary for timber *Kebergantungan kepada kawasan hutan yang terdapat di dalam*	Do you have the right to extract timber within the existing oil palm planting area? Or do the local communities and/or indigenous people have rights to extract timber from your existing oil palm planting area? *Adakah anda mempunyai hak untuk mengambil kayu di dalam kawasan tanaman sedia ada? Atau adakah masyarakat tempatan dan/atau*			

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
kawasan tanaman sedia ada anda untuk kayu	*orang asli mempunyai hak untuk mengeluarkan kayu dari kawasan tanaman sedia ada anda?*			
	Is timber used as material to build houses, boats, or any other living essentials? *Adakah kayu tersebut digunakan sebagai bahan binaan rumah, bot atau apa-apa keperluan hidup yang lain?*			
Dependency on the forest patches found within your existing oil palm planting area to gather wood *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan tanaman sedia ada anda untuk mengumpul kayu*	Are you, the local communities and/or indigenous people heavily dependent on firewood for cooking, lighting, and heating? *Adakah anda, masyarakat tempatan dan/atau orang asli sangat bergantung kepada kayu api untuk memasak, pencahayaan, dan pemanasan?*			

Table 20: Short descriptions of the HCV 5 findings (if present)
Jadual 20: Penerangan ringkas tentang penemuan HCV 5 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document / *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
1.	Water consumption *Penggunaan air*	
2.	Source of protein in rivers *Sumber protein di dalam sungai*	
3.	Hunting *Memburu*	
4.	Non-Timber Forest Product (NTFP) *Produk hutan bukan kayu (NTFP)*	
5.	Fuel for household consumption *Bahan api untuk kegunaan isi rumah*	
6.	Fodder *Makanan haiwan*	
7.	Building materials *Bahan binaan*	

F. HCV 6

This subsection also relies on data recorded in the social, cultural and economic characteristics subsection, as well as the interview with the assessment area's owner. The first segment of this subsection relies on a list of questions pertaining to the presence of religious or sacred sites, burial grounds or sites at which traditional ceremonies take place and historical sites. Additional questions attributed to whether these sites are still respected and maintained by the locals or indigenous people have also been included in this segment. As expected of all of the HCV attributes, photographic evidence and the GPS locations of the potential HCV 6 sites are required for further confirmation. The next segment of the subsection involves the use of the HCV 6 attributes based on the HCVN Global Guidance document to guide the assessors in justifying their findings. The findings of this subsection will later be translated into the description and HCV justification segments of the reporting template. The reporting template for this subsection filled by the HCV Assessors is presented in Tables 21 and 22.

Table 21: HCV 6 presence analysis
Jadual 21: Analisis kehadiran HCV 6

Question/ Description *Soalan / Penerangan*	Status		Evidence/ Photos *Bukti / Foto*	GPS Points *Titik Lokasi GPS*
	Yes / *Ya*	No / *Tidak*		
Based on the scoping study, are there any religious or sacred sites, burial grounds, or sites at which traditional ceremonies take place found within the existing oil palm planting area? *Berdasarkan skop kajian, adakah terdapat tapak keagamaan atau suci, tanah perkuburan, atau tapak untuk upacara tradisional di dalam kawasan tanaman sedia ada?*				
Are there any sites that have historical value found within your existing oil palm planting area? *Adakah terdapat tapak dengan nilai sejarah di dalam kawasan tanaman sedia ada anda?*				
Are these identified sites still respected and maintained by the local or indigenous people? *Adakah tapak yang dikenal pasti ini masih disanjungi dan diselenggara oleh penduduk tempatan atau orang asli (pribumi)?*				

Table 22: Short descriptions of the HCV 6 findings (if present)
Jadual 22: Penerangan ringkas tentang penemuan HCV 6 (jika ada)

No.	Attributes of HCVs based on HCVN Global Guidance Document *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings / *Penemuan*
1.	Nationally recognised high cultural value, historical, or religious sites. *Tapak yang diiktiraf kebangsaan dengan mempunyai nilai kebudayaan, sejarah, atau keagamaan yang tinggi.*	
2.	Religious or sacred sites, burial grounds, and sites for traditional ceremonies. *Tapak keagamaan atau suci, tanah perkuburan dan tapak untuk upacara tradisional.*	

G. Threats

The final subsection of this section involves the potential threats encountered by the assessors during the field assessment. The assessors should be able to identify potential threats to the assessment area's HCVs and provide brief descriptions of each of the threats identified during the assessment. Please note that the assessors should also record the HCV classification at risk from the identified threat. The findings in this subsection will later be described in the description and threats segment of the reporting template, where the results will further be elaborated on, and mitigation and monitoring actions will be provided to ensure that the HCV areas receive proper protection. The reporting template for this subsection filled by the HCV Assessors is presented in Table 23.

Table 23: Presence of Threats
Jadual 23: Kehadiran Ancaman

No.	HCV *HCV*	Threats *Ancaman*	*Description of Threat* *Penerangan Ancaman*
1.			
2.			
3.			
4.			
5.			
6.			

11.3 Summary of HCV Presence within the Assessment Area

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The final section of this Rapid HCV Assessment document requires a brief description of the HCV findings of the assessment. The description will entail the findings or the lack of findings depending on whether the HCV attributes are present or absent from the assessment area. This summary will also assist the assessors in preparing the final report for the assessment area. The summaries of each of the HCV findings will essentially be repeated and further elaborated on in the reporting template. Based on the threats identified in Table 23, the HCV Assessors would have to fill in the management and monitoring actions for each HCV. The reporting template filled by the HCV Assessors is presented in Tables 24 and 25.

Table 24: Summary of HCV Presence
Jadual 24: Ringkasan Kehadiran HCV

No.	Type of HCV/*Jenis HCV*	Status		Brief Description *Penerangan Ringkas*
		Yes / *Ya*	No/*Tidak*	
1.	HCV 1			
2.	HCV 2			
3.	HCV 3			
4.	HCV 4			
5.	HCV 5			
6.	HCV 6			

Table 25: Summary of Management and Monitoring Actions for each HCV
Jadual 25: Ringkasan Tindakan Pengurusan dan Pemantauan bagi setiap HCV

Type of HCV	Management and Monitoring Actions
HCV 1	
HCV 2	
HCV 3	
HCV 4 (Marginal Soil)	
HCV 4 (River Buffer)	
HCV 4 (Steep Slope)	
HCV 5	
HCV 6	

Once the required information has been recorded into the document, the assessors are expected to tabulate the results on an excel spreadsheet. The data will be further analysed to determine the presence/absence of HCVs in the assessment areas. The results will also be useful for the assessors when preparing the final assessment report below.

12 Reporting Template for Rapid HCV Assessment

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This section serves to guide the HCV assessors on the content of the final Rapid HCV Assessment report. It is not exhaustive, but it is provided to ensure that the authors have a systematic approach in reporting and information presentation. It serves as a checklist. **Information requirements for this report assessment should be strictly adhered to**.

COVER PAGE

Date of Report	
Contact Information (Company)	
MSPO Grower Category	
Estate Name	
Organisation Commissioning	
Address	
GPS Coordinates	
Assessment Date	
Size of Assessment Area (ha)	
Total number of hectares allocated as HCV management areas (ha)	
Lead HCV Assessor's Names	
Lead HCV Assessor's ID	
Number of Pages	

Table of Contents

<List of contents in the report>

List of Tables

<List of tables in the report>

List of Maps

<List of maps in the report>

List of Abbreviations

<List of abbreviations in the report>

1. INTRODUCTION AND BACKGROUND

1.1 Objective of the HCV Assessment

<Outline the purpose and background of the assessment>

1.2 Description of the Site

<Provide detailed information about the assessment area, including its name, location, size, and coordinates>

<Include the following maps >

- *Location of the site in Malaysia*
- *Map of the area to be assessed with current land use/satellite image*

Table 1: Base information relating to ownership and location
Jadual 1: Maklumat asas berkaitan pemilikan dan lokasi

Profile Information *Maklumat Profil*	
HCV Assessor's information/*Maklumat Penilai HCV*	
Lead HCV Assessor name *Nama ketua penilai HCV*	
Lead HCV Assessor ID *ID ketua penilai HCV*	
Contact details of Lead HCV Assessor (Contact number/email) *Butiran hubungan ketua penilai HCV (Nombor telefon/e-mel)*	**Contact number:** *Nombor telefon:* **Email:** *E-mel:*
Owner information/*Maklumat pemilik*	
Owner name *Nama pemilik*	
Contact details of owner (Contact number/email) *Butiran hubungan pemilik (nombor telefon/e-mel)*	**Contact Number:** *Nombor telefon:* **Email:** *E-mel:*
Location of existing planting (sub-district, district, division, state) *Lokasi kawasan tanaman sedia ada (mukim, daerah, bahagian, negeri)*	
GPS Centroid Coordinates of existing planting area *Koordinat Pusat GPS untuk kawasan tanaman sedia ada*	**X:** **Y:**

Table 2: Information related to existing certifications, legality of the site and mill/ramp information
Jadual 2: Maklumat berkaitan pensijilan sedia ada, kesahihan tapak dan maklumat kilang/ramp

Required Background Information ***Maklumat Latar Belakang yang Diperlukan***	
Land Title Information and Planting Extent ***Maklumat Hakmilik/Pemilikan Tanah dan Keluasan Tanaman***	
Land title – The small growers must show that they have legal rights to use land for oil palm development *Hakmilik tanah – Pekebun kecil mesti menunjukkan bahawa mereka mempunyai hak dari segi undang-undang untuk menggunakan tanah bagi pembangunan kelapa sawit*	**Land Title Number/*Nombor Lot Tanah*:**
Legal extent stated in land title (ha) *Keluasan yang dinyatakan dalam geran tanah (ha)*	
Date stated in land title *Tarikh diperoleh yang dinyatakan dalam geran tanah*	
Extent of oil palm planting (ha) *Keluasan kawasan tanaman (ha)*	
Mill/ramp information ***Maklumat kilang kelapa sawit/ramp***	
Name and location of mill where FFB will be sent to *Nama kilang kelapa sawit di mana FFB akan dihantar*	Name: *Nama:* Location/Address: *Lokasi/Alamat:*
Name and location of ramp/collection centre where FFB will be sent to *Nama ramp di mana FFB akan dihantar*	Name: *Nama:* Location/Address: *Lokasi/Alamat:*

1.3 Description of the AOI

- **Area of Interest (Refer to Section 4.1.2)**

<Provide a brief description of the size of the AOI and land cover occurrence within the AOI>

<Include the following maps>

- *AOI extent*
- *Land Cover/Land Use occurrence in the proposed development site*

Table 3: Information related to the land cover/land use within and outside of the existing oil palm planting site or boundary

Jadual 3: Maklumat berkaitan keluasan litupan tanah / pengunaan tanah di dalam dan di luar kawasan atau sempadan tanaman sedia ada

Area of Interest (AOI) Information *Maklumat Sekitar Kawasan Kajian*	
Type of land cover/land use within the existing oil palm planting boundary *Jenis litupan tanah / pengunaan tanah di kawasan tanaman sedia ada*	**Evidence (Photos)** *Bukti (Foto)*
Type of land cover/land use outside the existing oil palm planting boundary *Jenis litupan tanah / pengunaan tanah di luar kawasan tanaman sedia ada*	**Evidence (Photos)** *Bukti (Foto)*

- **Physical and Environmental Characteristics**

<Provide a brief description of elevation, slope, soils and rivers recorded in Table 4>
<Include the following maps (If available) >

- *Elevation*
- *Slope*
- *Soils*
- *Rivers*

Table 4: Information related to rivers, steep slopes, and soils within and adjacent to the existing oil palm planting site or boundary
Jadual 4: Maklumat berkaitan sungai, cerun curam dan jenis tanah di dalam dan bersebelahan tapak atau sempadan kawasan tanaman sedia ada

Physical and environmental characteristics ***Ciri-ciri fizikal dan persekitaran***	
Rivers within the existing oil palm planting site ***Sungai di dalam kawasan tanaman sedia ada***	
River Name ***Nama Sungai***	**River Width** ***Lebar Sungai***
Rivers adjacent or outside the existing oil palm planting site ***Sungai bersebelahan atau di luar kawasan tanaman sedia ada***	
River Name ***Nama Sungai***	**River Width** ***Lebar Sungai***
Steep slope areas within the existing oil palm planting site ***Cerun curam di dalam kawasan tanaman sedia ada***	
Slope (Degrees) ***Kecerunan (Darjah)***	**Evidence (Photos)** ***Bukti (Foto)***
Soils within the existing oil palm planting site ***Tanah di dalam kawasan tanaman sedia ada***	
Type of Soil ***Jenis Tanah***	**Evidence (Photos)** ***Bukti (Foto)***

- **Biological and Ecological Characteristics**

<Provide a brief description of the flora and fauna species, type of ecosystems and any protected areas overlap within the AOI (Refer to Table 5)>
<Fill in all the flora and fauna species identified in Table 5>
<Include the following maps>

- *Type of Ecosystem*
- *Protected Areas Overlap (If Present)*

Table 5: Information related to present species and ecosystems within the existing oil palm planting site or boundary
Jadual 5: Maklumat berkaitan spesies dan ekosistem semasa di dalam kawasan atau sempadan tanaman sedia ada

Biological and ecological characteristics ***Ciri-ciri biologi dan ekologi***			
Floral and faunal species list ***Senarai species flora dan fauna***			
No.	**Name of animals/plants** ***Nama haiwan/tumbuhan***	**Flora/Fauna**	**Photos (If applicable)** ***Foto (Jika berkenaan)***
Ecosystems/Habitats ***Ekosistem/Habitat***			
Type of ecosystem ***Jenis ekosistem***			**Evidence (Photos)** ***Bukti (Foto)***
Protected Areas within the AOI ***Kawasan Terlindung di dalam AOI***			
Name of Protected Areas ***Nama Kawasan Terlindung***			**Distance** ***Jarak***

- **Social, Cultural and Economic Characteristics**

<Provide a brief description of the social, cultural and economic characteristics of the AOI>

<Answer all additional questions listed in Table 6>

<Include the following maps>

- *Surrounding Villages (If Present within the AOI)*

Table 6: Information related to settlements within and outside the existing oil palm planting site or boundary, and additional questions

Jadual 6: Maklumat berkaitan penempatan di dalam dan di luar kawasan atau sempadan tanaman sedia ada, dan soalan tambahan

Social, cultural, and economic characteristics ***Ciri-ciri sosial, budaya dan ekonomi***		
Local communities, Indigenous people, and settlements throughout the surrounding areas ***Masyarakat tempatan, orang asli, dan penempatan di sekeliling kawasan***		
No.	**Inside/Outside** *Di dalam/Di luar*	**Name of Villages/ Settlements** *Nama Kampung/Penempatan*
Additional Questions ***Soalan Tambahan***		
Are there known native, or ancestral lands claimed by the local communities and/or indigenous people within the existing oil palm planting area? *Adakah terdapat tanah adat atau tanah leluhur yang diketahui oleh masyarakat tempatan dan/atau orang asli di dalam kawasan tanaman sedia ada?*		
Do you and the local communities and/or indigenous people depend on the rivers as a water source for consumption, domestic use, and source of protein? *Adakah anda dan masyarakat tempatan dan/atau orang asli bergantung pada sungai sebagai sumber air untuk minuman, kegunaan domestik dan sumber protein?*		
Do you and the local communities and/or indigenous people depend on the forest as a source of livelihood? (Hunting, Firewood, NTFP) *Adakah anda dan masyarakat tempatan dan/atau orang asli bergantung kepada hutan sebagai sara hidup atau sumber mata pencarian? (Memburu, kayu api, hasil hutan bukan kayu (NTFP))*		
Are there any sites with religious and cultural values found within the existing oil palm planting area? *Adakah terdapat tapak yang mempunyai nilai agama dan budaya di dalam kawasan tanaman sedia ada?*		
Are there any sites with historical values found within the existing oil palm planting area? *Adakah terdapat tapak dengan nilai sejarah di dalam kawasan tanaman sedia ada?*		

2 OVERVIEW OF HCV ASSESSMENT

2.1 HCV Assessment Team

<Present the assessment team briefly, including their name, institution, role, expertise, email address, and contact information>

2.2 Assessment Timeline

<Provide an overview of the assessment timeline and methods>

3 HCV IDENTIFICATION AND ITS JUSTIFICATION

3.1 HCV 1: Species Diversity

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 1>

<Fill in all tables in this section>

<Clearly state whether HCV 1 is present or absent in the management unit, supported by evidence from the assessment>

<Include the following map>

- *HCV 1 presence in the management unit (If Present)*

HCV 1 Definition: ***Concentrations of biological diversity including endemic species, and rare, threatened or endangered (RTE) species that are significant at global, regional or national levels.***

Table 7: HCV 1 (Fauna) affiliated species list, including RTE (Rare, Threatened and Endangered), endemic and migrant species

Jadual 7: Senarai spesies (Fauna) gabungan HCV 1, termasuk spesies RTE (Jarang dan Terancam), spesies endemik dan migran

No.	Name of Animals *Nama Haiwan*	Photos *Foto*	Conservation status *Status pemuliharaan*	Endemicity *Status Endemik*	Migrant / Resident *Migran / Pemastautin*

Table 8: HCV 1 (Flora) affiliated species list, including RTE (Rare, Threatened and Endangered), and endemic species

Jadual 8: Senarai spesies (Flora) gabungan HCV 1, termasuk spesies RTE (Jarang dan Terancam), dan spesies endemik

No.	Name of Plants *Nama Tumbuhan*	Photos *Foto*	Conservation status *Status pemuliharaan*	Endemicity *Status Endemik*

Table 9: Short descriptions of the HCV 1 findings (if present)
Jadual 9: Huraian ringkas tentang penemuan HCV 1 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document *Pemerihal Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
i.	Species Richness / Diversity *Kekayaan / Kepelbagaian Spesies*	
ii.	Endemic and RTE species *Spesies endemik dan RTE*	
iii.	Migratory species *Spesies migran*	

Table 10: Additional HCV 1 questions
Jadual 10: Soalan HCV 1 tambahan

Description *Penerangan*	Status	
	Yes/*Ya*	No/*Tidak*
Forest patches within the boundary *Kawasan hutan di dalam sempadan*		
Are the forest patches within your boundary connecting with any patches in the AOI? *Adakah kawasan hutan di dalam sempadan anda bersambung dengan mana-mana kawasan hutan di dalam AOI?*		
Any recorded human-wildlife conflict within your AOI? *Apakah rancangan kawasan mempunyai sebarang konflik manusia-hidupan liar yang direkodkan dalam AOI?*		

3.2 HCV 2: Landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 2>

<Fill in all tables in this section>

<Clearly state whether HCV 2 is present or absent in the management unit, supported by evidence from the assessment>

<Include the following map>

- *HCV 2 presence in the management unit (If Present)*

HCV 2 Definition: **Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL), that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.**

Table 11: HCV 2 affiliated questions
Jadual 11: Soalan berkaitan HCV 2

Description *Penerangan*	Status		Evidence/ Photos *Bukti/ Foto*
	Yes/*Ya*	No/*Tidak*	
Are there forest patches found within the existing oil palm planting area? *Adakah terdapat kawasan hutan yang ditemui di dalam sempadan kawasan tanaman sedia ada?*			
Are the forest patches within your boundary connecting with any forest patches in the AOI? *Adakah kawasan hutan ini bersambung dengan mana-mana Kawasan hutan di dalam AOI?*			
Are these forest patches connected to any protection status? *Adakah kawasan hutan ini bersambung dengan mana-mana kawasan terlindung?*			
Are there riparian forests and/or naturally vegetated riparian areas within the boundary of the existing oil palm planting area that are connected to forested areas in the wider landscape? *Adakah terdapat hutan riparian dan/atau kawasan riparian dengan tumbuhan semula jadi di dalam kawasan tanaman sedia ada bersambung dengan kawasan hutan di dalam landskap yang lebih luas?*			
Based on your HCV 2 findings, are there mobile animals that use these forest areas as habitats and roam the connecting larger forests outside your boundary? Please record the animals if any. *Berdasarkan penemuan HCV 2 anda, adakah terdapat haiwan bergerak yang menghuni kawasan hutan ini dan berkeliaran di dalam hutan lebih besar yang bersambungan di luar kawasan anda? Sila catatkan haiwan berkenaan jika ada.*			

3.3 HCV 3: Ecosystems and habitats

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 3>

<Fill in all tables in this section>

<Clearly state whether HCV 3 is present or absent in the management unit, supported by evidence from the assessment>

<Include the following map>

- *HCV 3 presence in the management unit (If Present)*

HCV 3 Definition: ***Rare, threatened or endangered ecosystems, habitats or refugia.***

Table 12: HCV 3 Presence Analysis
Jadual 12: Analisis Kehadiran HCV 3

Description *Penerangan*	Ecosystems *Ekosistem*	Status		Evidence/ Photos *Bukti / Foto*
		Yes/*Ya*	No/*Tidak*	
The types of ecosystems found in the oil palm boundary *Jenis ekosistem yang terdapat di dalam kawasan tanaman kelapa sawit*	Lowland Dipterocarp Forest *Hutan dipterokarpa pamah*			
	Limestone areas *Kawasan batu kapur*			
	Beach vegetation *Tumbuhan pantai*			
	Mangrove forest *Hutan bakau*			
	Peat swamp forest *Hutan paya gambut*			
	Fresh-water swamp forest *Hutan paya air tawar*			
	Vegetated areas in riverbanks *Kawasan dengan tumbuhan di tebing sungai*			

Table 13: Short descriptions of the HCV 3 findings (if present)
Jadual 13: Penerangan ringkas tentang penemuan HCV 3 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
1.	Rare intact ecosystems (natural) - Peat, Limestone, Mangrove Ecosystem, etc. *Ekosistem dalam keadaan baik yang jarang ditemui (semula jadi) - Ekosistem Gambut, Batu Kapur, Bakau*	
2.	Nationally or internationally threatened ecosystem - Peat, Limestone, Mangrove Ecosystem *Ekosistem yang terancam di peringkat kebangsaan atau antarabangsa - Ekosistem Gambut, Batu Kapur, Bakau*	

3.4 HCV 4: Ecosystem services

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 4>

<Fill in all tables in this section>

<Clearly state whether HCV 4 is present or absent in the management unit, supported by evidence from the assessment>

<Include the following map>

- *HCV 4 presence in the management unit (If Present)*

HCV 4 Definition: ***Basic ecosystem services in critical situations including protection of water catchments and control of erosion of vulnerable soils and slopes.***

Table 14: HCV 4 affiliated questions
Jadual 14: Soalan berkaitan HCV 4

Question/ Description *Soalan/ Penerangan*	Status		Evidence/ Photos and GPS coordinate *Bukti/ Foto dan Koordinat GPS*
	Yes/*Ya*	No/*Tidak*	
Do you have rivers or streams flowing through the existing oil palm planting area? *Adakah terdapat sungai atau aliran air yang mengalir melalui kawasan tanaman sedia ada?*			
Do you have rivers along the existing oil palm planting area boundary? *Adakah terdapat sungai di sepanjang sempadan kawasan tanaman sedia ada?*			
Do you have naturally vegetated riparian areas or forest along the rivers or streams within the existing oil palm planting area? *Adakah terdapat kawasan riparian dengan tumbuhan atau hutan semula jadi di sepanjang sungai atau aliran di dalam kawasan tanaman sedia ada?*			
Do you have plans to plant oil palm at the edge of the riverbanks within the existing oil palm planting area? *Adakah anda merancang untuk menanam kelapa sawit di pinggir tebing sungai* di *dalam kawasan tanaman sedia ada?*			
Based on the results of your scoping study and dialogue session, do you, local communities, or indigenous people within your AOI depend on rivers, ponds, and wells as a clean water source for consumption and domestic use? *Berdasarkan hasil skop kajian dan sesi dialog anda, adakah anda, masyarakat tempatan atau orang asli di dalam AOI anda bergantung kepada sungai, kolam, dan telaga sebagai sumber air bersih untuk minum dan kegunaan domestik?*			

Question/ Description *Soalan/ Penerangan*	Status		Evidence/ Photos and GPS coordinate *Bukti/ Foto dan Koordinat GPS*
	Yes/*Ya*	No/*Tidak*	
Are you planning to apply any pesticides and/or fertiliser? If so, what types? *Adakah anda merancang untuk menggunakan racun serangga dan/atau baja? Jika ya, apakah jenisnya?*			
Do you have any peat or sandy soils (vulnerable) within your oil palm boundary? *Adakah terdapat tanah gambut atau berpasir (rentan) di dalam kawasan kelapa sawit?*			

Table 15: List of rivers and streams (if present)
Jadual 15: Senarai sungai dan aliran (jika ada)

River/Stream name *Nama Sungai/aliran*	River/Stream width *Lebar Sungai/aliran*	Evidence/ Photos *Bukti/ Foto*	GPS coordinate *Koordinat GPS*

Table 16: Steep slope presence analysis
Jadual 16: Analisis kehadiran cerun curam

Question/ Description *Soalan/Penerangan*	Status		Evidence/ Photos and GPS coordinate *Bukti/ Foto dan Koordinat GPS*
	Yes/*Ya*	No/*Tidak*	
Are there steep areas within the oil palm boundary? *Adakah terdapat kawasan curam di dalam kawasan kelapa sawit?*			
Are the steep areas above 25° slope? *Adakah kawasan curam tersebut melebihi 25°?*			
Are the steep areas (above 25°) forested or naturally vegetated? *Adakah kawasan curam (melebihi 25°) berhutan atau mempunyai tumbuhan semula jadi?*			
Are the steep areas (above 25°) in the existing oil palm planting area? *Adakah terdapat kawasan curam (melebihi 25°) di dalam kawasan tanaman sedia ada?*			

Table 17: Short descriptions of the HCV 4 findings (if present)
Jadual 17: Penerangan ringkas tentang penemuan HCV 4 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
1.	Downstream flow regimes *Rejim aliran ke hilir*	
2.	Water quality *Kualiti air*	
3.	Fire (Burning) *Api (Kebakaran)*	
4.	Vulnerable soils, aquifers, and fisheries *Tanah, akuifer dan perikanan yang rentan*	
5.	Clean water, slope stability *Air bersih, kestabilan cerun*	

3.5 HCV 5: Community needs

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 5>

<Fill in all tables in this section>

<Clearly state whether HCV 5 is present or absent in the management unit, supported by evidence from the assessment>

<Include the following map>

- *HCV 5 presence in the management unit (If Present)*

HCV 5 Definition: ***Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or indigenous peoples.***

Table 18: River and stream dependency analysis
Jadual 18: Analisis kebergantungan kepada sungai dan aliran air

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
Dependency on rivers and streams *Kebergantungan kepada sungai dan aliran air*	Are you heavily dependent on the river as a source of water for consumption and domestic use? Or are the local communities and/or indigenous people dependent on the river resources? *Adakah anda sangat bergantung kepada sungai sebagai sumber air untuk minum dan kegunaan domestik? Atau adakah masyarakat tempatan dan/atau orang asli bergantung kepada sumber sungai?*			

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
	Is the access to clean water very limited? *Adakah akses kepada air bersih sangat terhad?*			
	Are you dependent on the river for sources of protein (e.g., fish and prawns)? Or are the local communities and/or indigenous people dependent on the river resources? *Adakah anda bergantung kepada sungai untuk sumber protein (contohnya, ikan dan udang)? Atau adakah masyarakat tempatan dan/atau orang asli bergantung kepada sumber sungai?*			
	Is there any dependency on rivers to support livelihood? *Adakah terdapat kebergantungan kepada sungai untuk menampung mata pencarian?*			
	Is there any alternative to obtaining protein sources other than from rivers (e.g., purchasing at local markets)? *Adakah terdapat alternatif untuk memperoleh sumber protein selain daripada sungai (contohnya, pembelian di pasaran tempatan)?*			

Table 19: Forest dependency analysis
Jadual 19: Analisis kebergantungan hutan

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
Dependency on the forest patches found within the oil palm boundary for hunting activities *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan kelapa sawit untuk kegiatan memburu*	Are there any local communities / indigenous people who have traditional hunting and gathering forest products rights over land within the existing oil palm planting area? *Adakah terdapat masyarakat tempatan / orang asli yang mempunyai hak memburu dan mengumpul hak hasil hutan secara tradisional ke atas tanah di dalam kawasan tanaman sedia ada?*			
Dependency on the forest patches found within the existing oil palm planting area by local communities to gather NTFPs *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan tanaman sedia ada untuk mengumpul produk hutan bukan kayu*	Is there a significant dependency on NTFPs for income generation or livelihood? Examples are Illipe nut (*engkabang*), resin (*damar*), wild honey, rattan, bamboo, *petai*, etc. *Adakah terdapat kebergantungan yang ketara kepada produk hutan bukan kayu (NTFP) untuk penjanaan pendapatan atau mata pencarian? Contohnya ialah kacang Illipe (engkabang), resin (damar), madu liar, rotan, buluh, petai, dan lain-lain.*			
	Is there a significant dependency on NTFPs for house-building materials and kitchen			

Description *Penerangan*	Question *Soalan*	Status		Evidence/ Photos *Bukti / Foto*
		Yes / *Ya*	No / *Tidak*	
(NTFP) oleh masyarakat tempatan	essentials? For example, materials for ceilings, walls, and cooking materials. *Adakah terdapat kebergantungan yang ketara kepada produk hutan bukan kayu (NTFP) untuk bahan binaan rumah dan keperluan dapur? Sebagai contoh, bahan untuk siling, dinding, dan bahan masak.*			
	Is there a significant dependency on traditional medicine due to limited access to medical facilities? *Adakah terdapat kebergantungan yang ketara kepada ubat tradisional kerana akses terhad kepada kemudahan perubatan?*			
	Is there a significant dependency on NTFPs for livestock fodder? *Adakah terdapat kebergantungan yang ketara kepada produk hutan bukan kayu (NTFP) untuk makanan ternakan?*			
Dependency on the forest patches found within the existing oil palm planting area boundary for timber *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan tanaman sedia ada anda untuk kayu*	Do you have the right to extract timber within the existing oil palm planting area? Or do the local communities and/or indigenous people have rights to extract timber from your existing oil palm planting area? *Adakah anda mempunyai hak untuk mengambil kayu di dalam kawasan tanaman sedia ada? Atau adakah masyarakat tempatan dan/atau orang asli mempunyai hak untuk mengeluarkan kayu dari kawasan tanaman sedia ada anda?*			
	Is timber used as material to build houses, boats, or any other living essentials? *Adakah kayu tersebut digunakan sebagai bahan binaan rumah, bot atau apa-apa keperluan hidup yang lain?*			
Dependency on the forest patches found within your existing oil palm planting area to gather wood *Kebergantungan kepada kawasan hutan yang terdapat di dalam kawasan tanaman sedia ada anda untuk mengumpul kayu*	Are you, the local communities and/or indigenous people heavily dependent on firewood for cooking, lighting, and heating? *Adakah anda, masyarakat tempatan dan/atau orang asli sangat bergantung kepada kayu api untuk memasak, pencahayaan, dan pemanasan?*			

Table 20: Short descriptions of the HCV 5 findings (if present)
Jadual 20: Penerangan ringkas tentang penemuan HCV 5 (jika ada)

No.	Descriptor of HCV Attributes adapted from HCVN Global Guidance document / *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings *Penemuan*
1.	Water consumption *Penggunaan air*	
2.	Source of protein in rivers *Sumber protein di dalam sungai*	
3.	Hunting *Memburu*	
4.	Non-Timber Forest Product (NTFP) *Produk hutan bukan kayu (NTFP)*	
5.	Fuel for household consumption *Bahan api untuk kegunaan isi rumah*	
6.	Fodder *Makanan haiwan*	
7.	Building materials *Bahan binaan*	

3.6 HCV 6: Cultural values

<Provide an explanation of how the assessment addresses all attributes and elements outlined in the definition of HCV 6>

<Fill in all tables in this section>

<Clearly state whether HCV 6 is present or absent in the management unit, supported by evidence from the assessment>

<Include the following map>

- *HCV 6 presence in the management unit (If Present)*

  HCV 6 Definition: ***Sites, resources, habitats, and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.***

Table 21: HCV 6 presence analysis
Jadual 21: Analisis kehadiran HCV 6

Question/ Description *Soalan / Penerangan*	Status		Evidence/ Photos *Bukti / Foto*	GPS Points *Titik Lokasi GPS*
	Yes / *Ya*	No / *Tidak*		
Based on the scoping study, are there any religious or sacred sites, burial grounds, or sites at which traditional ceremonies take place found within the existing oil palm planting area? *Berdasarkan skop kajian, adakah terdapat tapak keagamaan atau suci, tanah perkuburan, atau tapak untuk upacara tradisional di dalam kawasan tanaman sedia ada anda?*				
Are there any sites that have historical value found within your existing oil palm planting area? *Adakah terdapat tapak dengan nilai sejarah di dalam kawasan tanaman sedia ada anda?*				
Are these identified sites still respected and maintained by the local or indigenous people? *Adakah tapak yang dikenal pasti ini masih disanjungi dan diselenggara oleh penduduk tempatan atau orang asli?*				

Table 22: Short descriptions of the HCV 6 findings (if present)
Jadual 22: Penerangan ringkas tentang penemuan HCV 6 (jika ada)

No.	Attributes of HCVs based on HCVN Global Guidance Document *Penerangan Nilai HCV yang diadaptasi daripada dokumen Panduan Global HCVN*	Findings / *Penemuan*
1.	Nationally recognised high cultural value, historical, or religious sites *Tapak yang diiktiraf kebangsaan dengan mempunyai nilai kebudayaan, sejarah, atau keagamaan yang tinggi*	
2.	Religious or sacred sites, burial grounds, and sites for traditional ceremonies *Tapak keagamaan atau suci, tanah perkuburan dan tapak untuk upacara tradisional*	

4 MANAGEMENT AND MONITORING RECOMMENDATIONS

4.1 Threats Assessment

<Identify and describe the current and potential threats to all identified HCVs>

Table 23: Presence of Threats
Jadual 23: Kehadiran Ancaman

No.	HCV *HCV*	Threats *Ancaman*	*Description of Threat* *Penerangan Ancaman*
1.			
2.			
3.			
4.			
5.			
6.			

4.2 HCV Management Areas

<Based on the findings, state whether the HCV values are present or absent in the management unit>

<Include the extent of the management areas in a table, including the overlapping and non-overlapping classes>

<Provide a map illustrating the designated HCV management areas>

Table 24: Summary of HCV Presence
Jadual 24: Ringkasan Kehadiran HCV

No.	Type of HCV/*Jenis HCV*	Status		Brief Description *Penerangan Ringkas*
		Yes / *Ya*	No/*Tidak*	
1.	HCV1			
2.	HCV2			
3.	HCV3			
4.	HCV4			
5.	HCV5			
6.	HCV6			

4.3 HCV Management and Monitoring Action Plan

<Outline a management and monitoring plan based on the identified HCVs>

Table 25: Summary of Management and Monitoring Actions for each HCV
Jadual 25: Ringkasan Tindakan Pengurusan dan Pemantauan bagi setiap HCV

Type of HCV	Management and Monitoring Actions
HCV 1	
HCV 2	
HCV 3	
HCV 4 (Marginal Soil)	
HCV 4 (River Buffer)	
HCV 4 (Steep Slope)	
HCV 5	
HCV 6	

5 CONCLUSIONS

<Provide a summary of the key findings and presence of HCVs focusing on the importance of preserving these areas. Emphasis should be on the integrated management recommendations>
<Provide a guidance map to show the potential HCV areas within the existing oil palm planting extent with the details of extent in hectares>

6 REFERENCES

<Provide a list of sources referenced in the HCV assessment report>

<Ensure that all information sources are properly cited according to the appropriate citation format>

7 APPENDICES

<Full vegetation and wildlife species list>

<Photographs of encountered species>

13 End Note

This document serves as a practical guide for undertaking HCV assessments within existing oil palm plantings in Malaysia. Two approaches have been provided, the HCV Assessment and Rapid HCV Assessment. For the HCV Assessment, it is proposed that the assessment be less intensive and spread throughout the existing plantings. Established plantings are stable agricultural systems that would have some secondary forest fragments, river buffers and steep areas. It has been recorded in this guideline document that the occurrence of some of the major HCV attributes has very low relevancy and thus, occurrence. This document is specifically designed to identify low-occurrence HCV attributes in planted areas. It is important to note that the document presents a holistic approach where all the necessary information required for HCV assessments is listed. However, in reality, some of the information requested in the templates may be dependent on applicability, as developed oil palm plantings have reduced HCV attributes. The sampling spread is less intensive and assessors should take on a precautionary approach. The templates presented may seem comprehensive, but for maintaining HCV assessments integrity and quality, the list of information required has to be extensive as a precaution. But in most cases, the occurrence of HCV within existing oil palm plantings is often minimal. Thus, the reporting should also be minimal and simplified.

This guide is not exhaustive, neither does it profess to take into consideration the full remit of identifying areas with High Conservation Value. It serves to narrow the probability of omission of HCV attributes. A liberal interpretation of the recommendations and proposals in this guide is encouraged. A precautionary approach is advocated and in case some of the elements of the guide are found to be unsuitable, stakeholders are recommended to communicate with the MSPO Secretariat so that the guide can be revised and improved in the future.

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15 Appendices

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15.1 Appendix A: Examples of the Reclassification of Grower and Production

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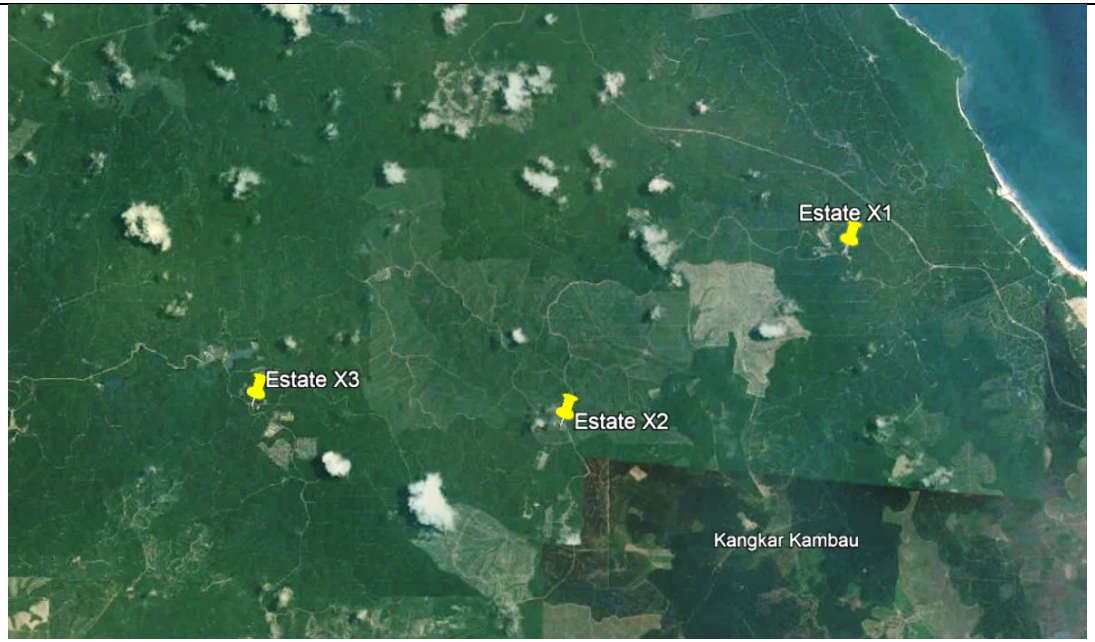
Table 15.1: Examples of the reclassification of growers for full HCV Assessment – Source: MSPO Trace

MSPO Revised Category	Category Code	Grower and Production Category	Sample Scenarios
Part 2-2 Organised Smallholders	**2-2 (B.i)**	Dispersed organised smallholder group (>100 ha)	 Source: Google Earth

MSPO Revised Category	Category Code	Grower and Production Category	Sample Scenarios
			Although these entities are certified as a group, these entities are dispersed over a wider landscape. Therefore, both entities are required to conduct separate HCV assessment.
	2-2 (B.ii)	Consolidated cluster of organised smallholders' group (> 100 ha)	 Source: Google Earth This refers to multiple consolidated organised smallholding entities which share common boundaries or have a maximum distance of 5km from the concession boundaries. It is possible to undertake a multi-site HCV assessment for this category.

MSPO Revised Category	Category Code	Grower and Production Category	Sample Scenarios
Part 3-1 Oil Palm Plantations (40.46 hectares to 500 hectares)	**3-1 (B.i)**	Single management unit (101 – 500 ha)	Note: Only applicable for a single estate with area from 101 to 500ha.
	3-1 (B.ii)	Consolidated multiple management units (101 – 500 ha)	Note: The spatial distribution is the same as 3-2 (B.i) multiple management units with common boundaries. This refers to multiple estates which share common boundaries or have a maximum distance of 5km from the concession boundaries. It is possible to undertake a multi-site HCV assessment for this category.
	3-1 (B.iii)	Dispersed multiple management units (101 – 500 ha)	Note: The spatial distribution is the same as 3-2 (B.ii) multiple management units distributed over a wider landscape.
Part 3-2 Oil Palm Plantations (> 500 hectares)	**3-2 (A)**	Single management unit (>500 ha)	Note: Only applicable for a single estate with area more than 500 ha.
	3-2 (B.i)	Consolidated multiple management units (>500 ha)	 Source: Google Earth

MSPO Revised Category	Category Code	Grower and Production Category	Sample Scenarios
			 Source: Google Earth This refers to multiple estates which share common boundaries or have a maximum distance of 5 km from the concession boundaries. It is possible to undertake a multi-site HCV assessment for this category.

MSPO Revised Category	Category Code	Grower and Production Category	Sample Scenarios
	3-2 (B.ii)	Dispersed multiple management units (>500 ha)	 Source: Google Earth Multiple Estates of the same group distributed over a wider landscape. Therefore, a separate HCV is required for each management unit.

15.2 Appendix B: Analysis on the level of relevancy of HCV Attributes in Malaysia's Oil Palm Context

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The HCV interpretation for oil palm growers and production in the Malaysian landscape is presented where the practicalities of considering the detailed attributes are commented upon. In cases where it is found that these attributes are either irrelevant or cannot be assessed, modifications are required as recorded below:

This relevancy of HCV attributes presence is based on actual assessments undertaken ranging from smallholdings to consolidated estates

Relevancy Ranking	Rank Level	Description
1	Low Relevance	This attribute will potentially be absent.
2	Moderate Relevance	There is a low probability of this attribute being present. There could be special cases.
3	High Relevance	Attributes may be present and can be assessed.
0	No Relevance	The attribute is absent.

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
1.1	High species richness, diversity or uniqueness within a defined area when compared with other sites within the same biogeographic area.	Species Richness / Diversity	1	1	1	1	1	1	1	1	1	1	1	1	1
1.2	Populations of multiple endemic or RTE species.	Population of endemic and RTE species.	1	1	1	1	1	1	1	1	1	1	1	1	1
1.3	Important populations or a great abundance of individual endemic or RTE species, representing a substantial proportion of the regional, national, or global population which are needed to maintain viable populations (e.g., seasonal, migratory species).	Viable populations of endemic or RTE species (including migratory species).	1	1	1	1	1	1	1	1	1	1	1	1	1

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
1.4	Small populations of endemic or RTE species, where the national, regional, or global survival of that species is critically dependent on the area.	Areas where small populations of endemic or RTE species critically dependent on.	1	1	1	1	1	1	1	1	1	1	1	1	1
1.5	Sites with significant RTE species richness, or populations of priority species approaching those of key protected areas or other priority sites within the same biogeographic boundary.	Approximating key protected areas or priority sites for RTE species	1	1	1	1	1	1	1	1	1	1	1	1	1
1.6	Important genetic variants, subspecies, or varieties.	Genetic variance	1	1	1	1	1	1	1	1	1	1	1	1	1
2.1	Large areas (e.g., >50,000 ha), that are relatively far from human settlement, roads, or other access.	Intact forest landscape	1	1	1	1	1	1	1	1	1	1	1	1	1
2.2	Smaller areas that provide key landscape functions such as connectivity and buffering.	Areas that provide connectivity and buffering	1	1	1	1	2	2	2	2	2	2	2	2	2
2.3	Large areas that are more natural and intact than most other such areas and which provide habitats of top predators or species with large range requirements.	Forest mosaic	1	1	1	1	1	1	1	1	1	1	1	1	1
3.1	Ecosystems that are naturally rare because they depend on highly localised soil types, locations, hydrology or other climatic or physical features.	Rare intact ecosystems (natural) - Peat, Limestone, Mangrove Ecosystem	1	1	1	1	1	1	1	1	1	1	1	1	1
3.2	Ecosystems that are anthropogenically rare, because the extent of the ecosystem has been greatly reduced by human activities compared to their historic extent.	Anthropogenically rare ecosystems (due to human activities)	1	1	1	1	1	1	1	1	1	1	1	1	1
3.3	Ecosystems that are threatened or endangered due to current or proposed operations.	Threatened or endangered ecosystems	1	1	1	1	1	1	1	1	1	1	1	1	1

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
3.4	Ecosystems that are classified as threatened in national or international systems.	Nationally or internationally threatened ecosystems - Peat, Limestone, Mangrove Ecosystem	1	1	1	1	1	1	1	1	1	1	1	1	1
4.1	Managing extreme flow events, including vegetated riparian buffer zones or intact floodplains.	Extreme flow events	3	3	3	3	3	3	3	3	3	3	3	3	3
4.2	Maintaining downstream flow regimes	Downstream flow regimes	3	3	3	3	3	3	3	3	3	3	3	3	3
4.3	Maintaining water quality characteristics	Water quality	3	3	3	3	3	3	3	3	3	3	3	3	3
4.4	Fire prevention and protection	Fire	1	1	1	1	1	1	1	1	1	1	1	1	1
4.5	Protection of vulnerable soils, aquifers, and fisheries	Vulnerable soils, aquifers, and fisheries	3	3	3	3	3	3	3	3	3	3	3	3	3
4.6	Provision of clean water, for example where local communities depend on natural rivers and springs for drinking water, or where natural ecosystems play an important role in stabilising steep slopes. These two values frequently occur together and the area which provides the critical services (water provision and erosion control) may overlap partially or completely.	Clean water, slope stability	3	3	3	3	3	3	3	3	3	3	3	3	3
5.1	Hunting and trapping grounds (for game, skin, and furs).	Hunting	1	1	1	1	2	2	1	2	2	2	2	2	2
5.2	NTFPs such as nuts, berries, mushrooms, medicinal plants, rattan.	NTFP	1	1	1	1	2	2	1	2	2	2	2	2	2
5.3	Fuel for household cooking, lighting, and heating.	Fuel for household consumption	1	1	1	1	2	2	1	2	2	2	2	2	2
5.4	Fish (as essential sources of proteins) and other freshwater species relied on by local communities	Source of proteins in rivers	1	1	1	1	2	2	1	2	2	2	2	2	2
5.5	Building materials (poles, thatching, timber).	Building materials	1	1	1	1	2	2	1	2	2	2	2	2	2

HCV Attributes		Descriptor	Part 2-1		Part 2-2				Part 3-1				Part 3-2		
			2-1 (A)	2-1 (B)	2-2 (A.i)	2-2 (A.ii)	2-2 (B.i)	2-2 (B.ii)	3-1 (A)	3-1 (B.i)	3-1 (B.ii)	3-1 (B.iii)	3-2 (A)	3-2 (B.i)	3-2 (B.ii)
5.6	Fodder for livestock and seasonal grazing.	Fodder	1	1	1	1	2	2	1	2	2	2	2	2	2
5.7	Water sources necessary for drinking water and sanitation.	Water consumption	1	1	1	1	2	2	1	2	2	2	2	2	2
5.8	Items which are bartered in exchange for other essential goods, or sold for cash which is then used to buy essentials	Resources for barter or livelihood or natural resources for cash income	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	Sites recognised as having high cultural value within national policy and legislation.	Nationally recognised high cultural value	1	1	1	1	2	2	1	2	2	2	2	2	2
6.2	Sites with official designation by national government and/or an international agency like UNESCO.	Nationally or internationally recognised historical, cultural, or religious site	1	1	1	1	2	2	1	2	2	2	2	2	2
6.3	Religious or sacred sites, burial grounds, or sites at which traditional ceremonies take place that have importance to local or indigenous people.	Religious or sacred sites, burial grounds, and sites for traditional ceremonies	1	1	1	1	2	2	1	2	2	2	2	2	2
6.4	Plant or animal resources with totemic values or used in traditional ceremonies.	Plant and animal resources for rituals	1	1	1	1	2	2	1	2	2	2	2	2	2

15.3 Appendix C: Examples of High-Risk Areas – Potential HCV Areas

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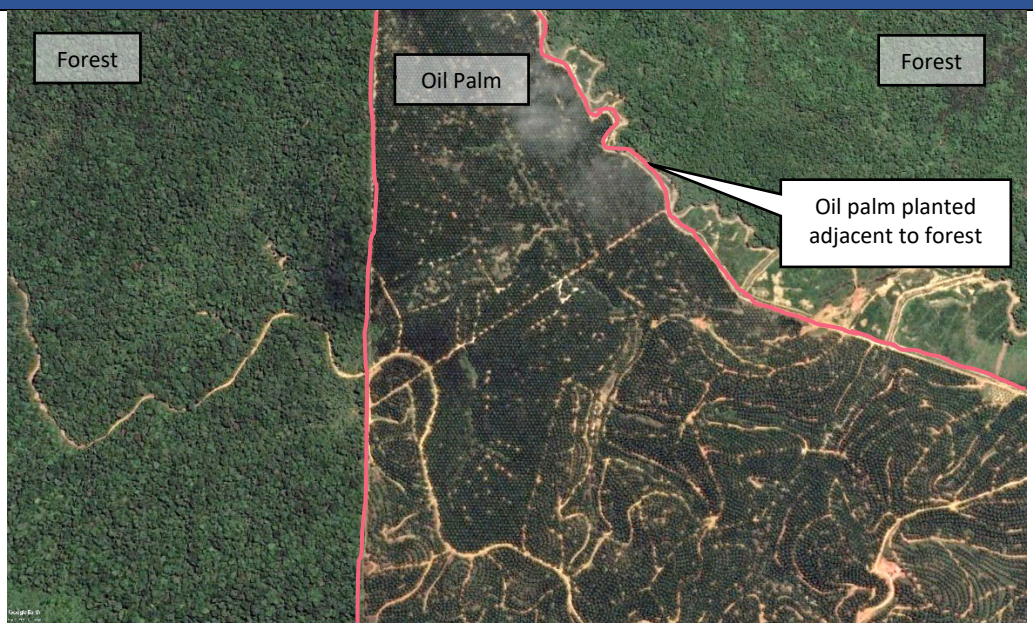
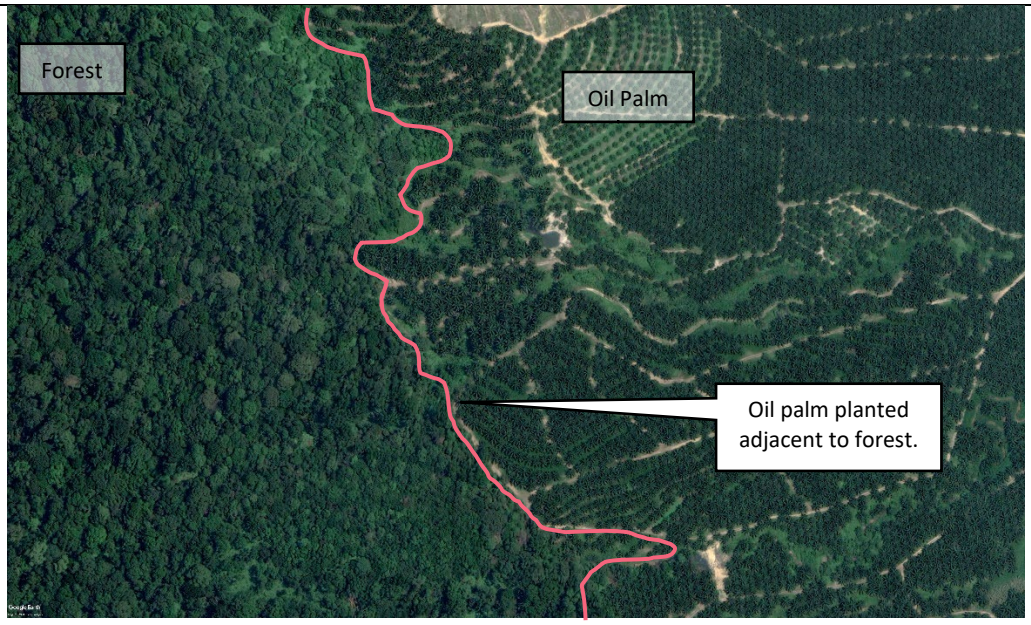
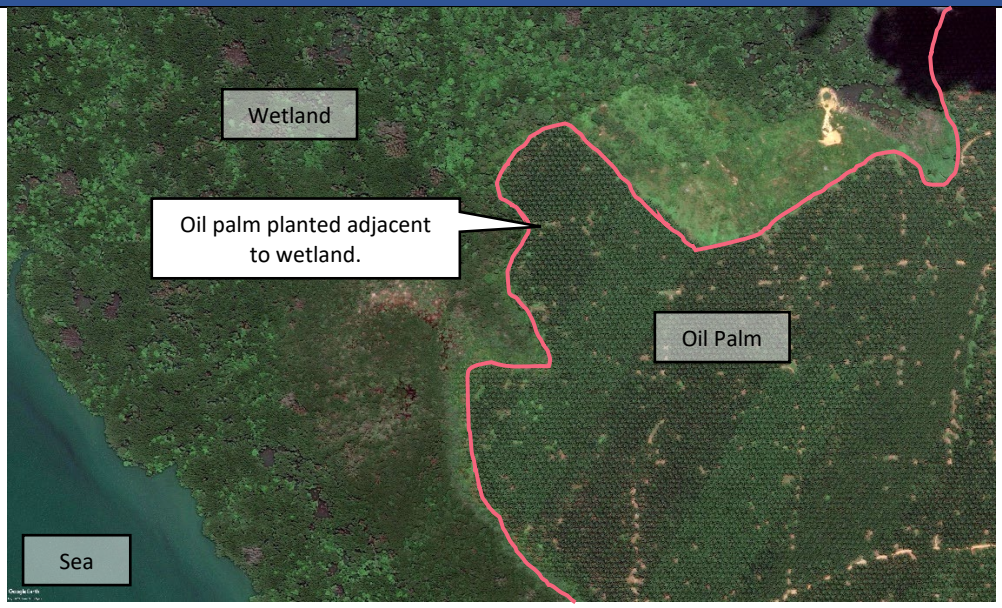
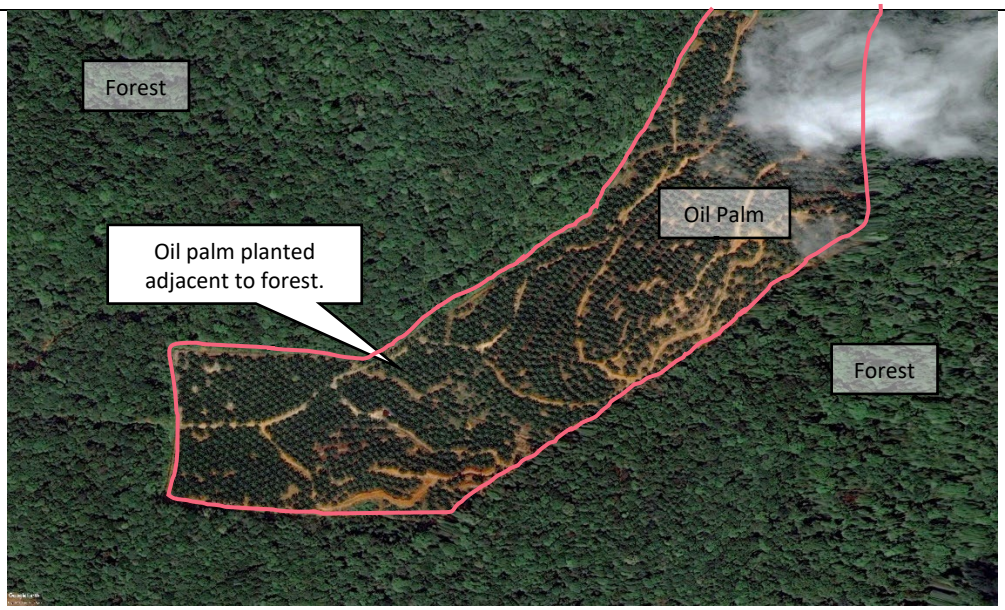
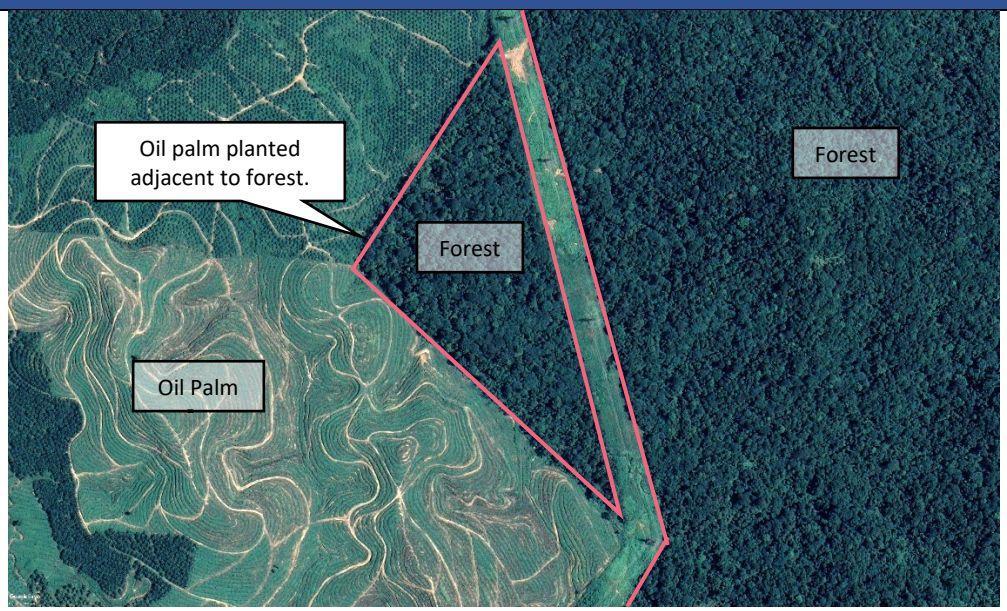
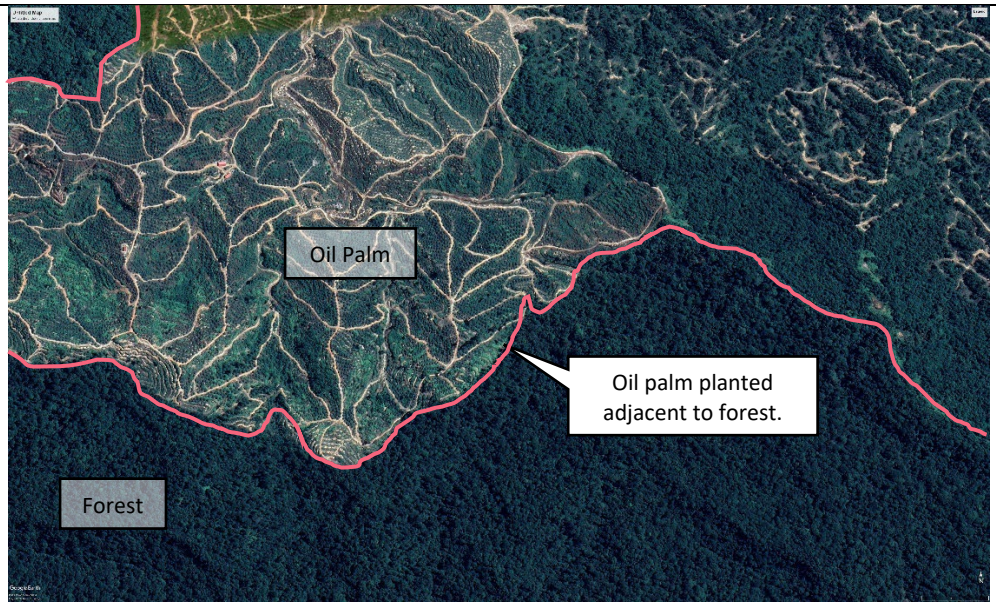
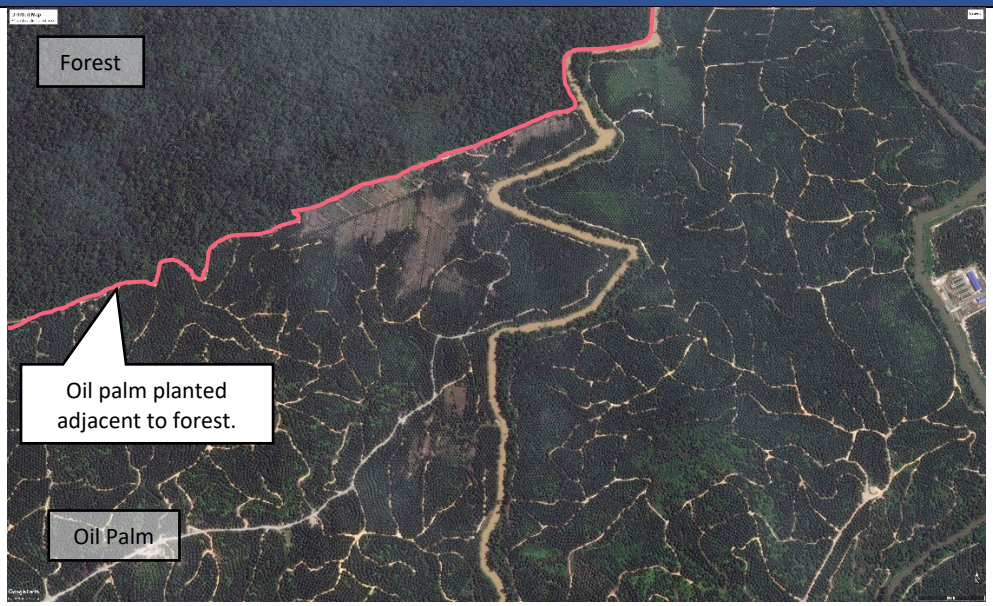
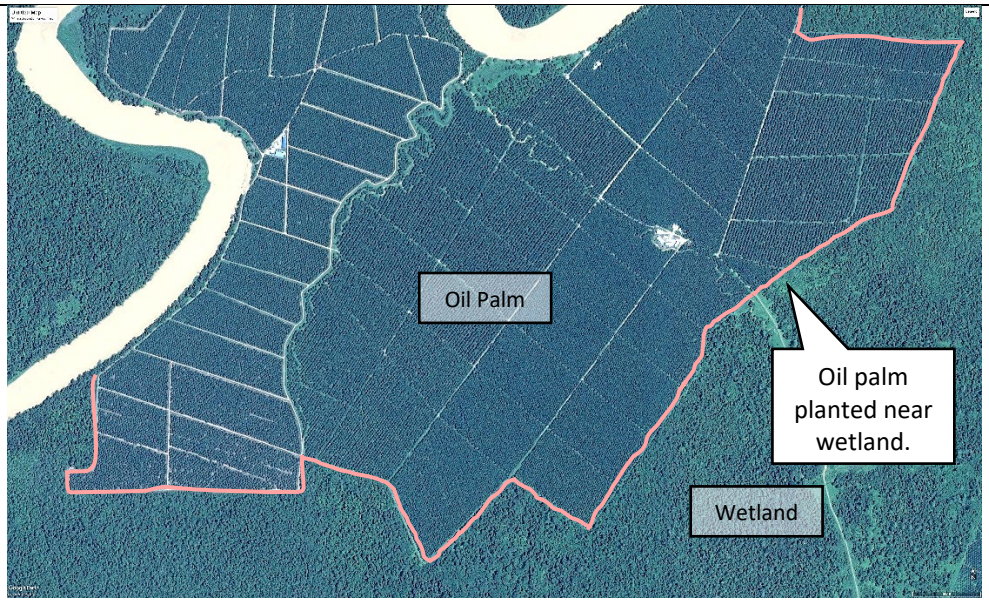
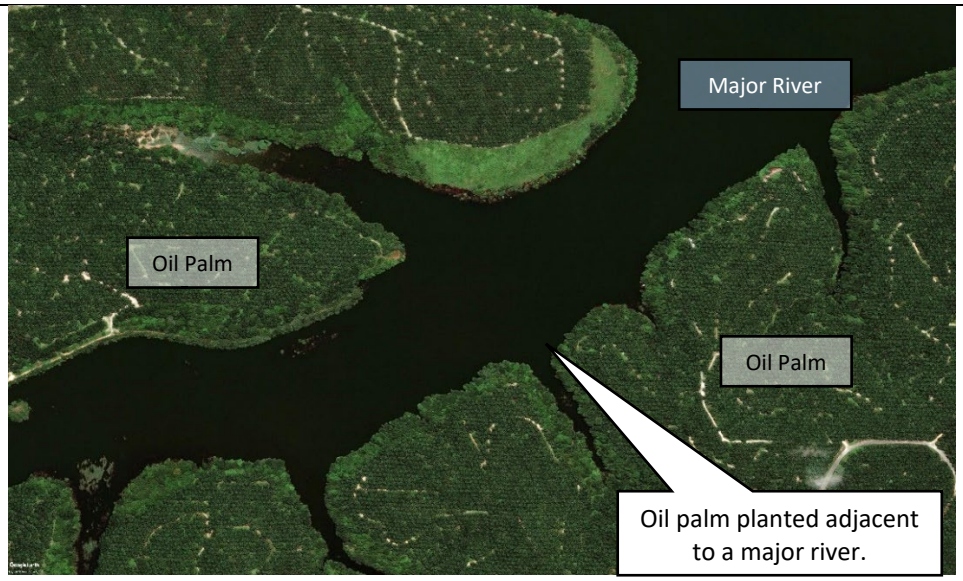
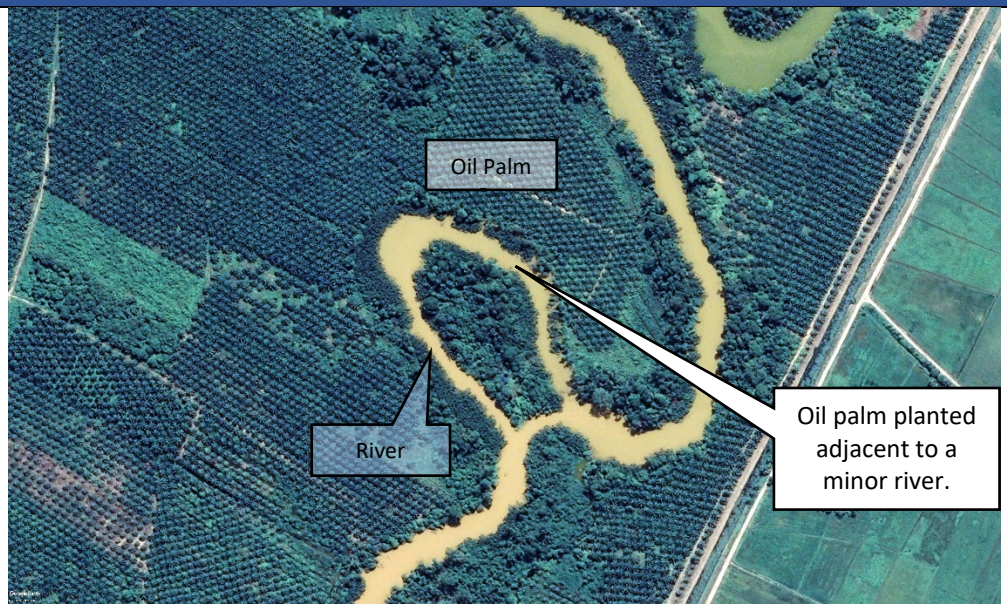
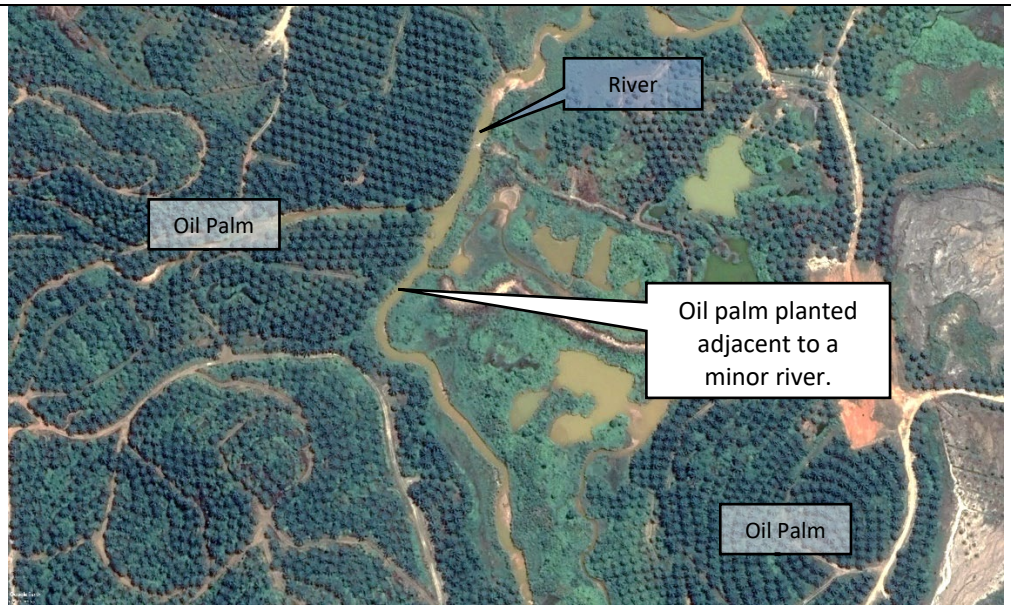
Table 15.2: High Risk Areas potentially impact HCV Areas

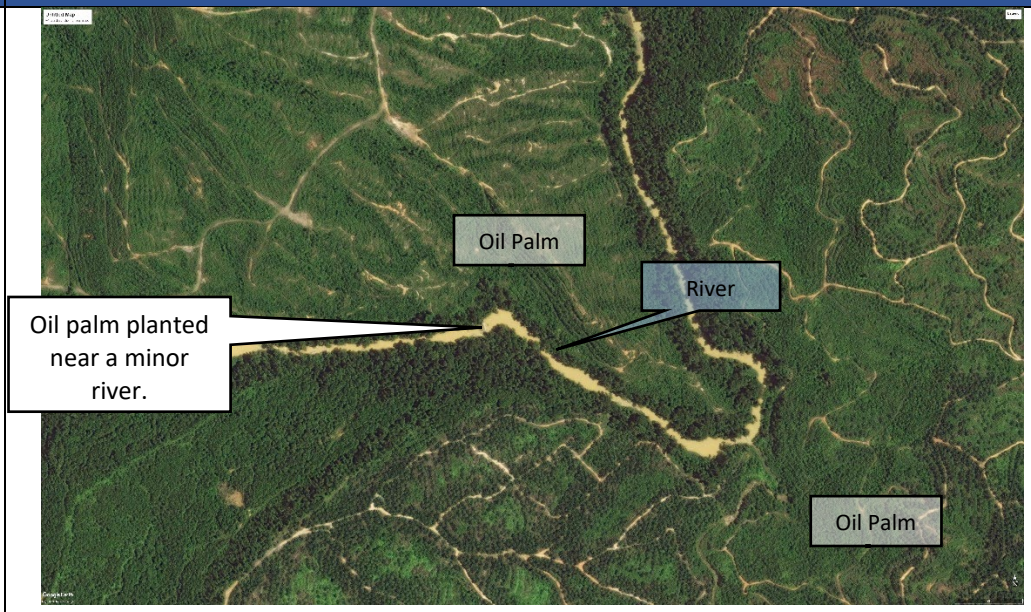
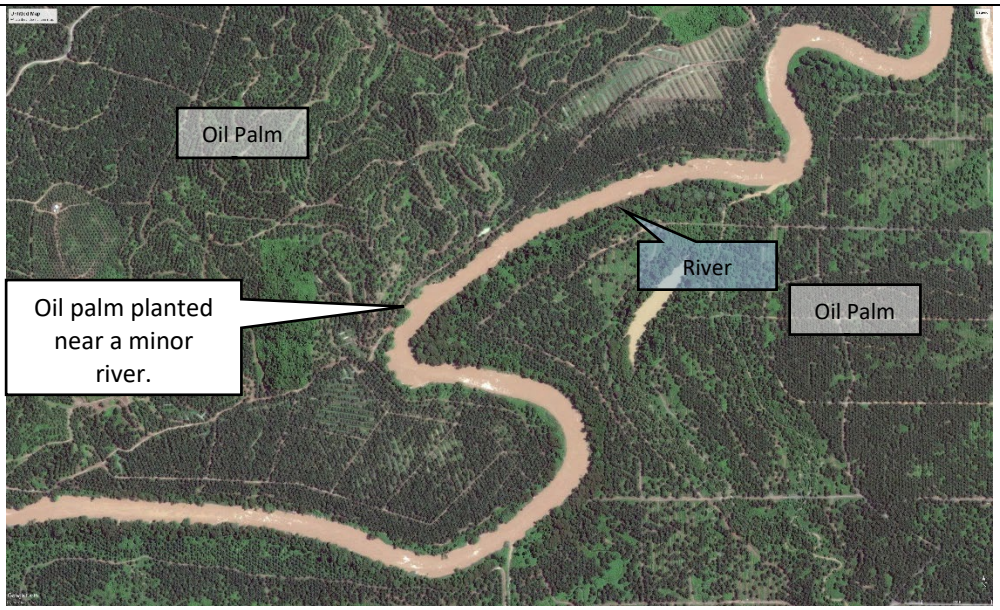
Type of Risk	Example
Oil palm development near forest/ wetland/ protected area	 

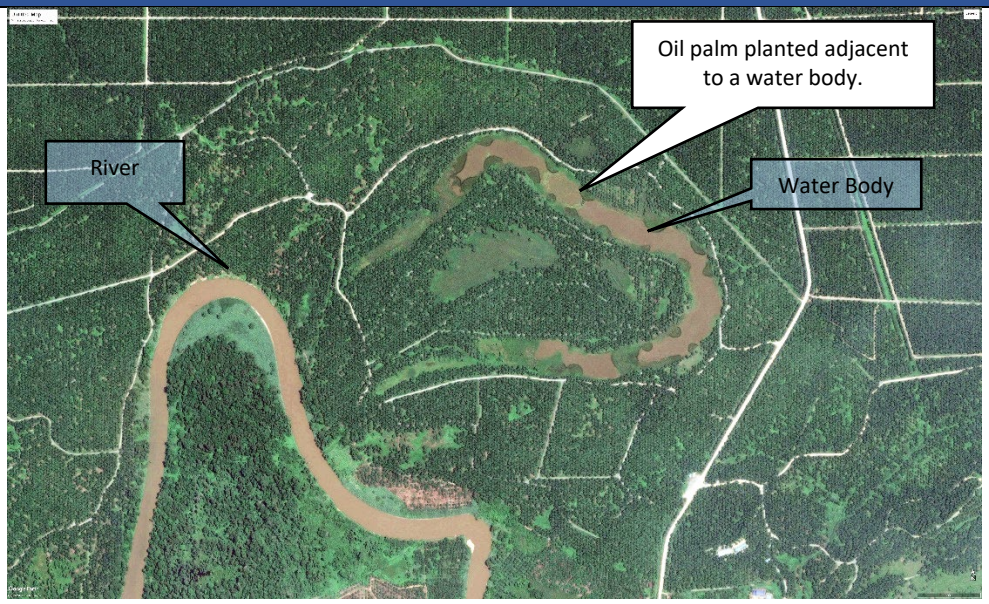
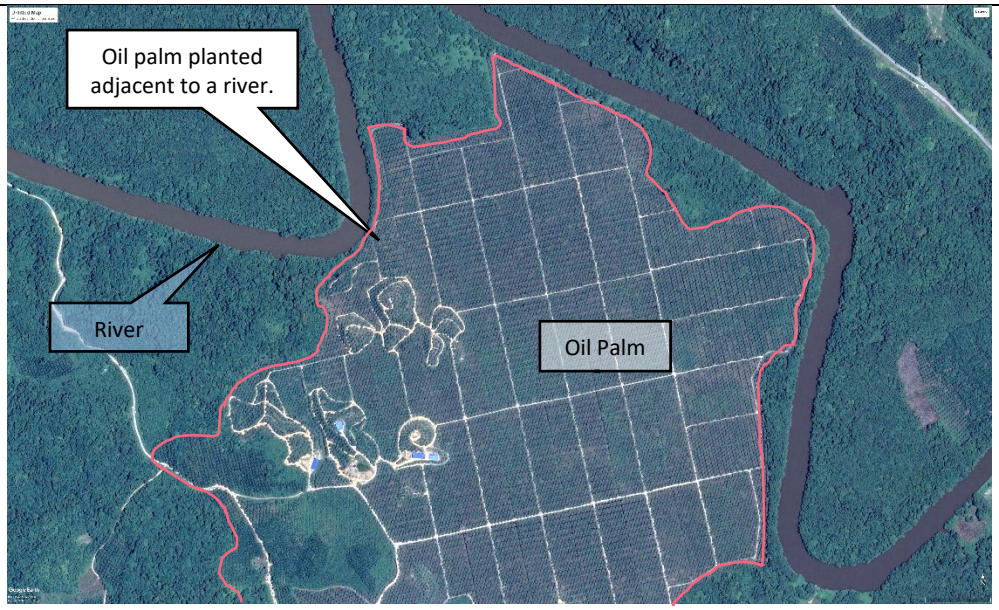
Type of Risk	Example
	 

Type of Risk	Example
	 

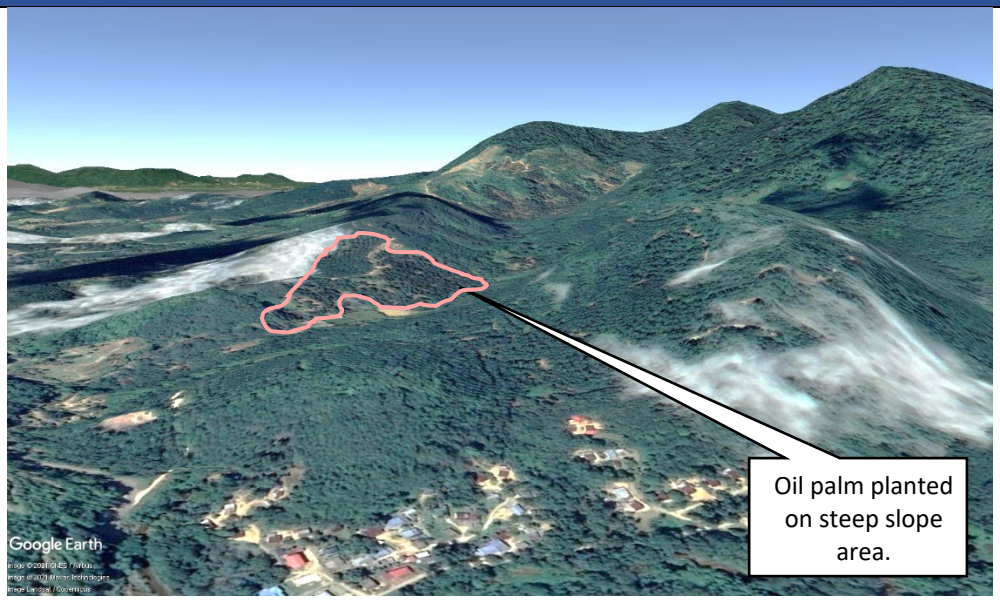
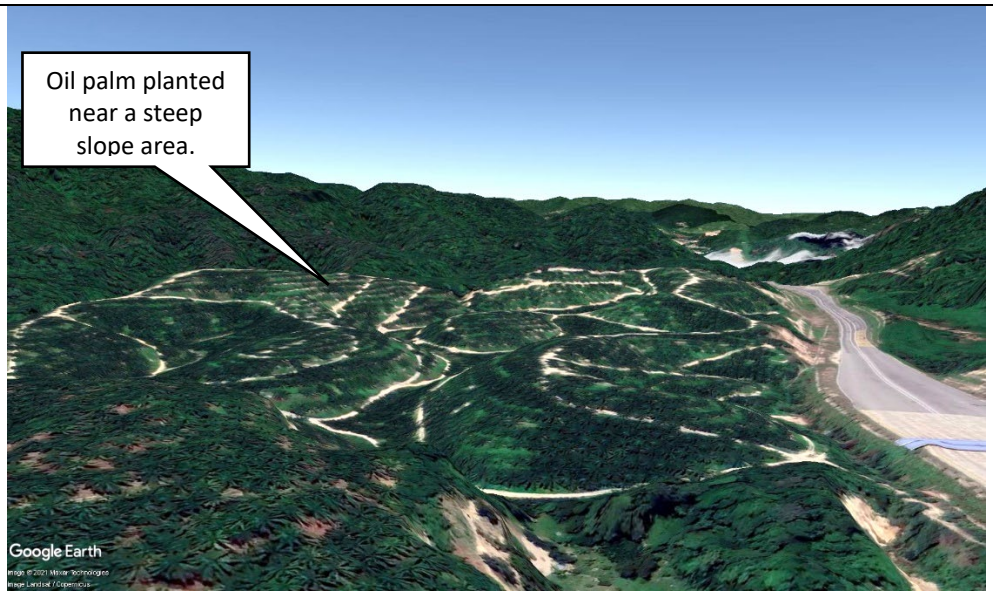
Type of Risk	Example
	
	
Oil palm development near natural water bodies	

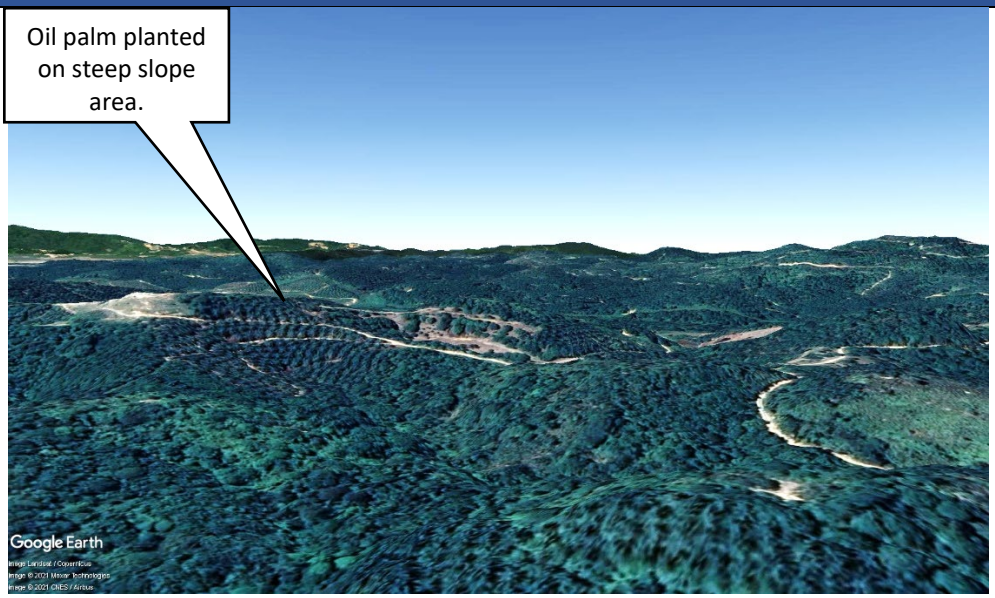
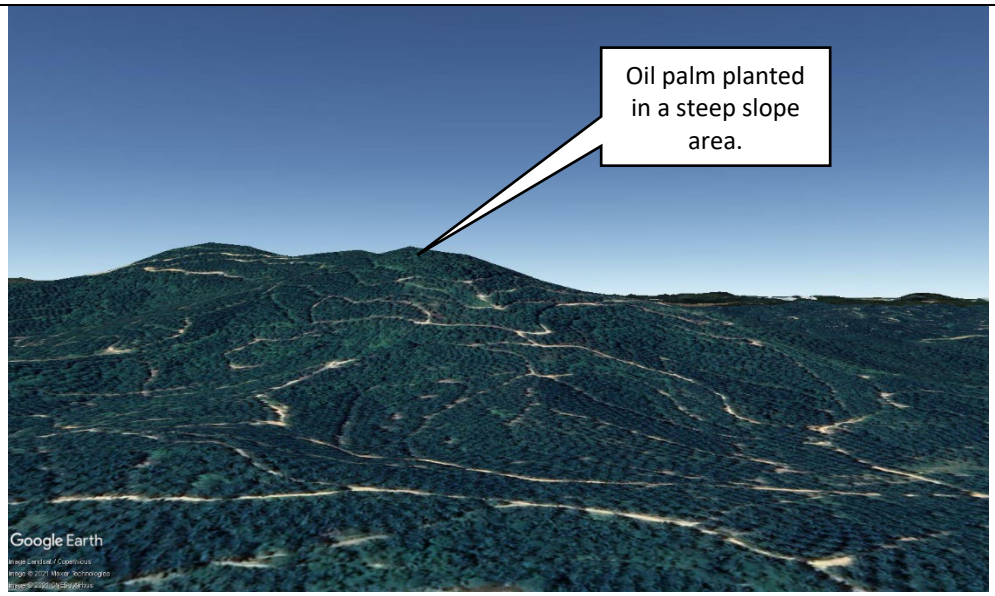
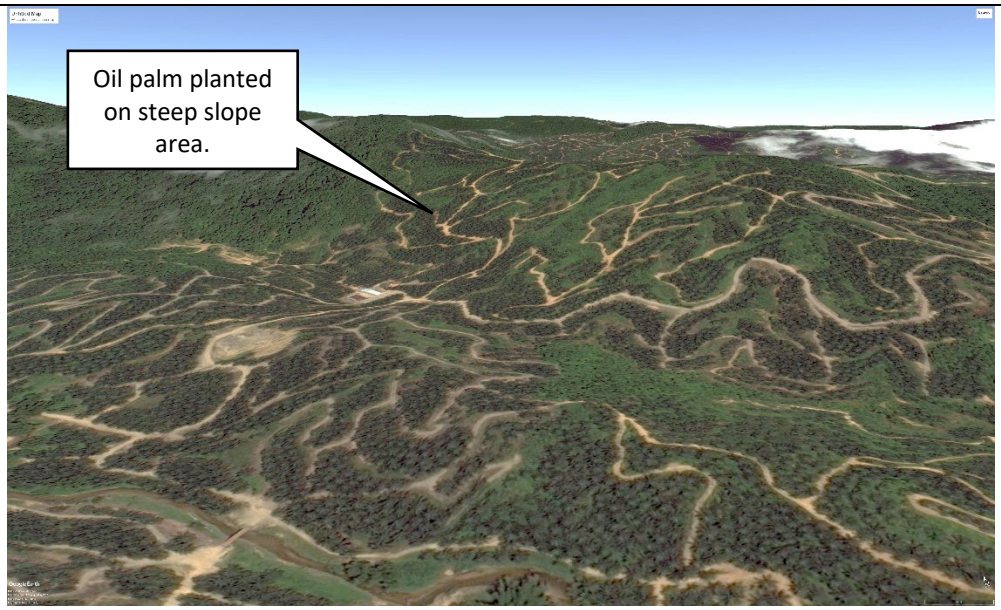
Type of Risk	Example
	
	

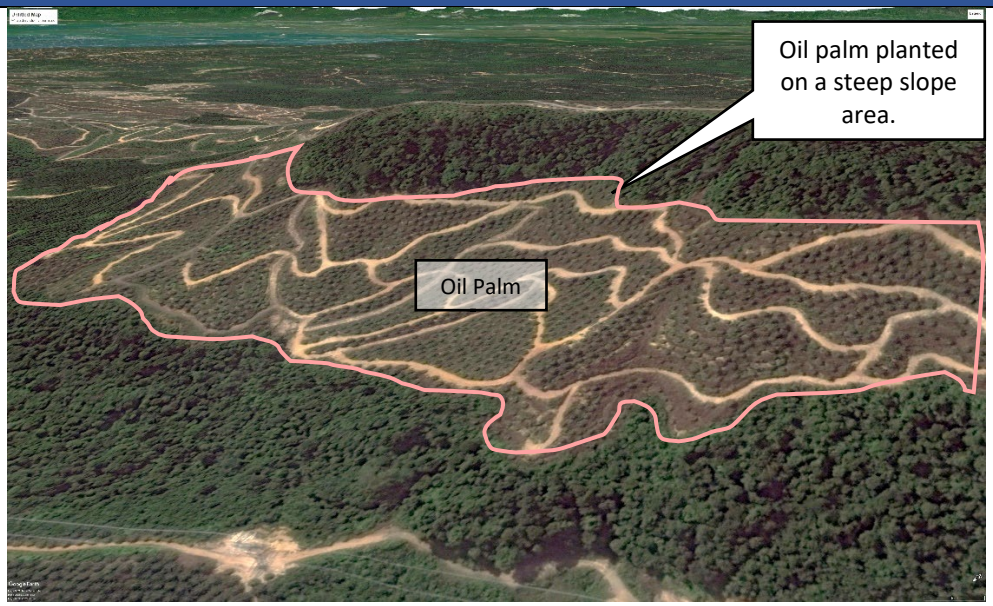
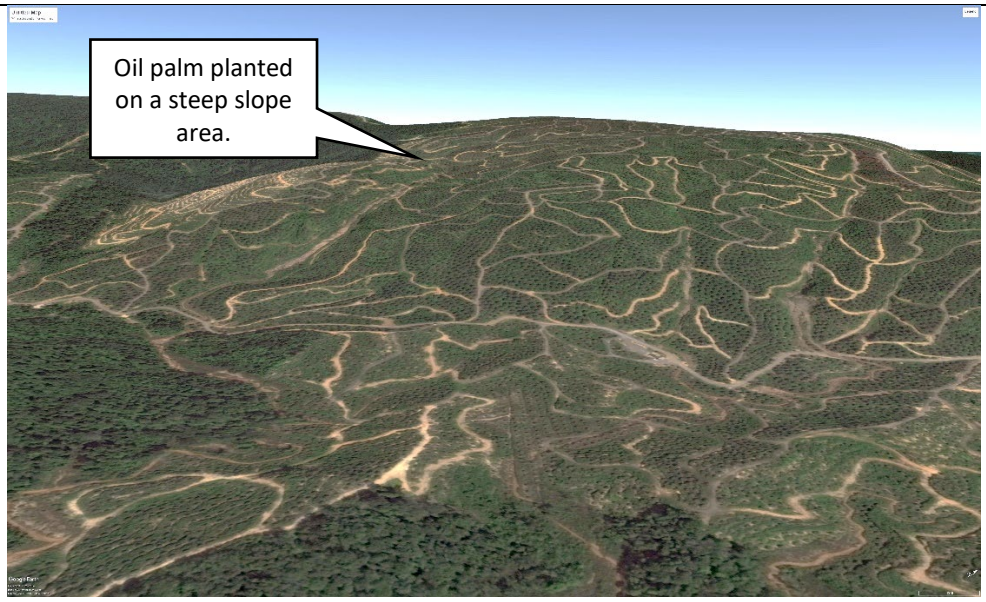
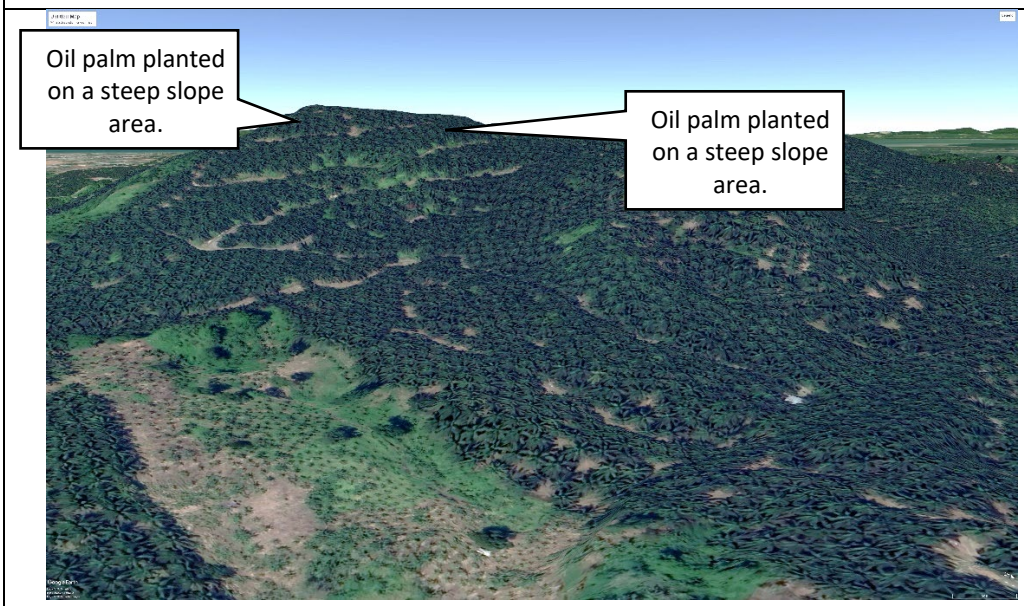
Type of Risk	Example
	 

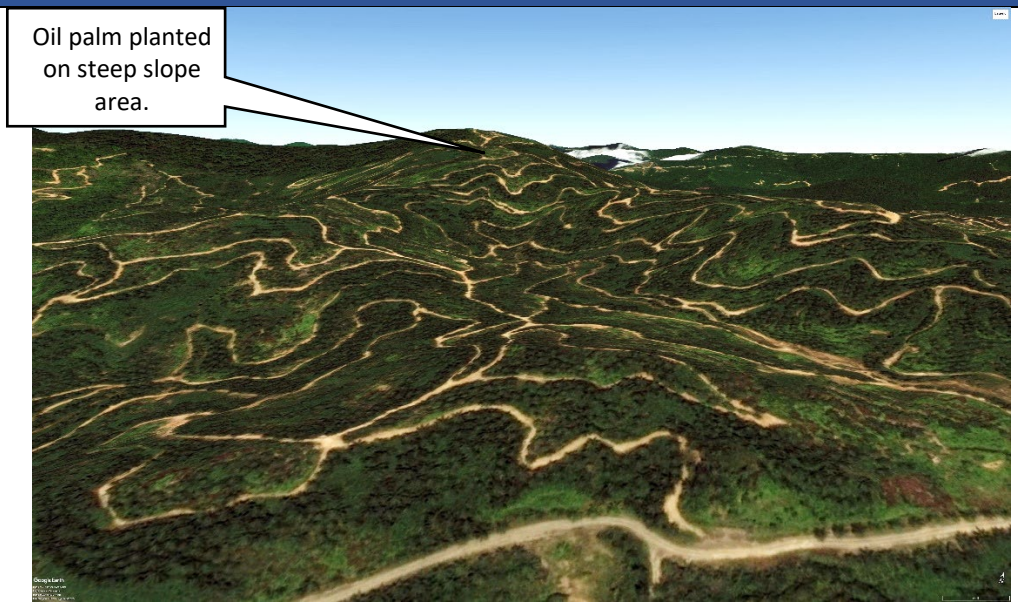
Type of Risk	Example
	 

Type of Risk	Example
	
	

Type of Risk	Example
Oil palm development on steep slopes	
	

Type of Risk	Example
	
	
	

Type of Risk	Example
	
	
	

Type of Risk	Example
	
	

Type of Risk	Example
	
	

15.4 Appendix D: Portfolio of Original Ecosystems with Protected Forest Extent in Malaysia

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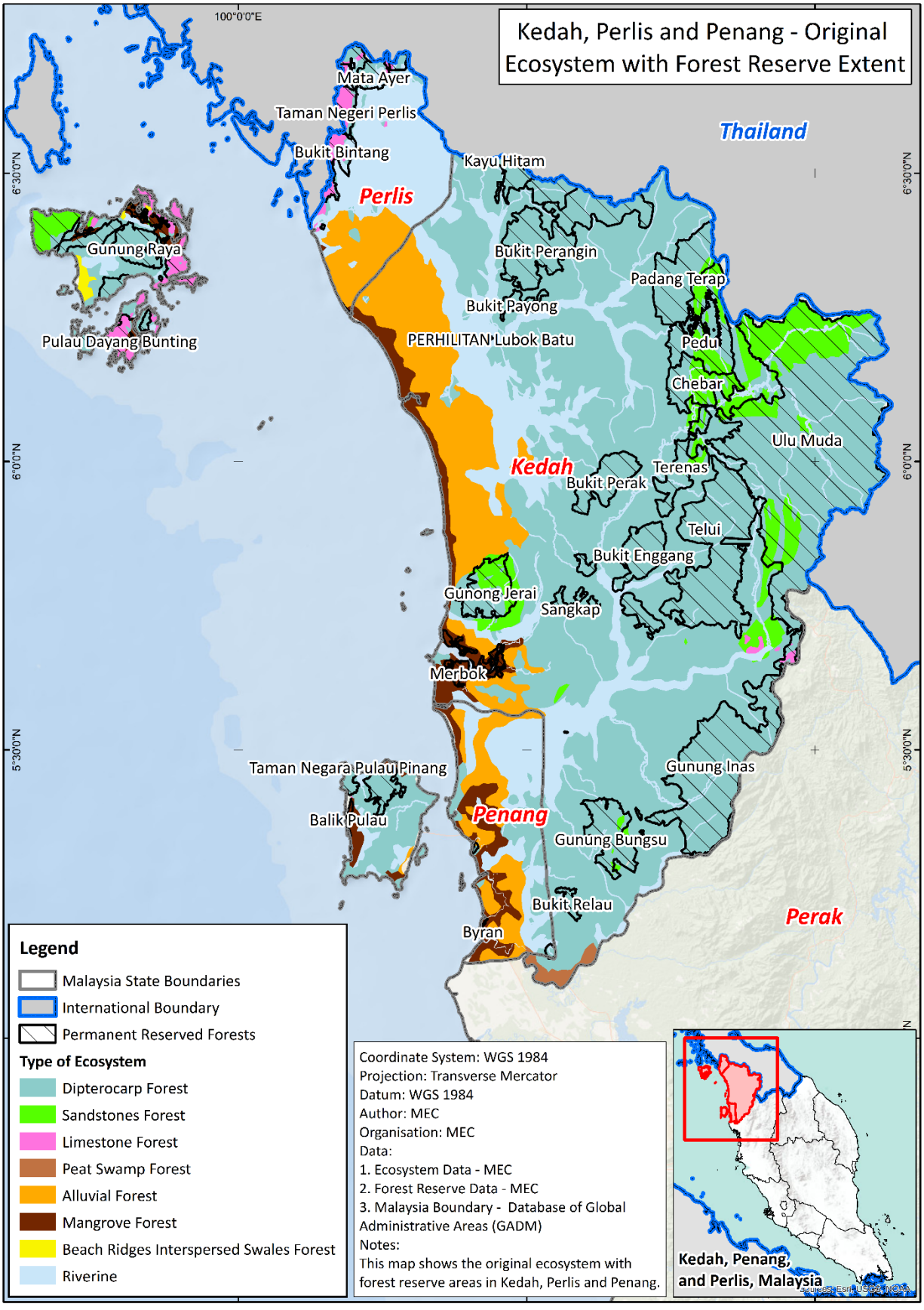
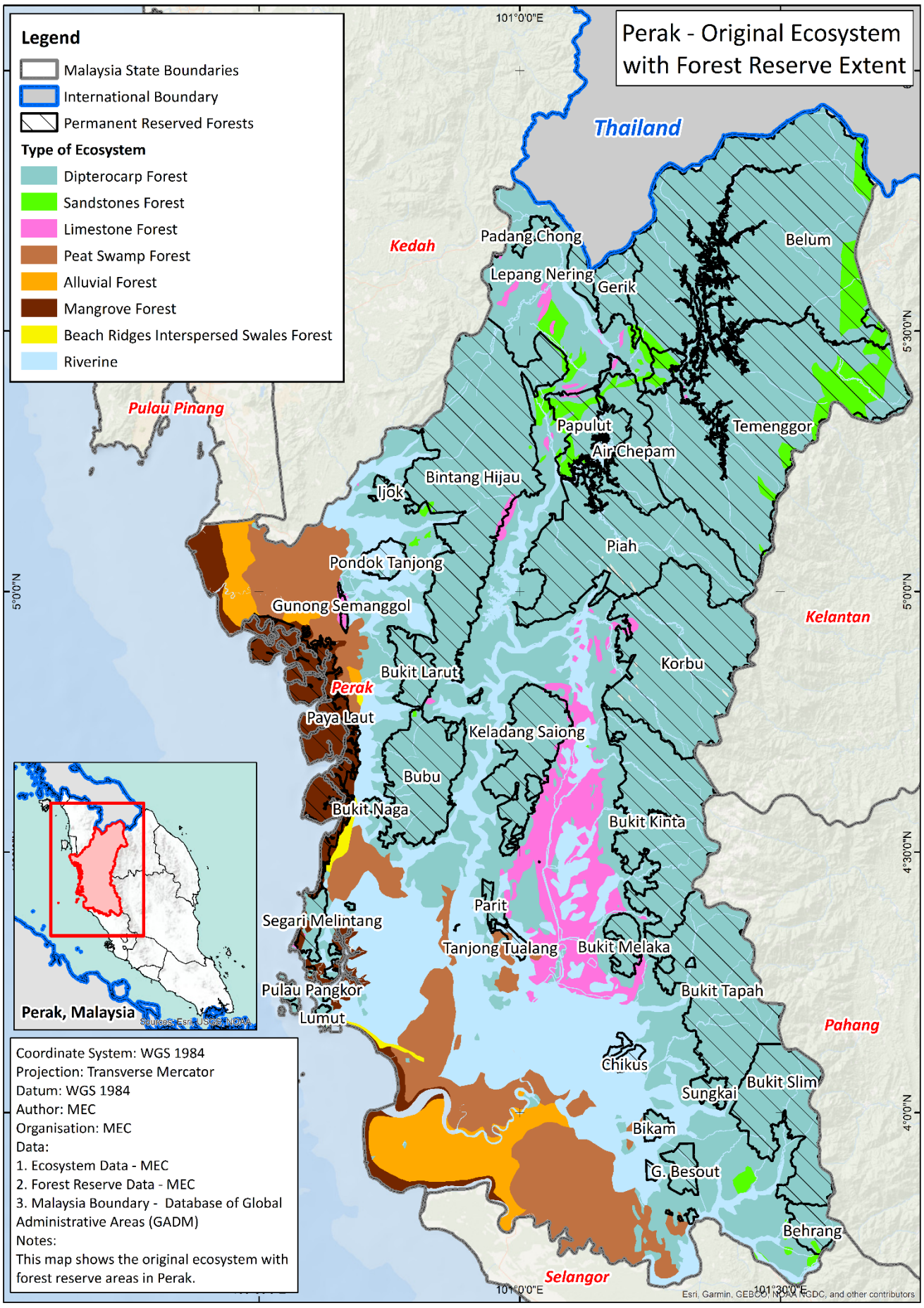
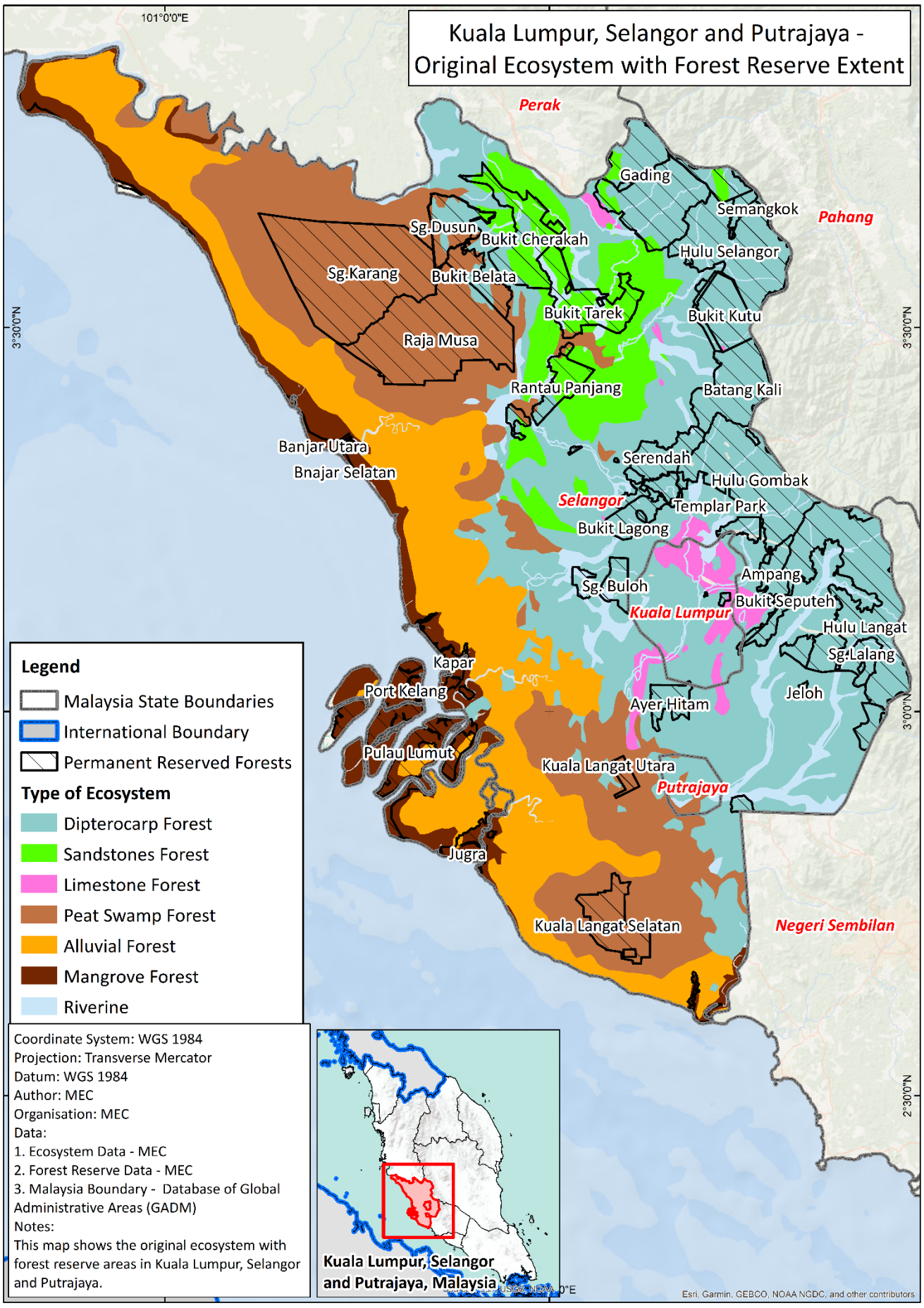
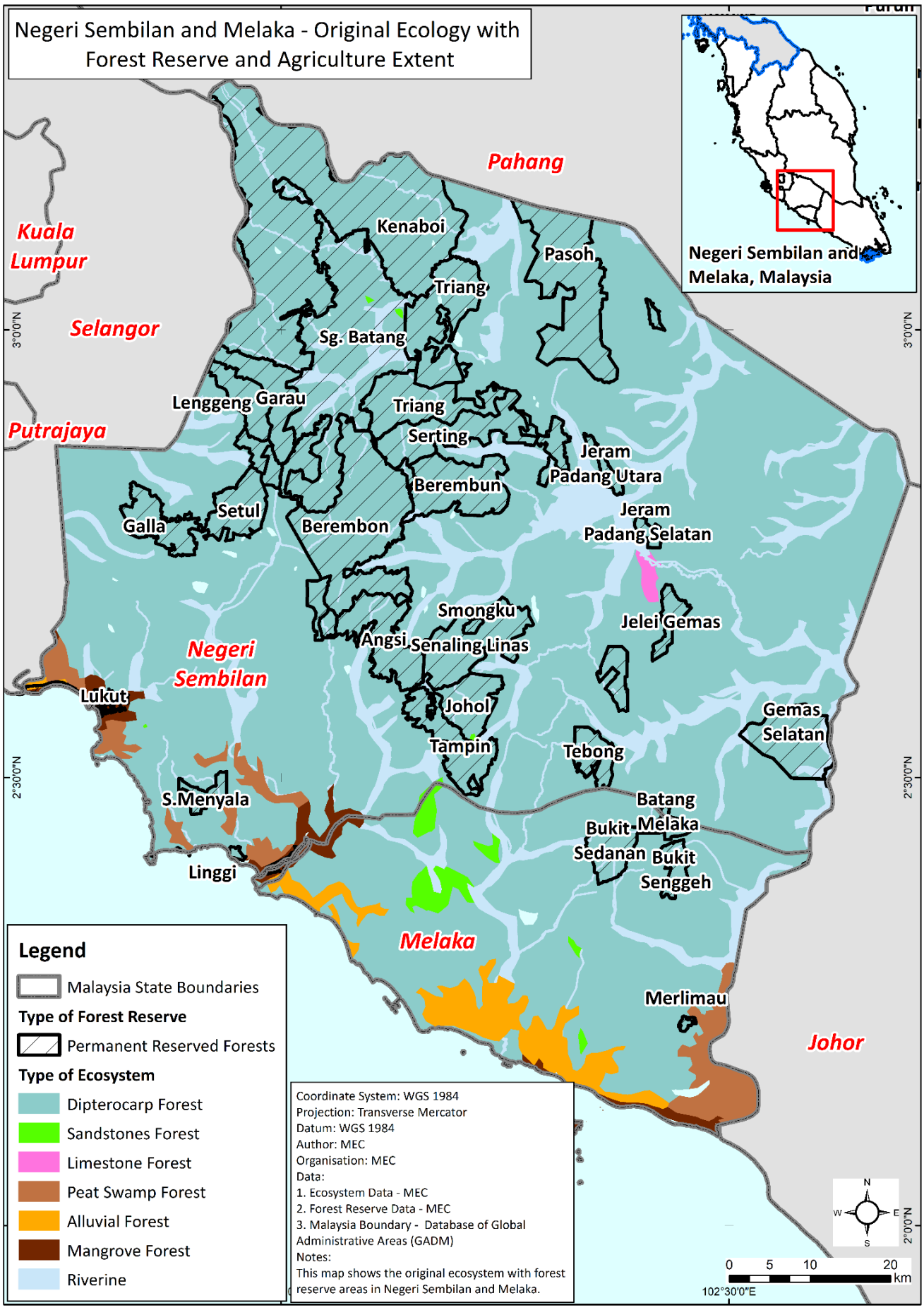
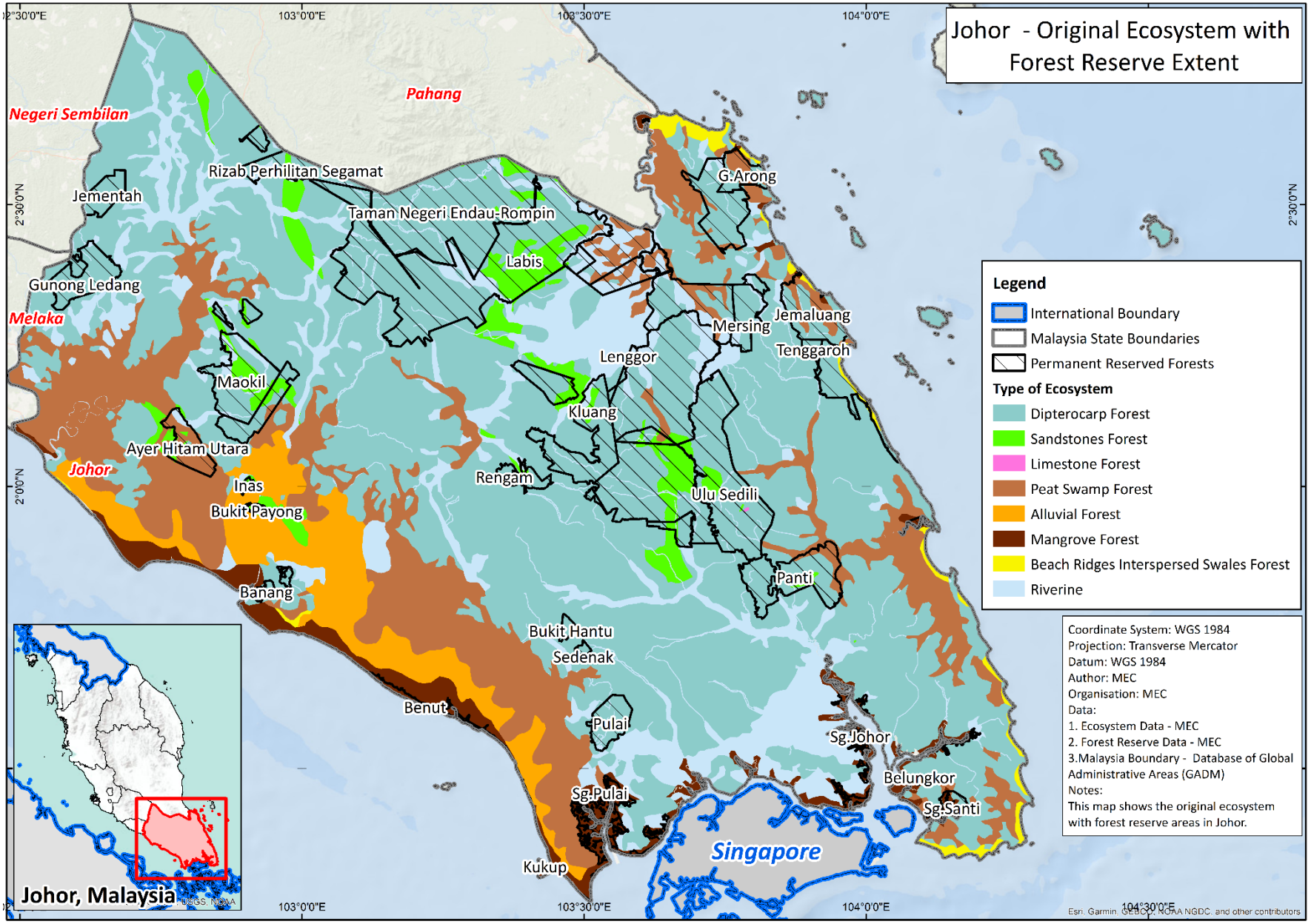
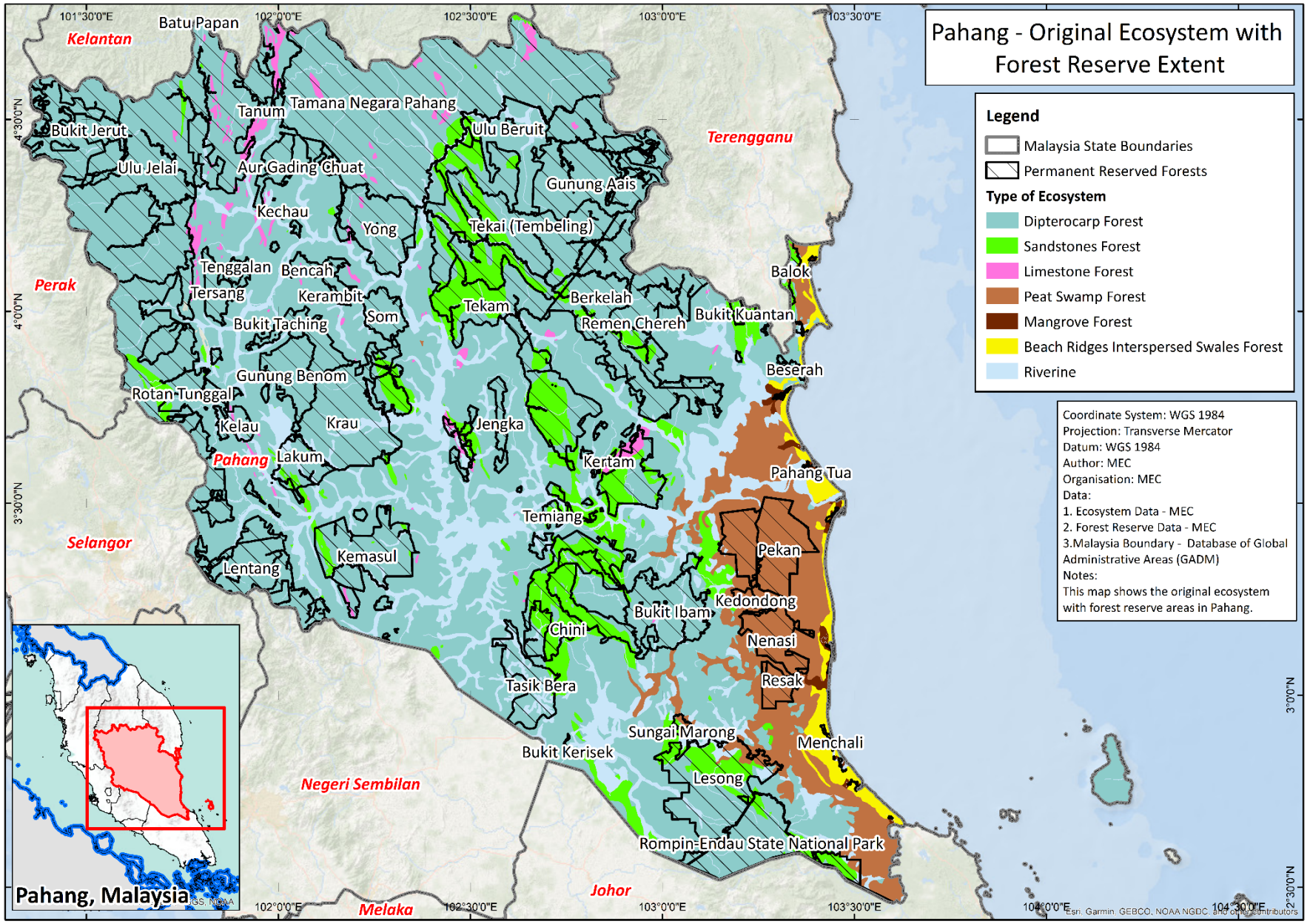


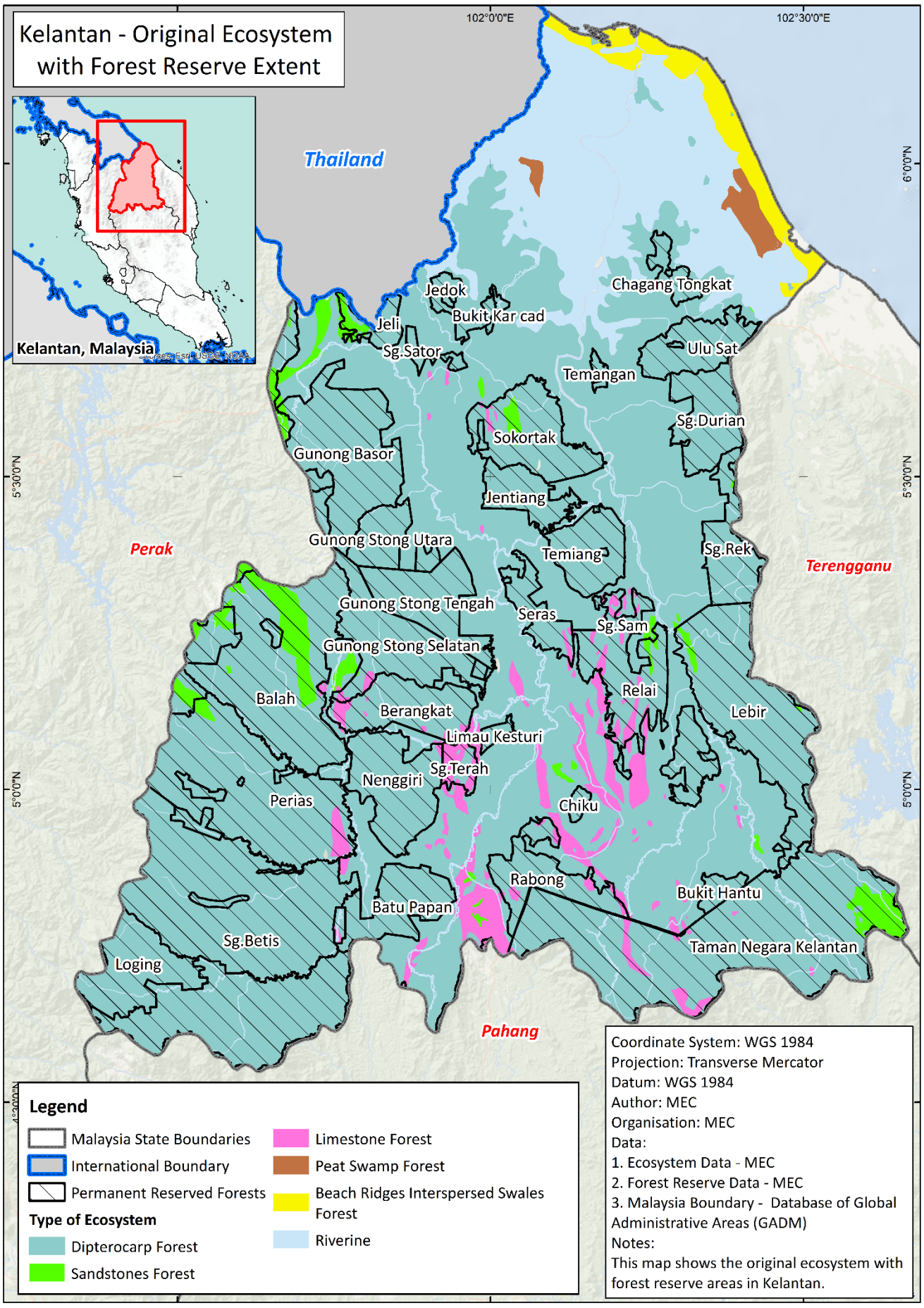

Perak - Original Ecosystem with Forest Reserve Extent
Legend
Malaysia State Boundaries
International Boundary
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Alluvial Forest
Mangrove Forest
Beach Ridges Interspersed Swales Forest
Riverine
Thailand
Kedah
Pulau Pinang
Perak
Kelantan
Pahang
Selangor
Padang Chong
Lepang Nering
Gerik
Belum
Temenggor
Papulut
Air Chepam
Bintang Hijau
Ijok
Piah
Pondok Tanjong
Gunong Semanggol
Bukit Larut
Korbu
Paya Laut
Keladang Saiong
Bubu
Bukit Naga
Bukit Kinta
Parit
Segari Melintang
Tanjong Tualang
Bukit Melaka
Pulau Pangkor
Lumut
Bukit Tapah
Chikus
Bukit Slim
Sungkai
Bikam
G. Besout
Behrang
Perak, Malaysia
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Perak.
101°0'0"E
101°30'0"E
5°30'0"N
5°0'0"N
4°30'0"N
4°0'0"N
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

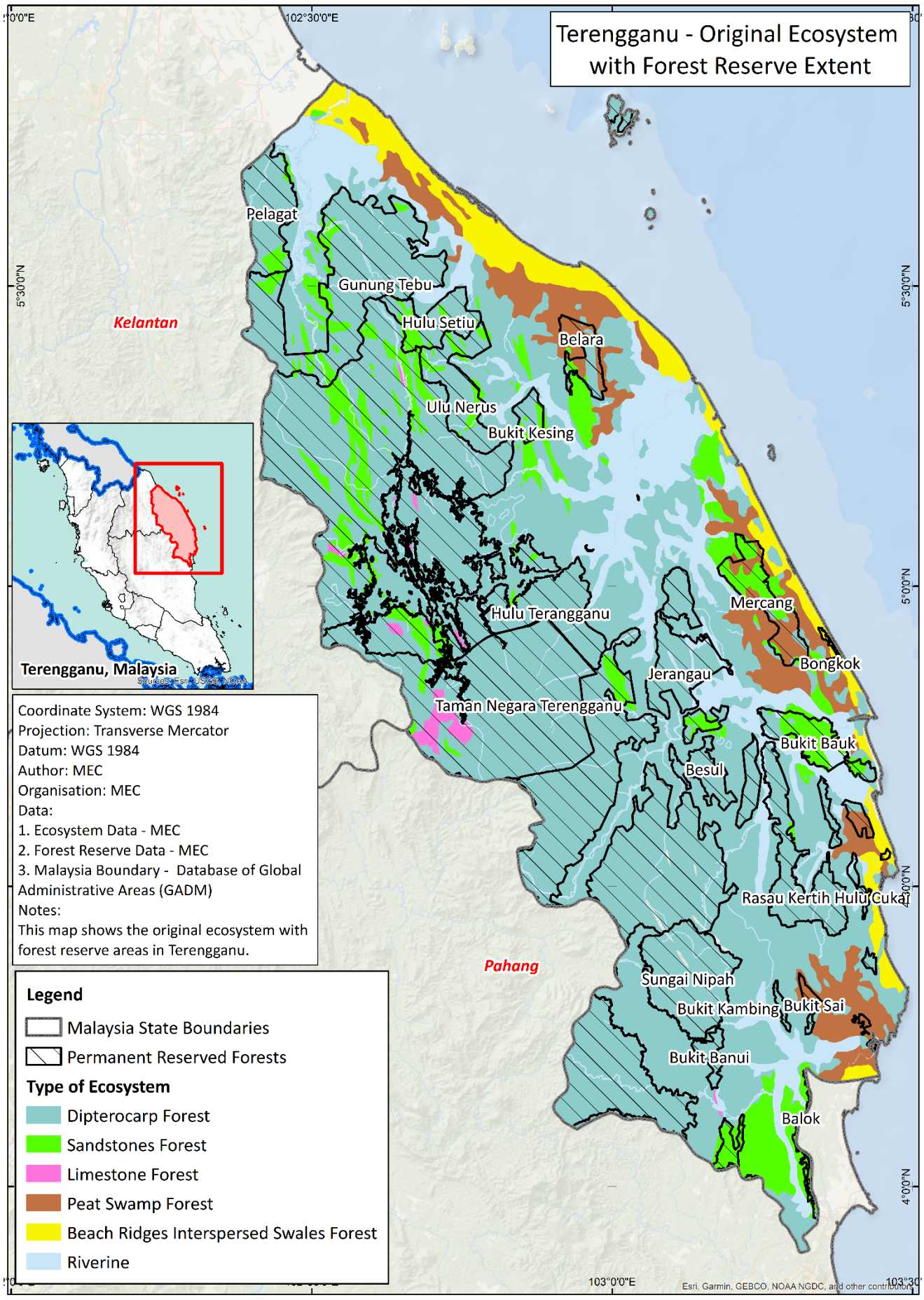

Kuala Lumpur, Selangor and Putrajaya - Original Ecosystem with Forest Reserve Extent
101°0'0"E
3°30'0"N
2°30'0"N
Perak
Pahang
Selangor
Kuala Lumpur
Putrajaya
Negeri Sembilan
Gading
Semangkok
Hulu Selangor
Sg.Dusun
Bukit Cherakah
Sg.Karang
Bukit Belata
Bukit Tarek
Bukit Kutu
Raja Musa
Rantau Panjang
Batang Kali
Banjar Utara
Bnajar Selatan
Serendah
Hulu Gombak
Templar Park
Bukit Lagong
Ampang
Sg. Buloh
Bukit Seputeh
Hulu Langat
Sg.Lalang
Jeloh
Kapar
Port Kelang
Ayer Hitam
Pulau Lumut
Kuala Langat Utara
Jugra
Kuala Langat Selatan
Legend
Malaysia State Boundaries
International Boundary
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Alluvial Forest
Mangrove Forest
Riverine
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Kuala Lumpur, Selangor and Putrajaya.
Kuala Lumpur, Selangor and Putrajaya, Malaysia
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

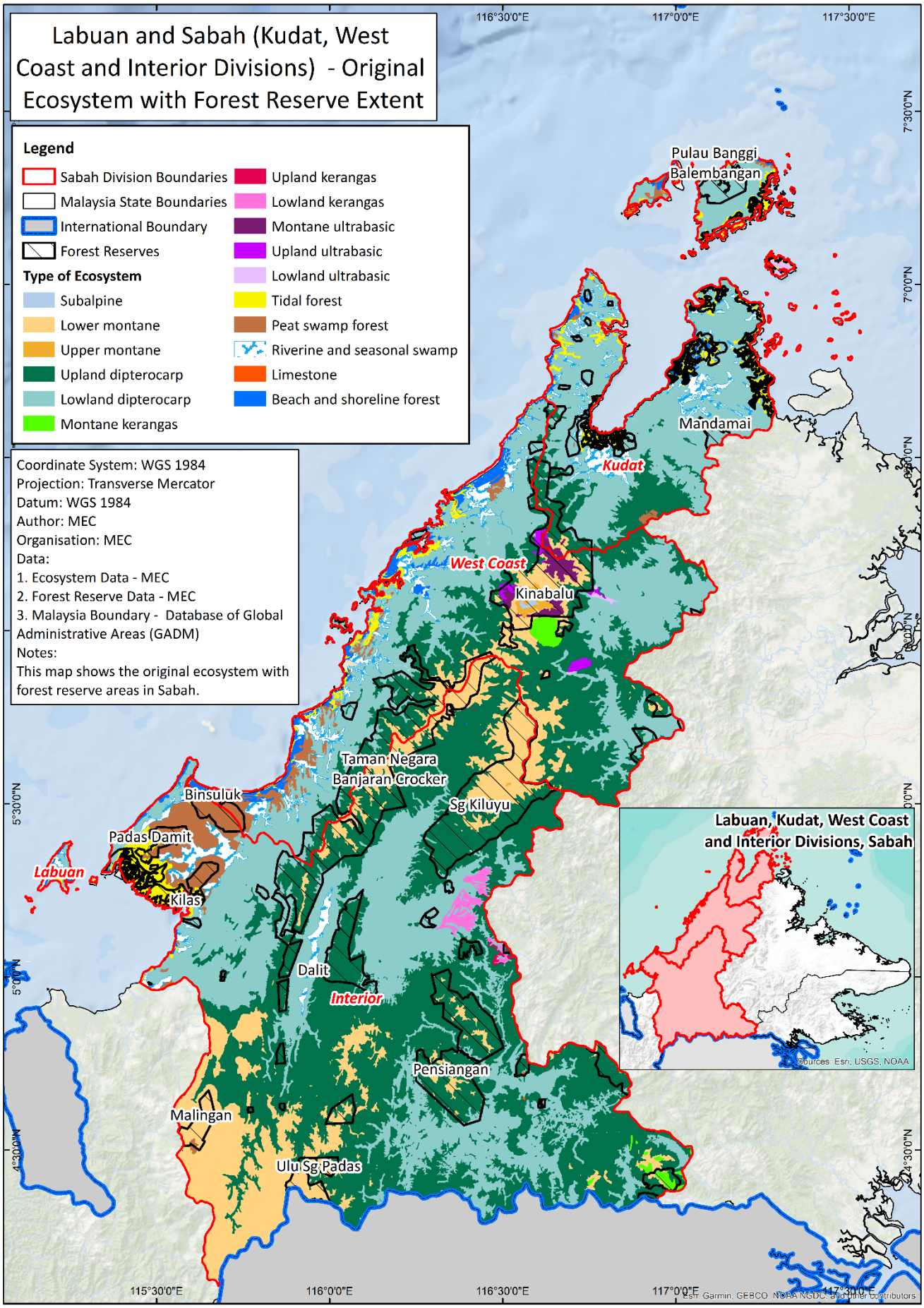

Negeri Sembilan and Melaka - Original Ecology with Forest Reserve and Agriculture Extent
Pahang
Kuala Lumpur
Selangor
Putrajaya
Negeri Sembilan
Melaka
Johor
Kenaboi
Pasoh
Triang
Sg. Batang
Lenggeng
Garau
Triang
Serting
Jeram
Padang Utara
Berembun
Setul
Galla
Berembon
Jeram
Padang Selatan
Smongku
Jelei
Gemas
Angsi
Senaling
Linas
Lukut
Johol
Gemas
Selatan
Tampin
Tebong
S.Menyala
Batang
Bukit
Melaka
Sedanan
Bukit
Senggeh
Linggi
Merlimau
Negeri Sembilan and Melaka, Malaysia
3°0'0"N
2°30'0"N
2°0'0"N
102°30'0"E
Legend
Malaysia State Boundaries
Type of Forest Reserve
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Alluvial Forest
Mangrove Forest
Riverine
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Negeri Sembilan and Melaka.
N
W
E
S
0 5 10 20
km

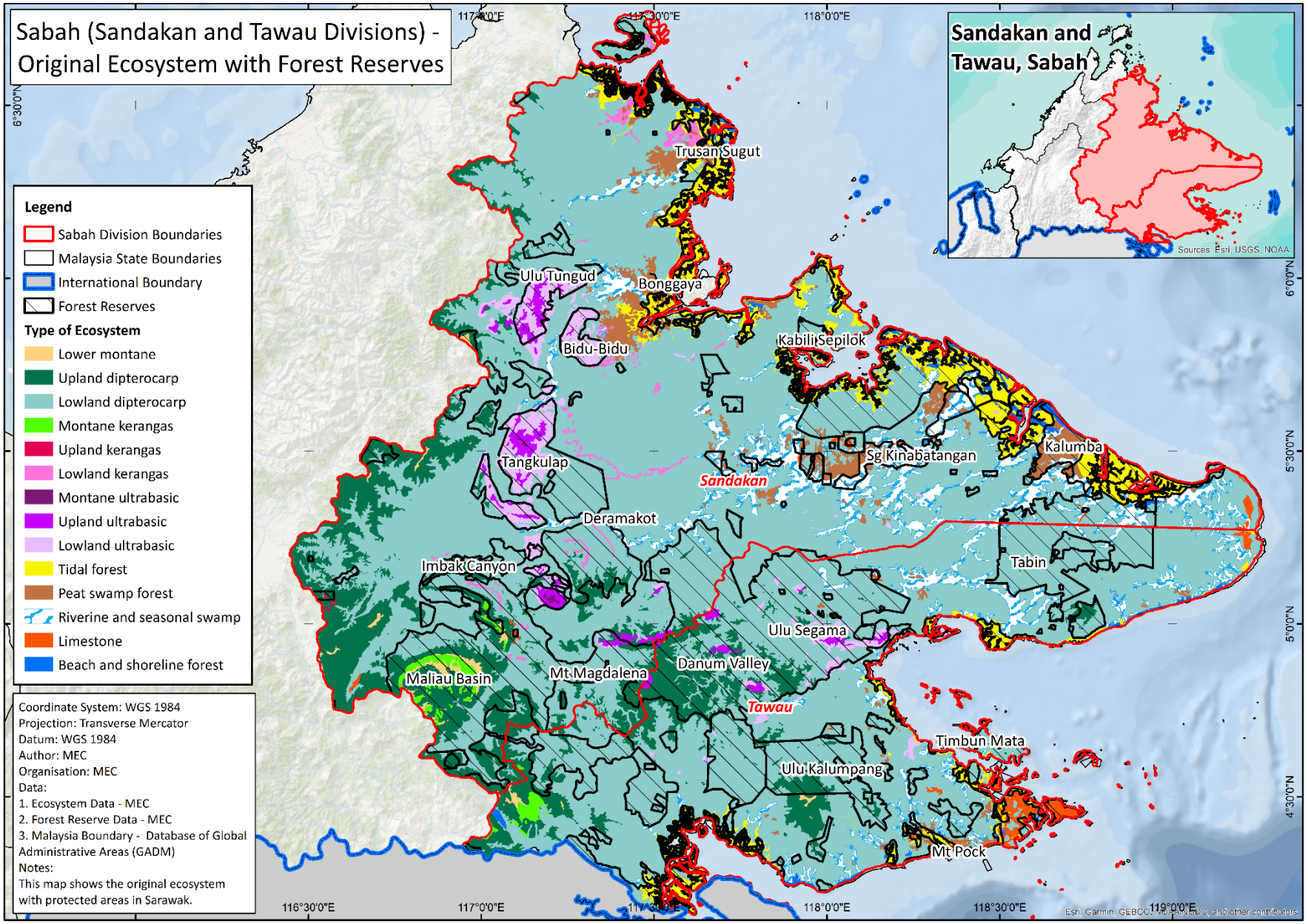

Johor - Original Ecosystem with Forest Reserve Extent
Pahang
Negeri Sembilan
Melaka
Johor
Singapore
Rizab Perhilitan Segamat
Jementah
Taman Negeri Endau-Rompin
Labis
Gunong Ledang
Maokil
Ayer Hitam Utara
Inas
Bukit Payong
Banang
Rengam
Kluang
Lenggor
Mersing
Jemaluang
Tenggaroh
G.Arong
Ulu Sedili
Panti
Bukit Hantu
Sedenak
Benut
Pulai
Sg.Pulai
Kukup
Sg.Johor
Belungkor
Sg.Santi
Legend
International Boundary
Malaysia State Boundaries
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Alluvial Forest
Mangrove Forest
Beach Ridges Interspersed Swales Forest
Riverine
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3.Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Johor.
Johor, Malaysia
USGS, NOAA
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
103°0'0"E
103°30'0"E
104°0'0"E
2°30'0"N
2°0'0"N

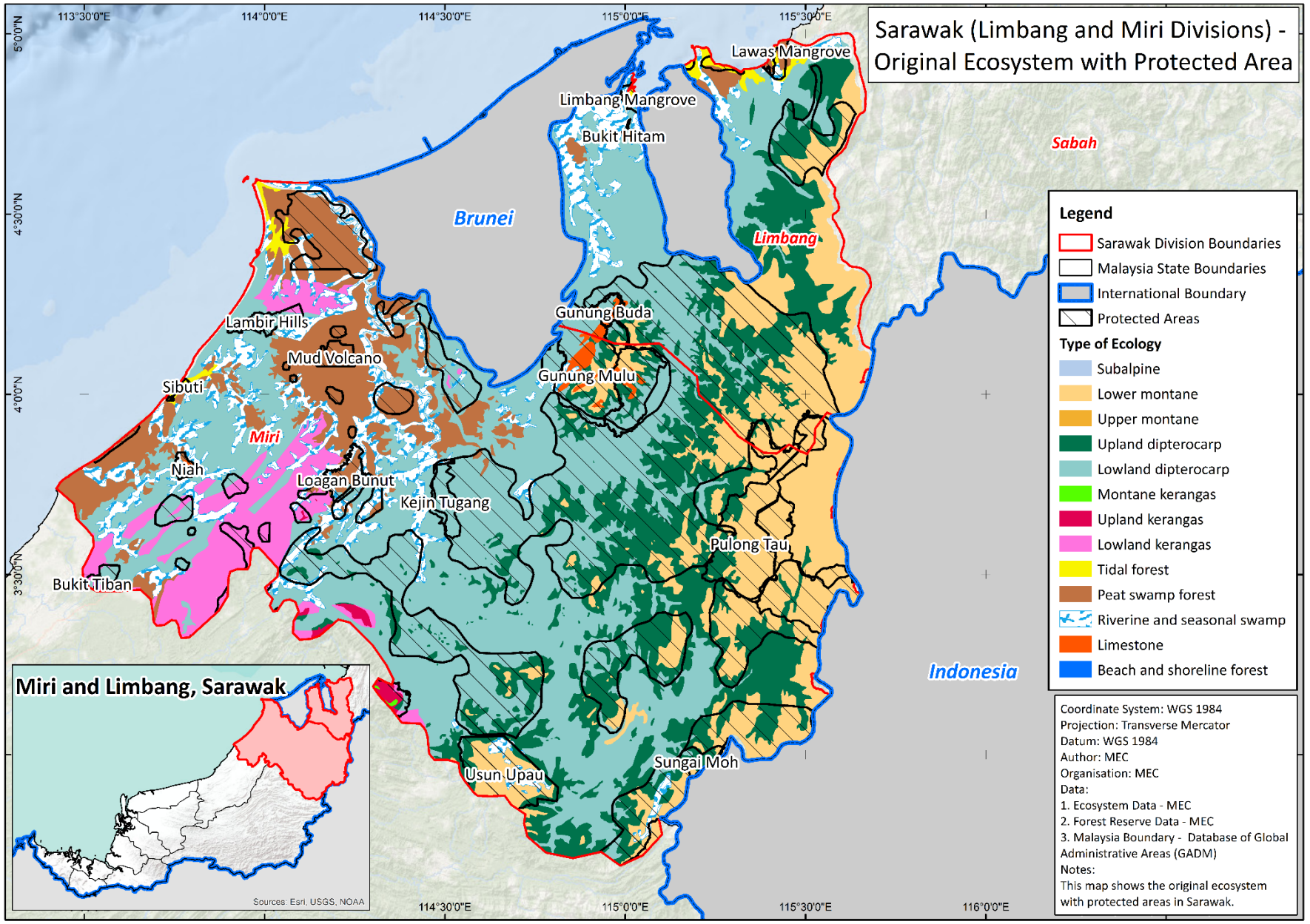

Pahang - Original Ecosystem with Forest Reserve Extent
Legend
Malaysia State Boundaries
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Mangrove Forest
Beach Ridges Interspersed Swales Forest
Riverine
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3.Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Pahang.
Pahang, Malaysia
Kelantan
Terengganu
Perak
Selangor
Negeri Sembilan
Melaka
Johor
Pahang
Batu Papan
Tanum
Tamana Negara Pahang
Bukit Jerut
Ulu Jelai
Aur Gading
Chuat
Kechau
Yong
Ulu Beruit
Gunung Aais
Tekai (Tembeling)
Tenggalan
Bencah
Tersang
Kerambit
Tekam
Berkelah
Remen
Chereh
Balok
Bukit Kuantan
Bukit Taching
Som
Gunung Benom
Rotan Tunggal
Kelau
Krau
Jengka
Lakum
Kertam
Pahang Tua
Temiang
Kemasul
Lentang
Pekan
Kedondong
Bukit Ibam
Chini
Nenasi
Resak
Tasik Bera
Sungai Marong
Menchali
Bukit Kerisek
Lesong
Rompin-Endau State National Park
Beserah
101°30'0"E
102°0'0"E
102°30'0"E
103°0'0"E
103°30'0"E
104°0'0"E
4°30'0"N
4°0'0"N
3°30'0"N
3°0'0"N
2°30'0"N
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

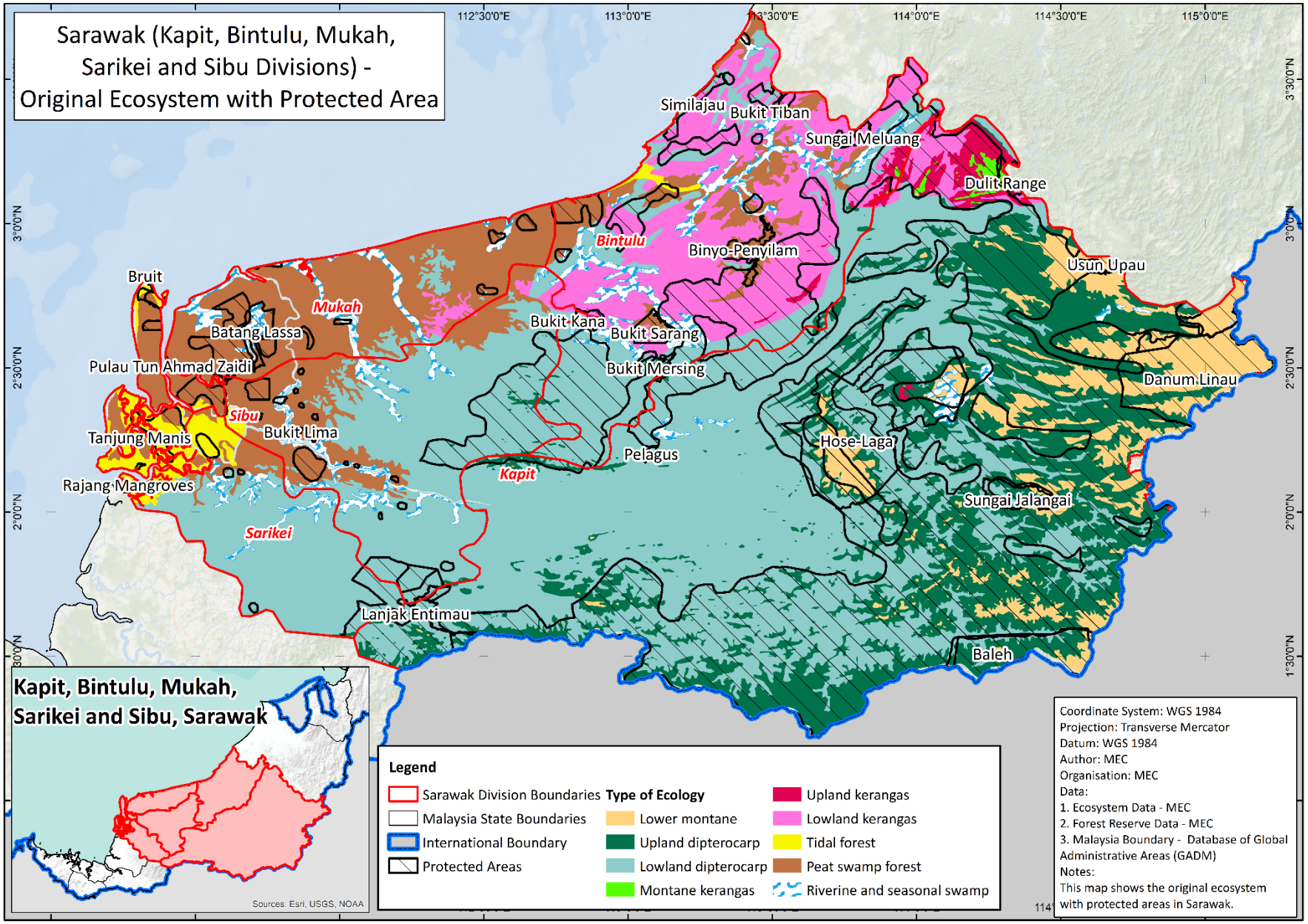

Kelantan - Original Ecosystem with Forest Reserve Extent
Kelantan, Malaysia
Thailand
Perak
Terengganu
Pahang
102°0'0"E
102°30'0"E
5°30'0"N
5°0'0"N
Jedok
Bukit Kar cad
Jeli
Sg.Sator
Chagang Tongkat
Ulu Sat
Temangan
Sg.Durian
Sokortak
Gunong Basor
Jentiang
Gunong Stong Utara
Temiang
Sg.Rek
Gunong Stong Tengah
Seras
Sg.Sam
Gunong Stong Selatan
Relai
Balah
Berangkat
Lebir
Limau Kesturi
Sg.Terah
Nenggiri
Perias
Chiku
Rabong
Bukit Hantu
Batu Papan
Sg.Betis
Taman Negara Kelantan
Loging
Legend
Malaysia State Boundaries
International Boundary
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Beach Ridges Interspersed Swales Forest
Riverine
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Kelantan.

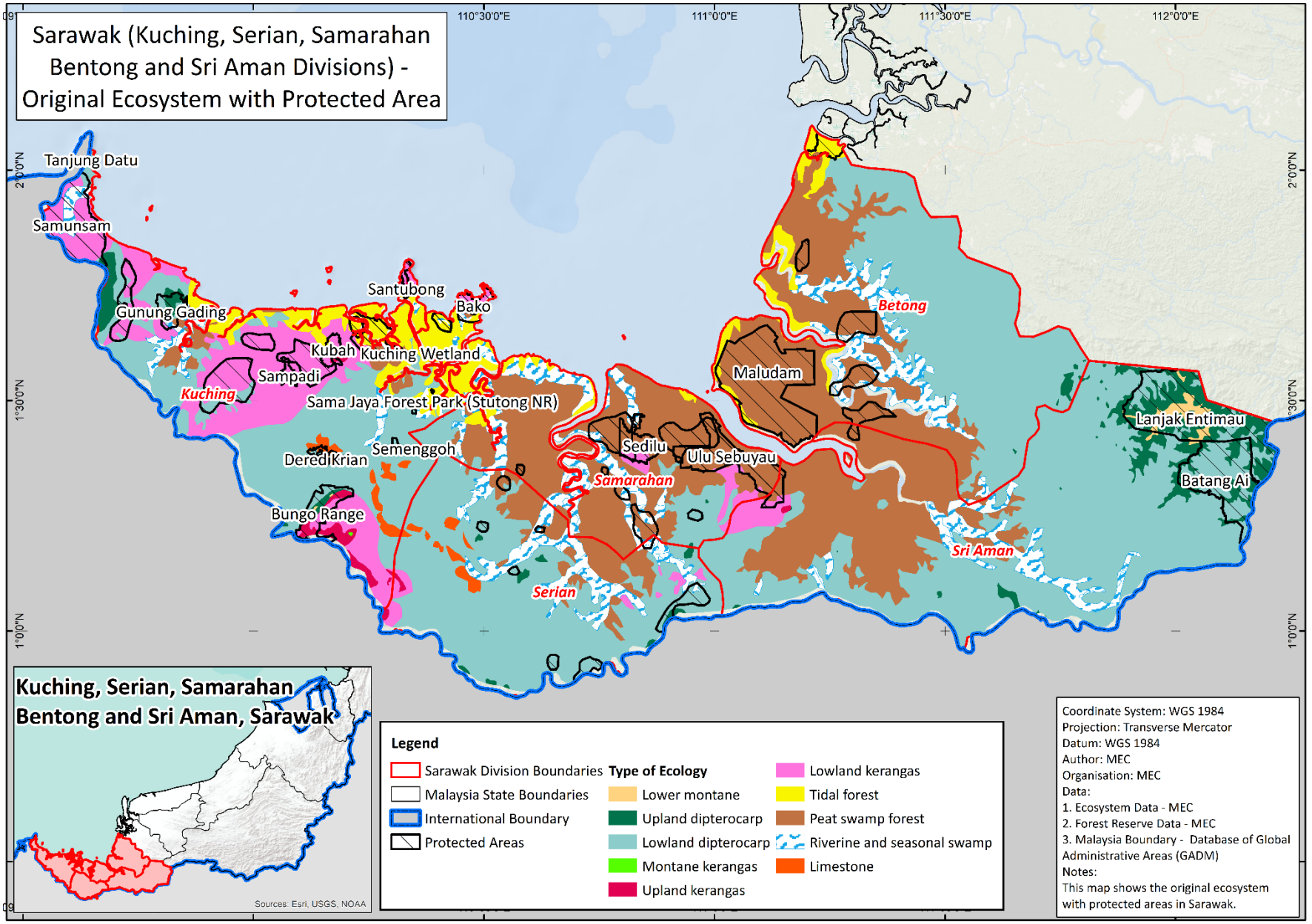

Terengganu - Original Ecosystem with Forest Reserve Extent
Pelagat
Gunung Tebu
Hulu Setiu
Belara
Ulu Nerus
Bukit Kesing
Kelantan
Hulu Terangganu
Mercang
Bongkok
Jerangau
Taman Negara Terengganu
Bukit Bauk
Besul
Rasau Kertih Hulu Cukai
Pahang
Sungai Nipah
Bukit Kambing
Bukit Sai
Bukit Banui
Balok
Terengganu, Malaysia
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Terengganu.
Legend
Malaysia State Boundaries
Permanent Reserved Forests
Type of Ecosystem
Dipterocarp Forest
Sandstones Forest
Limestone Forest
Peat Swamp Forest
Beach Ridges Interspersed Swales Forest
Riverine
102°30'0"E
103°0'0"E
5°30'0"N
5°0'0"N
4°30'0"N
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors


Labuan and Sabah (Kudat, West Coast and Interior Divisions) - Original Ecosystem with Forest Reserve Extent
Legend
Sabah Division Boundaries
Malaysia State Boundaries
International Boundary
Forest Reserves
Type of Ecosystem
Subalpine
Lower montane
Upper montane
Upland dipterocarp
Lowland dipterocarp
Montane kerangas
Upland kerangas
Lowland kerangas
Montane ultrabasic
Upland ultrabasic
Lowland ultrabasic
Tidal forest
Peat swamp forest
Riverine and seasonal swamp
Limestone
Beach and shoreline forest
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with forest reserve areas in Sabah.
Pulau Banggi
Balembangan
Mandamai
Kudat
West Coast
Kinabalu
Taman Negara
Banjaran Crocker
Sg Kiluyu
Binsuluk
Padas Damit
Labuan
Kilas
Dalit
Interior
Pensiangan
Malingan
Ulu Sg Padas
Labuan, Kudat, West Coast and Interior Divisions, Sabah
Sources: Esri, USGS, NOAA
116°30'0"E
117°0'0"E
117°30'0"E
7°30'0"N
7°0'0"N
6°30'0"N
6°0'0"N
5°30'0"N
5°0'0"N
4°30'0"N
115°30'0"E
116°0'0"E
116°30'0"E
117°0'0"E
117°30'0"E
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors


Sabah (Sandakan and Tawau Divisions) - Original Ecosystem with Forest Reserves
Sandakan and Tawau, Sabah
Sources: Esri, USGS, NOAA
Legend
Sabah Division Boundaries
Malaysia State Boundaries
International Boundary
Forest Reserves
Type of Ecosystem
Lower montane
Upland dipterocarp
Lowland dipterocarp
Montane kerangas
Upland kerangas
Lowland kerangas
Montane ultrabasic
Upland ultrabasic
Lowland ultrabasic
Tidal forest
Peat swamp forest
Riverine and seasonal swamp
Limestone
Beach and shoreline forest
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with protected areas in Sarawak.
Trusan Sugut
Ulu Tungud
Bonggaya
Bidu-Bidu
Kabili Sepilok
Sg Kinabatangan
Kalumba
Tangkulap
Sandakan
Deramakot
Tabin
Imbak Canyon
Ulu Segama
Danum Valley
Maliau Basin
Mt Magdalena
Tawau
Timbun Mata
Ulu Kalumpang
Mt Pock
116°30'0"E
117°0'0"E
118°0'0"E
118°30'0"E
119°0'0"E
6°30'0"N
6°0'0"N
5°30'0"N
5°0'0"N
4°30'0"N
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors


Sarawak (Limbang and Miri Divisions) - Original Ecosystem with Protected Area
113°30'0"E
114°0'0"E
114°30'0"E
115°0'0"E
115°30'0"E
116°0'0"E
5°0'0"N
4°30'0"N
4°0'0"N
3°30'0"N
Lawas Mangrove
Limbang Mangrove
Bukit Hitam
Sabah
Brunei
Limbang
Gunung Buda
Gunung Mulu
Lambir Hills
Mud Volcano
Sibuti
Miri
Niah
Loagan Bunut
Kejin Tugang
Bukit Tiban
Pulong Tau
Indonesia
Usun Upau
Sungai Moh
Miri and Limbang, Sarawak
Sources: Esri, USGS, NOAA
Legend
Sarawak Division Boundaries
Malaysia State Boundaries
International Boundary
Protected Areas
Type of Ecology
Subalpine
Lower montane
Upper montane
Upland dipterocarp
Lowland dipterocarp
Montane kerangas
Upland kerangas
Lowland kerangas
Tidal forest
Peat swamp forest
Riverine and seasonal swamp
Limestone
Beach and shoreline forest
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with protected areas in Sarawak.


Sarawak (Kapit, Bintulu, Mukah, Sarikei and Sibu Divisions) - Original Ecosystem with Protected Area
112°30'0"E
113°0'0"E
113°30'0"E
114°0'0"E
114°30'0"E
115°0'0"E
3°30'0"N
3°0'0"N
2°30'0"N
2°0'0"N
1°30'0"N
Similajau
Bukit Tiban
Sungai Meluang
Dulit Range
Bintulu
Binyo-Penyilam
Usun Upau
Bruit
Mukah
Batang Lassa
Bukit Kana
Bukit Sarang
Pulau Tun Ahmad Zaidi
Bukit Mersing
Danum Linau
Sibu
Bukit Lima
Tanjung Manis
Hose-Laga
Pelagus
Kapit
Rajang Mangroves
Sungai Jalangai
Sarikei
Lanjak Entimau
Baleh
Kapit, Bintulu, Mukah, Sarikei and Sibu, Sarawak
Sources: Esri, USGS, NOAA
Legend
Sarawak Division Boundaries
Malaysia State Boundaries
International Boundary
Protected Areas
Type of Ecology
Lower montane
Upland dipterocarp
Lowland dipterocarp
Montane kerangas
Upland kerangas
Lowland kerangas
Tidal forest
Peat swamp forest
Riverine and seasonal swamp
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with protected areas in Sarawak.


Sarawak (Kuching, Serian, Samarahan Bentong and Sri Aman Divisions) - Original Ecosystem with Protected Area
110°30'0"E
111°0'0"E
111°30'0"E
112°0'0"E
2°0'0"N
1°30'0"N
1°0'0"N
Tanjung Datu
Samunsam
Gunung Gading
Santubong
Bako
Kubah
Kuching Wetland
Sampadi
Kuching
Sama Jaya Forest Park (Stutong NR)
Semenggoh
Dered Krian
Bungo Range
Serian
Samarahan
Sedilu
Ulu Sebuyau
Maludam
Betong
Sri Aman
Lanjak Entimau
Batang Ai
Kuching, Serian, Samarahan Bentong and Sri Aman, Sarawak
Sources: Esri, USGS, NOAA
Legend
Sarawak Division Boundaries
Malaysia State Boundaries
International Boundary
Protected Areas
Type of Ecology
Lower montane
Upland dipterocarp
Lowland dipterocarp
Montane kerangas
Upland kerangas
Lowland kerangas
Tidal forest
Peat swamp forest
Riverine and seasonal swamp
Limestone
Coordinate System: WGS 1984
Projection: Transverse Mercator
Datum: WGS 1984
Author: MEC
Organisation: MEC
Data:
1. Ecosystem Data - MEC
2. Forest Reserve Data - MEC
3. Malaysia Boundary - Database of Global Administrative Areas (GADM)
Notes:
This map shows the original ecosystem with protected areas in Sarawak.

15.5 Appendix E: List of Forest Reserves and Protected Areas in Malaysia

Back to Quick Reference

15.5.1 List of Forest Reserve Areas in Peninsular Malaysia

Back to Quick Reference

No.	State	Name of Forest Reserves	Type of Forest Reserve
1	Johor	Air Hitam Utara	Peat Swamp Forest
2	Johor	Air Hitam Utara (Tambahan)	Peat Swamp Forest
3	Johor	Banang	Water Catchment Forest
4	Johor	Banang (Tambahan)	Permanent Reserved Forest
5	Johor	Belungkor	Permanent Reserved Forest
6	Johor	Benut	Other Forest Reserve
7	Johor	Bukit Bindu	Permanent Reserved Forest
8	Johor	Bukit Hantu	Permanent Reserved Forest
9	Johor	Bukit Inas	Water Catchment Forest
10	Johor	Bukit Payong	Permanent Reserved Forest
11	Johor	Gemereh	Permanent Reserved Forest
12	Johor	Gunung Arong	Water Catchment Forest
13	Johor	Gunung Arong (Tambahan)	Other Forest Reserve
14	Johor	Gunung Arong (Tambahan 2)	Other Forest Reserve
15	Johor	Gunung Arong (Tambahan 3)	Other Forest Reserve
16	Johor	Gunung Pulai	Water Catchment Forest
17	Johor	Jemaluang	Permanent Reserved Forest
18	Johor	Jementah	Permanent Reserved Forest
19	Johor	Jementah (Tambahan)	Permanent Reserved Forest
20	Johor	Kawasan Tadahan Air Melaka	Water Catchment
21	Johor	Kawasan Tadahan Empangan Bekok	Water Catchment
22	Johor	Kawasan Tadahan Empangan Seluyut	Water Catchment
23	Johor	Kluang	Water Catchment Forest
24	Johor	Kluang (Tambahan)	Permanent Reserved Forest
25	Johor	Kuala Sedili	Permanent Reserved Forest
26	Johor	Pulau Kukup	National/State Park
27	Johor	Labis	Water Catchment Forest
28	Johor	Labis (Tambahan)	Permanent Reserved Forest
29	Johor	Lenggor	Permanent Reserved Forest
30	Johor	Lenggor/Endau-Keluang	Permanent Reserved Forest
31	Johor	Maokil	Water Catchment Forest
32	Johor	Maokil (Tambahan)	Permanent Reserved Forest
33	Johor	Mersing	Water Catchment Forest
34	Johor	Mersing (Tambahan)	Permanent Reserved Forest
35	Johor	Panti	Water Catchment Forest
36	Johor	Renggam	Permanent Reserved Forest
37	Johor	Renggam (Tambahan)	Permanent Reserved Forest
38	Johor	Rezab Perhilitan Endau-Keluang	Wildlife Sanctuary/Reserve
39	Johor	Rezab Perhilitan Segamat	Wildlife Sanctuary/Reserve
40	Johor	Sedenak	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
41	Johor	Seluyut	Water Catchment Forest
42	Johor	Semberong	Other Forest Reserve
43	Johor	Semberong (Tambahan)	Other Forest Reserve
44	Johor	Sermin	Permanent Reserved Forest
45	Johor	Soga	Permanent Reserved Forest
46	Johor	Soga (Tambahan)	Permanent Reserved Forest
47	Johor	Sungai Johor	Mangrove Forest
48	Johor	Sungai Johor (Tambahan)	Mangrove Forest
49	Johor	Sungai Lebam	Permanent Reserved Forest
50	Johor	Sungai Pulai	Mangrove Forest
51	Johor	Sungai Santi	Mangrove Forest
52	Johor	Sungai Segamat	Permanent Reserved Forest
53	Johor	Tadahan Linggi	Other Forest Reserve
54	Johor	Tenggaroh	Permanent Reserved Forest
55	Johor	Tenggaroh/ Endau Kota Tinggi	Permanent Reserved Forest
56	Johor	Ulu Sedili	Water Catchment Forest
57	Johor	Ulu Sedili (Tambahan)	Permanent Reserved Forest
58	Kedah	Ayer Hangat	Permanent Reserved Forest
59	Kedah	Badak	Permanent Reserved Forest
60	Kedah	Bintang Hijau	Water Catchment Forest
61	Kedah	Bukit Enggang	Permanent Reserved Forest
62	Kedah	Bukit Genting Iboi	Permanent Reserved Forest
63	Kedah	Bukit Kemunting	Permanent Reserved Forest
64	Kedah	Bukit Keramat	Permanent Reserved Forest
65	Kedah	Bukit Kerong	Permanent Reserved Forest
66	Kedah	Bukit Malut	Permanent Reserved Forest
67	Kedah	Bukit Payong	Permanent Reserved Forest
68	Kedah	Bukit Perak	Permanent Reserved Forest
69	Kedah	Bukit Perangin	Permanent Reserved Forest
70	Kedah	Bukit Relau	Permanent Reserved Forest
71	Kedah	Bukit Saiong	Permanent Reserved Forest
72	Kedah	Bukit Sawak	Permanent Reserved Forest
73	Kedah	Bukit Tangga	Permanent Reserved Forest
74	Kedah	Bukit Tiang Layar	Permanent Reserved Forest
75	Kedah	Chebar Besar	Water Catchment Forest
76	Kedah	Chebar Kecil	Permanent Reserved Forest
77	Kedah	Gua Cherita	Permanent Reserved Forest
78	Kedah	Gua Tembus	Permanent Reserved Forest
79	Kedah	Gunung Bongsu	Permanent Reserved Forest
80	Kedah	Gunung Inas	Permanent Reserved Forest
81	Kedah	Gunung Jerai	Permanent Reserved Forest
82	Kedah	Gunung Machinchang	Permanent Reserved Forest
83	Kedah	Gunung Raya	Permanent Reserved Forest
84	Kedah	Kawasan Tadahan Air Kulim	Water Catchment

No.	State	Name of Forest Reserves	Type of Forest Reserve
85	Kedah	Kawasan Tadahan Air Parit Buntar	Water Catchment
86	Kedah	Kawasan Tadahan Bukit Pancur	Water Catchment
87	Kedah	Kawasan Tadahan Empangan Ahning	Water Catchment
88	Kedah	Kawasan Tadahan Empangan Muda dan Pedu	Water Catchment
89	Kedah	Kayu Hitam	Permanent Reserved Forest
90	Kedah	Kisap	Permanent Reserved Forest
91	Kedah	Koh Mai	Permanent Reserved Forest
92	Kedah	Kuah	Permanent Reserved Forest
93	Kedah	Kuala Ayer Hangat	Mangrove Forest
94	Kedah	Kubang Badak	Mangrove Forest
95	Kedah	Merbok	Mangrove Forest
96	Kedah	Padang Terap	Permanent Reserved Forest
97	Kedah	Pedu	Water Catchment Forest
98	Kedah	PERHILITAN Lubok Batu	Other Forest Reserve
99	Kedah	Pulau Singa Besar	Sea Cucumber Protection Area
100	Kedah	Pulau Tuba	Permanent Reserved Forest
101	Kedah	Pulau Dayang Bunting	Permanent Reserved Forest
102	Kedah	Pulau Langgun	Permanent Reserved Forest
103	Kedah	Pulau Langkawi	Permanent Reserved Forest
104	Kedah	Pulau Payar	Marine Park
105	Kedah	Pulau Perak	Permanent Reserved Forest
106	Kedah	Pulau Segantang	Marine Park
107	Kedah	Pulau Timun	Permanent Reserved Forest
108	Kedah	Relau	Permanent Reserved Forest
109	Kedah	Rimba Teloi (Kedah Selatan)	Permanent Reserved Forest
110	Kedah	Rimba Teloi (Kedah Tengah)	Permanent Reserved Forest
111	Kedah	Sangkap	Permanent Reserved Forest
112	Kedah	Selat Panchor	Permanent Reserved Forest
113	Kedah	Sungai Badak	Permanent Reserved Forest
114	Kedah	Sungkop	Permanent Reserved Forest
115	Kedah	Tanjung Dagu	Permanent Reserved Forest
116	Kedah	Telui	Permanent Reserved Forest
117	Kedah	Terenas	Water Catchment Forest
118	Kedah	Ulu Muda (Kudah Selatan)	Water Catchment Forest
119	Kedah	Ulu Muda (Kudah Tengah)	Water Catchment Forest
120	Kelantan	Balah	Permanent Reserved Forest
121	Kelantan	Batu Papan	Water Catchment Forest
122	Kelantan	Berangkat	Permanent Reserved Forest
123	Kelantan	Bukit Hantu	Permanent Reserved Forest
124	Kelantan	Bukit Kar cad	Permanent Reserved Forest
125	Kelantan	Chabang Tongkat	Water Catchment Forest
126	Kelantan	Chikus	Permanent Reserved Forest
127	Kelantan	Gunung Basor	Water Catchment Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
128	Kelantan	Gunung Basor (Tambahan)	Permanent Reserved Forest
129	Kelantan	Gunung Rabong	Permanent Reserved Forest
130	Kelantan	Jedok	Water Catchment Forest
131	Kelantan	Jeli	Water Catchment Forest
132	Kelantan	Jentiang	Permanent Reserved Forest
133	Kelantan	Kawasan Tadahan Empangan Pergau	Water Catchment
134	Kelantan	Lebir	Permanent Reserved Forest
135	Kelantan	Limau Kesturi	Water Catchment Forest
136	Kelantan	Lojing	Permanent Reserved Forest
137	Kelantan	Nenggiri	Permanent Reserved Forest
138	Kelantan	Perias	Permanent Reserved Forest
139	Kelantan	Rabong	Permanent Reserved Forest
140	Kelantan	Relai	Permanent Reserved Forest
141	Kelantan	Semerak	Permanent Reserved Forest
142	Kelantan	Serasa	Permanent Reserved Forest
143	Kelantan	Sokortak	Permanent Reserved Forest
144	Kelantan	Sungai Betis	Permanent Reserved Forest
145	Kelantan	Sungai Betis Ganti	Permanent Reserved Forest
146	Kelantan	Sungai Brok	Permanent Reserved Forest
147	Kelantan	Sungai Durian	Permanent Reserved Forest
148	Kelantan	Sungai Rek	Water Catchment Forest
149	Kelantan	Sungai Sam	Permanent Reserved Forest
150	Kelantan	Sungai Sator	Permanent Reserved Forest
151	Kelantan	Sungai Terah	Permanent Reserved Forest
152	Kelantan	Temangan	Permanent Reserved Forest
153	Kelantan	Ulu Galas	Permanent Reserved Forest
154	Kelantan	Ulu Sat	Permanent Reserved Forest
155	Kelantan	Ulu Temiang	Water Catchment Forest
156	Kuala Lumpur	Bukit Langong	Permanent Reserved Forest
157	Kuala Lumpur	Bukit Langong (Tambahan)	Permanent Reserved Forest
158	Kuala Lumpur	Sungai Besi	Permanent Reserved Forest
159	Melaka	Batang Melaka	Permanent Reserved Forest
160	Melaka	Bukit Beruang	Permanent Reserved Forest
161	Melaka	Bukit Sedanan	Permanent Reserved Forest
162	Melaka	Bukit Senggeh	Permanent Reserved Forest
163	Melaka	Kemuning	Permanent Reserved Forest
164	Melaka	Kuala Linggi	Permanent Reserved Forest
165	Melaka	Linggi	Mangrove Forest
166	Melaka	Linggi (Tambahan)	Mangrove Forest
167	Melaka	Merlimau	Permanent Reserved Forest
168	Melaka	Merlimau (Paya Laut)	Permanent Reserved Forest
169	Melaka	Merlimau (Paya Laut) (Tambahan)	Permanent Reserved Forest
170	Melaka	Sungai Baru Ilir	Permanent Reserved Forest
171	Melaka	Sungai Baru Ulu	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
172	Melaka	Sungai Udang	Permanent Reserved Forest
173	Melaka	Taboh Naning	Permanent Reserved Forest
174	Melaka	Tanjung Tuan	Fisheries Prohibited Areas, Wildlife Santuary/Reserve
175	Negeri Sembilan	Angsi	Amenity Forest, Education Forest, Virgin Jungle Forest, Water Catchment Forest
176	Negeri Sembilan	Arang	Other Forest Reserve
177	Negeri Sembilan	Berembun	Amenity Forest, Education Forest, Virgin Jungle Forest, Water Catchment Forest
178	Negeri Sembilan	Galla	Education Forest, Water Catchment Forest
179	Negeri Sembilan	Gapau	Permanent Reserved Forest
180	Negeri Sembilan	Gemas Selatan	Permanent Reserved Forest
181	Negeri Sembilan	Gunung Tampin	Permanent Reserved Forest
182	Negeri Sembilan	Jelei Gemas	Permanent Reserved Forest
183	Negeri Sembilan	Jelei Gemas (Tambahan)	Permanent Reserved Forest
184	Negeri Sembilan	Jeram Padang Selatan	Permanent Reserved Forest
185	Negeri Sembilan	Jeram Padang Utara	Permanent Reserved Forest
186	Negeri Sembilan	Johol	Permanent Reserved Forest
187	Negeri Sembilan	Kawasan Tadahan Empangan Beringin	Water Catchment
188	Negeri Sembilan	Kawasan Tadahan Empangan Gemencheh	Water Catchment
189	Negeri Sembilan	Kawasan Tadahan Empangan Kelinchi (1)	Water Catchment
190	Negeri Sembilan	Kawasan Tadahan Empangan Kelinchi (2)	Water Catchment
191	Negeri Sembilan	Kawasan Tadahan Empangan Sepri	Water Catchment
192	Negeri Sembilan	Kawasan Tadahan Empangan Sungai Terip	Water Catchment
193	Negeri Sembilan	Kawasan Tadahan Empangan Talang	Water Catchment
194	Negeri Sembilan	Kawasan Tadahan Tampin	Water Catchment
195	Negeri Sembilan	Kawasan Tadahan Gunong Angsi	Water Catchment
196	Negeri Sembilan	Kawasan Tadahan Smongku	Water Catchment
197	Negeri Sembilan	Kenaboi	Amenity Forest, Education Forest, Wildlife Sanctuary/Reserve, Water Catchment Forest
198	Negeri Sembilan	Lenggeng	Amenity Forest, Education Forest
199	Negeri Sembilan	Lenggeng (Tambahan)	Permanent Reserved Forest
200	Negeri Sembilan	Linggi	Mangrove Forest
201	Negeri Sembilan	Lukut	Mangrove Forest
202	Negeri Sembilan	Pantai	Permanent Reserved Forest
203	Negeri Sembilan	Pasir Panjang	Amenity Forest, Education Forest, Virgin Jungle Reserve
204	Negeri Sembilan	Pasoh	Amenity Forest, Education Forest, Virgin Jungle Forest, Water Catchment Forest, Research Forest
205	Negeri Sembilan	Paya Bakau	Permanent Reserved Forest
206	Negeri Sembilan	Pelangai	Water Catchment Forest
207	Negeri Sembilan	Petai	Permanent Reserved Forest
208	Negeri Sembilan	Pulau Arang	Permanent Reserved Forest
209	Negeri Sembilan	Pulau Babi	Other Forest Reserve
210	Negeri Sembilan	Pulau Judi	Other Forest Reserve

No.	State	Name of Forest Reserves	Type of Forest Reserve
211	Negeri Sembilan	Senaling Inas	Water Catchment Forest
212	Negeri Sembilan	Sepang	Mangrove Forest
213	Negeri Sembilan	Serting	Amenity Forest, Education Forest, Virgin Jungle Forest, Water Catchment Forest
214	Negeri Sembilan	Serting (Tambahan)	Permanent Reserved Forest
215	Negeri Sembilan	Setul	Permanent Reserved Forest
216	Negeri Sembilan	Sungai Menyala	Education Forest, Virgin Jungle Forest, Research Forest
217	Negeri Sembilan	Tampin	Amenity Forest, Education Forest, Water Catchment Forest
218	Negeri Sembilan	Tanjung Tuan	Fisheries Prohibited Areas
219	Negeri Sembilan	Tebong	Education Forest, Virgin Jungle Forest, Water Catchment Forest
220	Negeri Sembilan	Triang	Water Catchment Forest
221	Negeri Sembilan	Triang (Tambahan)	Permanent Reserved Forest
222	Pahang	Aur Gading	Permanent Reserved Forest
223	Pahang	Aur Gading (Tambahan)	Permanent Reserved Forest
224	Pahang	Balok	Soil Reclamation Forest
225	Pahang	Balok (Paya Laut) (Tambahan)	Permanent Reserved Forest
226	Pahang	Batu Beras	Permanent Reserved Forest
227	Pahang	Batu Gangan	Soil Protection Forest, Water Catchment Forest
228	Pahang	Batu Gangan (Tambahan)	Permanent Reserved Forest
229	Pahang	Batu Talam	Soil Protection Forest, Water Catchment Forest
230	Pahang	Batu Talam (Tambahan)	Permanent Reserved Forest
231	Pahang	Bebar (Paya Laut)	Soil Reclamation Forest
232	Pahang	Benchah	Permanent Reserved Forest
233	Pahang	Benchah (Tambahan)	Permanent Reserved Forest
234	Pahang	Berkelah (Jerantut)	Amenity Forest, Soil Protection Forest
235	Pahang	Berkelah (Kuantan)	Amenity Forest, Soil Protection Forest
236	Pahang	Berkelah (Temerloh)	Amenity Forest, Soil Protection Forest
237	Pahang	Berkelah (Tambahan)	Permanent Reserved Forest
238	Pahang	Bertam	Soil Protection Forest
239	Pahang	Beserah	Permanent Reserved Forest
240	Pahang	Betung	Permanent Reserved Forest
241	Pahang	Bukit Bujang	Soil Protection Forest
242	Pahang	Bukit Galing	Permanent Reserved Forest
243	Pahang	Bukit Gebok	Water Catchment Forest
244	Pahang	Bukit Ibam	Permanent Reserved Forest
245	Pahang	Bukit Jerut	Soil Protection Forest
246	Pahang	Bukit Kajang	Permanent Reserved Forest
247	Pahang	Bukit Kajang (Tambahan)	Permanent Reserved Forest
248	Pahang	Bukit Kerisik	Permanent Reserved Forest
249	Pahang	Bukit Kuantan	Permanent Reserved Forest
250	Pahang	Bukit Taching	Permanent Reserved Forest
251	Pahang	Bukit Tinggi	Soil Protection Forest, Water Catchment Forest
252	Pahang	Bukit Tinggi (Tambahan)	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
253	Pahang	Bungor	Permanent Reserved Forest
254	Pahang	Cherating (Paya Laut)	Soil Reclamation Forest
255	Pahang	Chini (Kuala Rompin)	Water Catchment Forest
256	Pahang	Chini (Kuantan)	Water Catchment Forest
257	Pahang	Chini (Temerloh)	Water Catchment Forest
258	Pahang	Chini (Tambahan)	Permanent Reserved Forest
259	Pahang	Chuat	Permanent Reserved Forest
260	Pahang	Chuat (Tambahan)	Permanent Reserved Forest
261	Pahang	Endau	Soil Reclamation Forest
262	Pahang	Endau (Paya Laut)	Mangrove Forest
263	Pahang	Gayung	Permanent Reserved Forest
264	Pahang	Gunung Aais	Soil Protection Forest
265	Pahang	Gunung Aais (Tambahan)	Permanent Reserved Forest
266	Pahang	Gunung Benum	Soil Protection Forest
267	Pahang	Gunung Siku	Soil Protection Forest, Water Catchment Forest
268	Pahang	Gunung Siku A dan B	Soil Protection Forest, Water Catchment Forest
269	Pahang	Hulu Bertam	Permanent Reserved Forest
270	Pahang	Hulu Lemoi	Permanent Reserved Forest
271	Pahang	Hulu Lemoi (Tambahan)	Permanent Reserved Forest
272	Pahang	Hulu Teranum	Permanent Reserved Forest
273	Pahang	Ibam	Water Catchment Forest
274	Pahang	Ibam (Tambahan)	Permanent Reserved Forest
275	Pahang	Jahit	Permanent Reserved Forest
276	Pahang	Jengka	Water Catchment Forest
277	Pahang	Jerantut	Soil Protection Forest
278	Pahang	Jerantut (Tambahan)	Permanent Reserved Forest
279	Pahang	Kawasan Tadahan Empangan Chereh	Water Catchment
280	Pahang	Kawasan Tadahan Empangan Tekai	Water Catchment
281	Pahang	Kawasan Tadahan Empangan Ulu Jelai	Water Catchment
282	Pahang	Kechau	Permanent Reserved Forest
283	Pahang	Kedondong	Permanent Reserved Forest
284	Pahang	Kemasul (Bentong)	Permanent Reserved Forest
285	Pahang	Kemasul (Temerloh)	Permanent Reserved Forest
286	Pahang	Kemasul (Tambahan) (Bentong)	Permanent Reserved Forest
287	Pahang	Kemasul (Tambahan) (Temerloh)	Permanent Reserved Forest
288	Pahang	Kerambit	Permanent Reserved Forest
289	Pahang	Kertam	Permanent Reserved Forest
290	Pahang	Kial	Permanent Reserved Forest
291	Pahang	Kial (Tambahan)	Permanent Reserved Forest
292	Pahang	Klau	Permanent Reserved Forest
293	Pahang	Klau/Raka	Permanent Reserved Forest
294	Pahang	Klau/Raka (Tambahan)	Permanent Reserved Forest
295	Pahang	Krau	Wildlife Sanctuary/Reserve

No.	State	Name of Forest Reserves	Type of Forest Reserve
296	Pahang	Kuantan (Paya Laut)	Soil Reclamation Forest
297	Pahang	Kuantan (Tambahan)	Permanent Reserved Forest
298	Pahang	Lakum	Water Catchment Forest
299	Pahang	Lakum (Tambahan)	Permanent Reserved Forest
300	Pahang	Lemoi	Permanent Reserved Forest
301	Pahang	Lemoi (Tambahan)	Permanent Reserved Forest
302	Pahang	Lentang	Soil Protection Forest, Water Catchment Forest
303	Pahang	Lentang (Tambahan)	Permanent Reserved Forest
304	Pahang	Lepar	Permanent Reserved Forest
305	Pahang	Lesong	Water Catchment Forest
306	Pahang	Menchali	Amenity Forest
307	Pahang	Mentigi	Soil Protection Forest, Water Catchment Forest
308	Pahang	Mentigi (Tambahan)	Permanent Reserved Forest
309	Pahang	Nenasi	Permanent Reserved Forest
310	Pahang	Nenasi (Tambahan)	Permanent Reserved Forest
311	Pahang	Pahang Tua	Wildlife Sanctuary/Reserve
312	Pahang	Papai	Permanent Reserved Forest
313	Pahang	Papai (Tambahan)	Permanent Reserved Forest
314	Pahang	Paya Pasir	Permanent Reserved Forest
315	Pahang	Pekan	Peat Swamp Forest
316	Pahang	Pekan (Tambahan)	Peat Swamp Forest
317	Pahang	Peramu (Paya Laut)	Permanent Reserved Forest
318	Pahang	Persit	Permanent Reserved Forest
319	Pahang	Pontian (Paya Laut)	Mangrove Forest
320	Pahang	Pontian (Paya Laut) (Tambahan)	Mangrove Forest
321	Pahang	Pukin	Water Catchment Forest
322	Pahang	Purun	Permanent Reserved Forest
323	Pahang	Remen Chereh	Soil Protection Forest, Water Catchment Forest
324	Pahang	Remen Chereh (Tambahan)	Permanent Reserved Forest
325	Pahang	Resak	Permanent Reserved Forest
326	Pahang	Resak (Tambahan)	Permanent Reserved Forest
327	Pahang	Ringlet	Soil Protection Forest, Water Catchment Forest
328	Pahang	Rompin (Paya Laut)	Permanent Reserved Forest
329	Pahang	Rompin (Paya Laut) (Tambahan)	Permanent Reserved Forest
330	Pahang	Rotan Tunggal	Water Catchment Forest
331	Pahang	Rotan Tunggal (Tambahan)	Permanent Reserved Forest
332	Pahang	Satak	Permanent Reserved Forest
333	Pahang	Som	Amenity Forest
334	Pahang	Sungai Kial	Soil Protection Forest
335	Pahang	Sungai Kial (Tambahan)	Permanent Reserved Forest
336	Pahang	Sungai Marong	Permanent Reserved Forest
337	Pahang	Sungai Miang (Paya Laut)	Permanent Reserved Forest
338	Pahang	Sungai Miang (Paya Laut) (Tambahan)	Permanent Reserved Forest
339	Pahang	Sungai Pukin	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
340	Pahang	Sungai Sia	Soil Protection Forest, Water Catchment Forest
341	Pahang	Sungai Terla	Permanent Reserved Forest
342	Pahang	Sungai Wi	Soil Protection Forest
343	Pahang	Sungai Yu	Permanent Reserved Forest
344	Pahang	Tanum	Permanent Reserved Forest
345	Pahang	Tasek Bera	Ramsar Reserve
346	Pahang	Tekai Tembeling	Permanent Reserved Forest
347	Pahang	Tekai Tembeling (Tambahan)	Permanent Reserved Forest
348	Pahang	Tekam	Permanent Reserved Forest
349	Pahang	Tembeling	Permanent Reserved Forest
350	Pahang	Temelong	Permanent Reserved Forest
351	Pahang	Temiang	Water Catchment Forest
352	Pahang	Tenggalan	Permanent Reserved Forest
353	Pahang	Teras	Permanent Reserved Forest
354	Pahang	Terenggun	Amenity Forest
355	Pahang	Tersang	Permanent Reserved Forest
356	Pahang	Tersang (Tambahan)	Permanent Reserved Forest
357	Pahang	Tranum	Permanent Reserved Forest
358	Pahang	Ulu Bertam	Water Catchment Forest
359	Pahang	Ulu Beruit	Permanent Reserved Forest
360	Pahang	Ulu Dong	Permanent Reserved Forest
361	Pahang	Ulu Ichat	Soil Protection Forest
362	Pahang	Ulu Jelai	Soil Protection Forest
363	Pahang	Ulu Jelai (Tambahan)	Permanent Reserved Forest
364	Pahang	Ulu Luit	Permanent Reserved Forest
365	Pahang	Ulu Mas	Permanent Reserved Forest
366	Pahang	Ulu Teranum	Soil Protection Forest, Water Catchment Forest
367	Pahang	Yong	Permanent Reserved Forest
368	Pahang	Yong (Jerantut)	Permanent Reserved Forest
369	Pahang	Yong (Lipis)	Permanent Reserved Forest
370	Pahang	Yong (Tambahan) (Jerantut)	Permanent Reserved Forest
371	Pahang	Yong (Tambahan) (Lipis)	Permanent Reserved Forest
372	Perak	Air Cepam	Permanent Reserved Forest
373	Perak	Amanjaya	Permanent Reserved Forest
374	Perak	Asam Kumbang	Permanent Reserved Forest
375	Perak	Banding	Permanent Reserved Forest
376	Perak	Behrang	Water Catchment Forest
377	Perak	Belukar Semang	Water Catchment Forest
378	Perak	Belum	National/State Park
379	Perak	Bikam	Permanent Reserved Forest
380	Perak	Bintang Hijau	Water Catchment Forest
381	Perak	Bubu	Water Catchment Forest
382	Perak	Bujang Melaka	Water Catchment Forest
383	Perak	Bukit Kinta	Water Catchment Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
384	Perak	Bukit Larut	Water Catchment Forest
385	Perak	Bukit Melaka	Permanent Reserved Forest
386	Perak	Bukit Naga	Permanent Reserved Forest
387	Perak	Bukit Payung	Permanent Reserved Forest
388	Perak	Bukit Slim	Water Catchment Forest
389	Perak	Bukit Tapah	Water Catchment Forest
390	Perak	Bukit Undan	Permanent Reserved Forest
391	Perak	Cabai Malai	Permanent Reserved Forest
392	Perak	Chikus	Permanent Reserved Forest
393	Perak	Gerik	Water Catchment Forest
394	Perak	Gunung Besout	Permanent Reserved Forest
395	Perak	Gunung Lang	Water Catchment Forest
396	Perak	Gunung Semanggol	Permanent Reserved Forest
397	Perak	Gunung Tunggal	Permanent Reserved Forest
398	Perak	Ijok	Water Catchment Forest
399	Perak	Jebong	Permanent Reserved Forest
400	Perak	Kampar	Permanent Reserved Forest
401	Perak	Kampong Gajah	Permanent Reserved Forest
402	Perak	Kawasan Tadahan Empangan Bersia	Water Catchment
403	Perak	Kawasan Tadahan Empangan Chendering	Water Catchment
404	Perak	Kawasan Tadahan Empangan Kenering	Water Catchment
405	Perak	Kawasan Tadahan Empangan Temenggor	Water Catchment
406	Perak	Kladang Saiong	Permanent Reserved Forest
407	Perak	Korbu	Water Catchment Forest
408	Perak	Kota Siam	Permanent Reserved Forest
409	Perak	Lapang Nenering	Permanent Reserved Forest
410	Perak	Lumut	Permanent Reserved Forest
411	Perak	Padang Chong	Permanent Reserved Forest
412	Perak	Palong Tinggi	Permanent Reserved Forest
413	Perak	Papulut	Permanent Reserved Forest
414	Perak	Parit	Permanent Reserved Forest
415	Perak	Paya Laut	Permanent Reserved Forest
416	Perak	Perias	Permanent Reserved Forest
417	Perak	Piah	Water Catchment Forest
418	Perak	Pondok Tanjong	Permanent Reserved Forest
419	Perak	Pulau Gula	Permanent Reserved Forest
420	Perak	Pulau Kalumpang	Permanent Reserved Forest
421	Perak	Pulau Kecil	Permanent Reserved Forest
422	Perak	Pulau Pangkor Selatan	Permanent Reserved Forest
423	Perak	Pulau Pangkor Utara	Permanent Reserved Forest
424	Perak	Pulau Pasir Hitam	Permanent Reserved Forest
425	Perak	Pulau Sangga Besar	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
426	Perak	Pulau Sangga Kecil	Permanent Reserved Forest
427	Perak	Pulau Selinsing	Permanent Reserved Forest
428	Perak	Pulau Sungai Nibong	Permanent Reserved Forest
429	Perak	Pulau Tiga	Permanent Reserved Forest
430	Perak	Pulau Trong Selatan	Permanent Reserved Forest
431	Perak	Pulau Trong Utara	Permanent Reserved Forest
432	Perak	Segari Melintang	Permanent Reserved Forest
433	Perak	Sungai Baharu	Permanent Reserved Forest
434	Perak	Sungai Kuak	Permanent Reserved Forest
435	Perak	Sungai Limau	Permanent Reserved Forest
436	Perak	Sungai Pinang	Permanent Reserved Forest
437	Perak	Sungai Sepetang	Permanent Reserved Forest
438	Perak	Sungai Temerlok	Permanent Reserved Forest
439	Perak	Sungai Tinggi	Permanent Reserved Forest
440	Perak	Sungkai	Wildlife Sanctuary/Reserve
441	Perak	Tanjung Burung	Permanent Reserved Forest
442	Perak	Tanjung Hantu	Permanent Reserved Forest
443	Perak	Tanjung Tualang	Permanent Reserved Forest
444	Perak	Teluk Kertang	Permanent Reserved Forest
445	Perak	Teluk Kopiah	Permanent Reserved Forest
446	Perak	Temenggor	Permanent Reserved Forest
447	Perlis	Bukit Bintang	Permanent Reserved Forest
448	Perlis	Bukit Namera	Permanent Reserved Forest
449	Perlis	Bukit Tung-Tung	Permanent Reserved Forest
450	Perlis	Kurong Batang	Permanent Reserved Forest
451	Perlis	Mata Ayer	Permanent Reserved Forest
452	Perlis	Rimba Mas-Mas	Permanent Reserved Forest
453	Perlis	Wang Mu	Permanent Reserved Forest
454	Pulau Pinang	Balik Pulau	Mangrove Forest
455	Pulau Pinang	Bukit Gemuruh	Permanent Reserved Forest
456	Pulau Pinang	Bukit Genting	Permanent Reserved Forest
457	Pulau Pinang	Bukit Juru	Permanent Reserved Forest
458	Pulau Pinang	Bukit Kerajaan	Permanent Reserved Forest
459	Pulau Pinang	Bukit Mertajam	Permanent Reserved Forest
460	Pulau Pinang	Bukit Panchor	Permanent Reserved Forest
461	Pulau Pinang	Bukit Relau	Permanent Reserved Forest
462	Pulau Pinang	Bukit Seraya	Permanent Reserved Forest
463	Pulau Pinang	Byram	Mangrove Forest
464	Pulau Pinang	Highlands	Permanent Reserved Forest
465	Pulau Pinang	Laksamana	Permanent Reserved Forest
466	Pulau Pinang	Panara Bukit	Permanent Reserved Forest
467	Pulau Pinang	Pantai Acheh	Permanent Reserved Forest
468	Pulau Pinang	Pasir Panjang	Permanent Reserved Forest
469	Pulau Pinang	Telok Bahang	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
470	Selangor	Ampang	Water Catchment Forest
471	Selangor	Ampang Pechah	Permanent Reserved Forest
472	Selangor	Ayer Hitam	Amenity Forest, Protection Forest Reserve
473	Selangor	Ayer Hitam (Tambahan)	Permanent Reserved Forest
474	Selangor	Banjar Selatan	Mangrove Forest
475	Selangor	Banjar Utara	Mangrove Forest
476	Selangor	Banjar Utara (Tambahan)	Mangrove Forest
477	Selangor	Batang Kali	Permanent Reserved Forest
478	Selangor	Bukit Belata	Water Catchment Forest
479	Selangor	Bukit Belata (Tambahan 2)	Permanent Reserved Forest
480	Selangor	Bukit Belata (Tambahan)	Permanent Reserved Forest
481	Selangor	Bukit Cherakah	Water Catchment Forest
482	Selangor	Bukit Cherakah (Tambahan)	Permanent Reserved Forest
483	Selangor	Bukit Jugra	Mangrove Forest
484	Selangor	Bukit Jugra (Tambahan)	Mangrove Forest
485	Selangor	Bukit Lagong	Permanent Reserved Forest
486	Selangor	Bukit Langong (Tambahan)	Permanent Reserved Forest
487	Selangor	Bukit Seputeh	Permanent Reserved Forest
488	Selangor	Bukit Sungai Puteh Selatan	Permanent Reserved Forest
489	Selangor	Bukit Sungai Puteh Utara	Permanent Reserved Forest
490	Selangor	Bukit Tarek	Wildlife Sanctuary/Reserve
491	Selangor	Bukit Tarek (Tambahan)	Permanent Reserved Forest
492	Selangor	Bukit Tarek (Tambahan 2)	Permanent Reserved Forest
493	Selangor	Bukit Tunggul	Permanent Reserved Forest
494	Selangor	Gading	Water Catchment Forest
495	Selangor	Gading Tambahan	Permanent Reserved Forest
496	Selangor	Jeloh	Permanent Reserved Forest
497	Selangor	Jeloh	Permanent Reserved Forest
498	Selangor	Jugra Kompok 1	Permanent Reserved Forest
499	Selangor	Jugra Kompok 2	Permanent Reserved Forest
500	Selangor	Kanching	Permanent Reserved Forest
501	Selangor	Kapar	Mangrove Forest
502	Selangor	Kapar (Tambahan)	Mangrove Forest
503	Selangor	Kawasan Tadahan Empangan Batu	Water Catchment
504	Selangor	Kawasan Tadahan Empangan Klang Gates	Water Catchment
505	Selangor	Kawasan Tadahan Empangan Langat	Water Catchment
506	Selangor	Kawasan Tadahan Empangan Sungai Semenyih	Water Catchment
507	Selangor	Kawasan Tadahan Empangan Sungai Tinggi	Water Catchment
508	Selangor	Kota Damansara	Protection Forest Reserve
509	Selangor	Kuala Bernam	Permanent Reserved Forest
510	Selangor	Kuala Langat Selatan	Peat Swamp Forest
511	Selangor	Kuala Langat Selatan (Tambahan)	Peat Swamp Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
512	Selangor	Kuala Langat Utara	Peat Swamp Forest
513	Selangor	Kuala Sepang	Permanent Reserved Forest
514	Selangor	Port Kelang	Mangrove Forest
515	Selangor	Pulau Che Mat Zin	Permanent Reserved Forest
516	Selangor	Pulau Che Mat Zin (Tambahan)	Permanent Reserved Forest
517	Selangor	Pulau Ketam	Permanent Reserved Forest
518	Selangor	Pulau Klang	Permanent Reserved Forest
519	Selangor	Pulau Klang (Tambahan)	Permanent Reserved Forest
520	Selangor	Pulau Lumut	Mangrove Forest
521	Selangor	Pulau Pintu Gedong	Permanent Reserved Forest
522	Selangor	Pulau Rusa	Permanent Reserved Forest
523	Selangor	Pulau Selat Kering	Permanent Reserved Forest
524	Selangor	Pulau Selat Kering (Tambahan)	Permanent Reserved Forest
525	Selangor	Pulau Selat Mahang	Permanent Reserved Forest
526	Selangor	Pulau Selat Meriam	Permanent Reserved Forest
527	Selangor	Pulau Tengah	Permanent Reserved Forest
528	Selangor	Pulau Tengah (Tambahan)	Permanent Reserved Forest
529	Selangor	Pulau Tonggok	Mangrove Forest
530	Selangor	Raja Musa	Peat Swamp Forest
531	Selangor	Rantau Panjang	Water Catchment Forest
532	Selangor	Rantau Panjang (Tambahan)	Permanent Reserved Forest
533	Selangor	Semangko	Water Catchment Forest
534	Selangor	Semangko (Tambahan)	Permanent Reserved Forest
535	Selangor	Sepang Kechil	Mangrove Forest
536	Selangor	Sepang Kechil (Tambahan)	Mangrove Forest
537	Selangor	Serendah	Permanent Reserved Forest
538	Selangor	Sungai Buloh	Permanent Reserved Forest
539	Selangor	Sungai Karang	Peat Swamp Forest
540	Selangor	Sungai Lalang	Water Catchment Forest
541	Selangor	Sungai Lalang (Tambahan)	Permanent Reserved Forest
542	Selangor	Selangor Nature Park	Forest Reserve
543	Selangor	Teluk Gedong	Mangrove Forest
544	Selangor	Teluk Gedong (Tambahan)	Mangrove Forest
545	Selangor	Templer	Protection Forest Reserve
546	Selangor	Ulu Gombak	Water Catchment Forest
547	Selangor	Ulu Gombak (Tambahan 2)	Permanent Reserved Forest
548	Selangor	Ulu Gombak (Tambahan 3)	Permanent Reserved Forest
549	Selangor	Ulu Gombak (Tambahan)	Permanent Reserved Forest
550	Selangor	Ulu Langat	Water Catchment Forest
551	Selangor	Ulu Langat (Tambahan)	Permanent Reserved Forest
552	Selangor	Ulu Selangor	Water Catchment Forest
553	Terengganu	Belara	Permanent Reserved Forest
554	Terengganu	Besul	Water Catchment Forest
555	Terengganu	Besul (Tambahan)	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
556	Terengganu	Bukit Bandi	Permanent Reserved Forest
557	Terengganu	Bukit Banui	Permanent Reserved Forest
558	Terengganu	Bukit Bauk	Water Catchment Forest
559	Terengganu	Bukit Gong	Permanent Reserved Forest
560	Terengganu	Bukit Jemalang	Permanent Reserved Forest
561	Terengganu	Bukit Kambing	Permanent Reserved Forest
562	Terengganu	Bukit Kesing	Water Catchment Forest
563	Terengganu	Bukit Labohan	Permanent Reserved Forest
564	Terengganu	Bukit Mual	Permanent Reserved Forest
565	Terengganu	Bukit Palus	Permanent Reserved Forest
566	Terengganu	Bukit Panjang	Permanent Reserved Forest
567	Terengganu	Bukit Sai	Permanent Reserved Forest
568	Terengganu	Bukit Terendak	Permanent Reserved Forest
569	Terengganu	Cerul	Permanent Reserved Forest
570	Terengganu	Gunung Tebu	Permanent Reserved Forest
571	Terengganu	Hulu Besut	Permanent Reserved Forest
572	Terengganu	Hulu Nerus	Water Catchment Forest
573	Terengganu	Hulu Setiu	Permanent Reserved Forest
574	Terengganu	Hulu Temelong	Permanent Reserved Forest
575	Terengganu	Hulu Terengganu	Water Catchment Forest
576	Terengganu	Hulu Terengganu (Tambahan)	Permanent Reserved Forest
577	Terengganu	Jabur	Permanent Reserved Forest
578	Terengganu	Jambu Bongkok	Water Catchment Forest
579	Terengganu	Jengai	Water Catchment Forest
580	Terengganu	Jerangau	Water Catchment Forest
581	Terengganu	Kawasan Tadahan Empangan Kenyir	Permanent Reserved Forest
582	Terengganu	Kawasan Tadahan Empangan Puah	Permanent Reserved Forest
583	Terengganu	Kawasan Tadahan Empangan Tembat	Permanent Reserved Forest
584	Terengganu	Kekal Berok	Permanent Reserved Forest
585	Terengganu	Kuala Kemaman	Permanent Reserved Forest
586	Terengganu	Kuala Paka	Permanent Reserved Forest
587	Terengganu	Merchang	Permanent Reserved Forest
588	Terengganu	Pak Kancil	Permanent Reserved Forest
589	Terengganu	Pasir Raja Barat	Permanent Reserved Forest
590	Terengganu	Pasir Raja Selatan	Permanent Reserved Forest
591	Terengganu	Paya Gelam	Mangrove Forest
592	Terengganu	Pelagat	Water Catchment Forest
593	Terengganu	Petuang	Permanent Reserved Forest
594	Terengganu	Pulau Redang	Marine Park
595	Terengganu	Pulau Tenggol	Marine Park
596	Terengganu	Rambau Daun	Permanent Reserved Forest
597	Terengganu	Rantau Abang	Fisheries Prohibited Area, Turtle Sanctuary
598	Terengganu	Rasau Kerteh	Permanent Reserved Forest

No.	State	Name of Forest Reserves	Type of Forest Reserve
599	Terengganu	Sungai Mekeluk	Permanent Reserved Forest
600	Terengganu	Sungai Nipah	Permanent Reserved Forest
601	Terengganu	Sungai Pimpin	Permanent Reserved Forest
602	Terengganu	Tembat	Permanent Reserved Forest

15.5.2 List of Protected Areas in Peninsular Malaysia

Back to Quick Reference

No.	State	Name of Protected Areas	Type of Protected Areas
1	Johor	Endau-Kota Tinggi (East)	Wildlife Reserve
2	Johor	Endau-Kota Tinggi (West)	Wildlife Reserve
3	Johor	Endau-Kluang	Wildlife Reserve
4	Johor	Hutan Lipur Sungai Bantang	State Park
5	Johor	Hutan Lipur Gunung Arong	State Park
6	Johor	Hutan Lipur Gunung Berlumut	State Park
7	Johor	Gunung Ledang	National Park
8	Johor	Segamat	Wildlife Reserve
9	Johor	*Taman Negara* Johor Tanjung Piai	National Park
10	Johor	*Taman Negara* Johor Pulau Kukup	National Park
11	Kelantan	Gunung Stong	State Park
12	Melaka	Melaka	State Park
13	Negeri Sembilan	Port Dickson	Wildlife Reserve
14	Pahang	Bukit Fraser	Wildlife Reserve
15	Pahang	Krau	Wildlife Reserve
16	Pahang	Pahang Tua	National Park
17	Pahang	Tasek Bera	Wildlife Reserve
18	Penang	Penang	National Park
19	Perak	Batu Gajah	Wildlife Reserve
20	Perak	Chior	Wildlife Reserve
21	Perak	Royal Belum	State Park
22	Perak	Sungkai Sambar Deer and Pheasant	Wildlife Reserve
23	Perak	Terrapin Reserves	Wildlife Reserve
24	Perlis	Wang Pinang	Wildlife Reserve
25	Selangor	Bukit Kutu	Wildlife Reserve
26	Selangor	Bukit Melawati	Wildlife Reserve
27	Selangor	Bukit Nanas	Wildlife Reserve
28	Selangor	Bukit Sungai Putih	Wildlife Reserve
29	Selangor	Klang Gate	Wildlife Reserve
30	Selangor	Selangor State Park	State Park
31	Selangor	Sungai Dusun	Wildlife Reserve
32	Selangor	Templer's Park	State Park
33	Selangor	Kuala Selangor Nature Park	State Park
34	Terengganu	Setiu Wetlands	State Park
35	Terengganu	Kenyir	State Park
36	Johor and Pahang	Endau-Rompin	National Park
37	Kelantan, Pahang and Terengganu	*Taman Negara*	National Park

15.5.3 List of Protected Areas in Sabah

Back to Quick Reference

No.	Name of Protected Areas	Type of Protected Areas
1	Agathis	Virgin Jungle Reserve
2	Bald Hill	Protection Forest Reserve
3	Balembangan	Protection Forest Reserve
4	Banggi	Protection Forest Reserve
5	Batu Timbang	Virgin Jungle Reserve
6	Batumapun (mangrove)	Virgin Jungle Reserve
7	Bengkoka	Protection Forest Reserve
8	Bidu-Bidu	Protection Forest Reserve
9	Binsuluk	Protection Forest Reserve
10	Bkt. Kuamas	Protection Forest Reserve
11	Bkt. Taviu	Protection Forest Reserve
12	Bod Tai	Virgin Jungle Reserve
13	Bohihan, Maganting, Silumpat & Tabawan Islands	Virgin Jungle Reserve
14	Bonggaya	Protection Forest Reserve
15	Botitian	Protection Forest Reserve
16	Brantian-Tatulit	Virgin Jungle Reserve
17	Bukit Hampuan	Protection Forest Reserve
18	Bukit Hampuan Extentsion	Protection Forest Reserve
19	Crocker Range	Virgin Jungle Reserve
20	Dagat	Virgin Jungle Reserve
22	Dalit	Protection Forest Reserve
23	Dalit Extension	Protection Forest Reserve
24	Danum Valley	Protection Forest Reserve
25	Deramakot	Protection Forest Reserve
26	Deramakot Extension	Protection Forest Reserve
27	Garinono	Virgin Jungle Reserve
28	Garui	Protection Forest Reserve
29	Gemok Hill	Protection Forest Reserve
30	Gn. Lumaku (lower)	Protection Forest Reserve
31	Gn. Lumaku (upper)	Protection Forest Reserve
32	Gomantong	Virgin Jungle Reserve
33	Gunung Kumaka	Protection Forest Reserve
34	Gunung Lumaku	Protection Forest Reserve
35	Gunung Lumaku Extension	Protection Forest Reserve
36	Imbok	Virgin Jungle Reserve
37	Kabili-Sepilok	Virgin Jungle Reserve
38	Kabili-Sepilok	Virgin Jungle Reserve
39	Kalumba	Wildlife Reserve
40	Kalumpang	Virgin Jungle Reserve
41	Karakit	Virgin Jungle Reserve
42	Kawang	Protection Forest Reserve
43	Kawang Gibong	Virgin Jungle Reserve

No.	Name of Protected Areas	Type of Protected Areas
44	Kelawat	Protection Forest Reserve
45	Kerangas	Virgin Jungle Reserve
46	Keruak	Virgin Jungle Reserve
47	Kg. Hindian	Protection Forest Reserve
48	Kinabalu	Sabah Park
49	Kitabu	Virgin Jungle Reserve
50	Klias	Protection Forest Reserve
51	Kretam	Virgin Jungle Reserve
52	Kulamba	Wildlife Reserve
53	Kungkular	Protection Forest Reserve
54	Labuk Road	Virgin Jungle Reserve
55	Lajong	Virgin Jungle Reserve
56	Lamag	Protection Forest Reserve
57	Leila	Protection Forest Reserve
58	Limau-Limauan	Protection Forest Reserve
59	Lipaso	Protection Forest Reserve
60	Loro	Virgin Jungle Reserve
61	Loro, Kitabu & Lajong	Virgin Jungle Reserve
62	Lungmanis	Virgin Jungle Reserve
63	Madai-Baturong	Virgin Jungle Reserve
64	Malawaring	Virgin Jungle Reserve
65	Maliau Basin	Protection Forest Reserve
66	Maligan	Virgin Jungle Reserve
67	Malingan	Virgin Jungle Reserve
68	Malubuk	Virgin Jungle Reserve
69	Mamahat	Virgin Jungle Reserve
70	Mandamai	Protection Forest Reserve
71	Marudu	Protection Forest Reserve
72	Materis	Virgin Jungle Reserve
73	Mengalong	Virgin Jungle Reserve
74	Menumbok	Protection Forest Reserve
75	Menumbok Extension	Protection Forest Reserve
76	Merisuli	Virgin Jungle Reserve
77	Milian-Labau	Virgin Jungle Reserve
78	Mt Andrassy	Protection Forest Reserve
79	Mt Cochrane	Protection Forest Reserve
80	Mt Conner	Protection Forest Reserve
81	Mt Hatton	Protection Forest Reserve
82	Mt Magdalena	Protection Forest Reserve
83	Mt Mandalom	Protection Forest Reserve
84	Mt Pock	Protection Forest Reserve
85	Mt Pock	Protection Forest Reserve
86	Mt Walker	Protection Forest Reserve
87	Mt Wullersdorf	Protection Forest Reserve
88	Nurod Urod	Virgin Jungle Reserve

No.	Name of Protected Areas	Type of Protected Areas
89	Pababag Island	Protection Forest Reserve
90	Padas Damit	Protection Forest Reserve
91	Padas Damit Extentension	Protection Forest Reserve
92	Pangi	Virgin Jungle Reserve
93	Pengsiangan	Protection Forest Reserve
94	Pengsiangan Extension	Protection Forest Reserve
95	Pin-Supu	Virgin Jungle Reserve
96	Pulau Banggi Balembangan	Protection Forest Reserve
97	Pulau Batik	Virgin Jungle Reserve
98	Pulau Malawali	Virgin Jungle Reserve
99	Pulau Sakar	Virgin Jungle Reserve
100	Quion Hill	Protection Forest Reserve
101	Rafflesia	Virgin Jungle Reserve
102	Segarong	Protection Forest Reserve
103	Selangan Is.	Protection Forest Reserve
104	Sem Kerangas	Virgin Jungle Reserve
105	Sempilor Malawali	Virgin Jungle Reserve
106	Sepagaya	Virgin Jungle Reserve
107	Sepilok (mangrove)	Virgin Jungle Reserve
108	Siaunggau & Mesapol	Virgin Jungle Reserve
109	Silabukan	Protection Forest Reserve
111	Sipitang	Protection Forest Reserve
112	Sosopodon	Protection Forest Reserve
113	Sungai Basio	Virgin Jungle Reserve
114	Sungai Imbak	Virgin Jungle Reserve
115	Sungai Kapur	Virgin Jungle Reserve
116	Sungai Katambalang	Protection Forest Reserve
117	Sungai Kiluyu	Virgin Jungle Reserve
118	Sungai Lokan	Virgin Jungle Reserve
119	Sungai Maruap	Virgin Jungle Reserve
120	Sungai Paitan	Virgin Jungle Reserve
121	Sungai Penawan	Protection Forest Reserve
122	Sungai Rayoh	Protection Forest Reserve
123	Sungai Sansiang	Virgin Jungle Reserve
124	Sungai Sapi	Virgin Jungle Reserve
125	Sungai Sebungali	Protection Forest Reserve
126	Sungai Serudong	Protection Forest Reserve
127	Sungai Siliawan	Virgin Jungle Reserve
128	Sungai Simpang	Virgin Jungle Reserve
129	Sungai Tikolod	Protection Forest Reserve
130	Sungai Tindikon	Protection Forest Reserve
131	Sungai Warlu	Protection Forest Reserve
132	Tabin	Wildlife Reserve
133	Tabin (in Tabin Wildlife Reserve)	Virgin Jungle Reserve
134	Tabin Extension	Wildlife Reserve

No.	Name of Protected Areas	Type of Protected Areas
135	Tamalang	Virgin Jungle Reserve
136	Taman Negara Banjaran Crocker	Sabah Park
137	Tambalugu	Protection Forest Reserve
138	Tangkulap	Protection Forest Reserve
139	Tanjung Nagas	Protection Forest Reserve
140	Tawai	Protection Forest Reserve
141	Tawau	Protection Forest Reserve
142	Teak Plantation	Virgin Jungle Reserve
143	Tenompok	Protection Forest Reserve
144	Timbun Mata	Protection Forest Reserve
145	Tinagat	Protection Forest Reserve
146	Trusan Sugut	Protection Forest Reserve
147	Ulu Kalumpang	Protection Forest Reserve
148	Ulu Kukut	Protection Forest Reserve
149	Ulu Sapa Payau	Virgin Jungle Reserve
150	Ulu Segama	Protection Forest Reserve
151	Ulu Sungai Napagon	Virgin Jungle Reserve
152	Ulu Sungai Padas	Protection Forest Reserve
153	Ulu Telupid	Protection Forest Reserve
154	Ulu Tungud	Protection Forest Reserve
155	Umas Umas	Virgin Jungle Reserve

15.5.4 List of Protected Areas in Sarawak

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No.	Name of Protected Areas	Type of Protected Areas
1	Bako	National Park
2	Baleh	National Park
3	Batang Ai	National Park
4	Batang Lassa	National Park
5	Binyo-Penyilam	National Park
6	Bruit	National Park
7	Bruit Extension	National Park
8	Bukit Hitam	National Reserve
9	Bukit Kana	National Park
10	Bukit Lima	National Reserve
11	Bukit Mersing	National Park
12	Bukit Sarang	National Park
13	Bukit Sembiling	National Reserve
14	Bukit Tiban	National Park
15	Bungo Range	National Park
16	Danum Linau	National Park
17	Danum Linau Extension - Part 1	National Park
18	Danum Linau Extension - Part 2	National Park
19	Dered Krian	National Park
20	Dulit Range	National Park
21	Gunung Buda	National Park
22	Gunung Buda Extension	National Park
23	Gunung Gading	National Park
24	Gunung Mulu	National Park
25	Gunung Mulu Extension - Part 1	National Park
26	Gunung Mulu Extension - Part 2	National Park
27	Hose-Laga	National Park
28	Kejin Tugang	National Park
29	Kubah	National Park
30	Kuching Wetland	National Park
31	Lambir Hills	National Park
32	Lambir Hills Extension	National Park
33	Lanjak Entimau	Wildlife Sanctuary
34	Lanjak Entimau Extension I - Part 1	Wildlife Sanctuary
35	Lanjak Entimau Extension I - Part 2	Wildlife Sanctuary
36	Lanjak Entimau Extension I - Part 3	Wildlife Sanctuary
37	Lawas Mangrove	National Park
38	Limbang Mangrove	National Park
39	Loagan Bunut	National Park
40	Maludam	National Park
41	Mud Volcano	National Park
42	Niah	National Park

No.	Name of Protected Areas	Type of Protected Areas
43	Pelagus	National Park
44	Pulau Tukong Ara	Wildlife Sanctuary
45	Pulau Tun Ahmad Zaidi	National Reserve
46	Pulong Tau	National Park
47	Pulong Tau Extension - Part 1	National Park
48	Pulong Tau Extension - Part 2	National Park
49	Rajang Mangroves	National Park
50	Sama Jaya Forest Park (Stutong NR)	National Reserve
51	Sampadi	National Park
52	Samunsam	Wildlife Sanctuary
53	Santubong	National Park
54	Sedilu	National Park
55	Semenggoh	National Reserve
56	Sibuti	Wildlife Sanctuary
57	Similajau	National Park
58	Sungai Jalangai	Wildlife Sanctuary
59	Sungai Meluang	National Park
60	Sungai Moh	Wildlife Sanctuary
61	Tanjung Datu	National Park
62	Tanjung Manis	National Reserve
63	Ulu Sebuyau	National Park
64	Usun Upau	National Park

15.6 Appendix F: Stakeholder List Template

Back to Quick Reference

No.	Full name of Organisation/ Department/ Village/ *Rumah Panjang* (Longhouse)	Address	Contact Person Name	Position	Contact Details
1.					
2.					
3.					
4.					

15.7 Appendix G: HCV Management and Monitoring Template

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Table 15.3: HCV Management and Monitoring Action Plan Recommendations

No.	HCV	Management actions based on threats	Monitoring management actions	202X											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.	HCV 1: Concentrations of biodiversity	a.	1.1												
			1.2												
			1.3												
			1.4												
2	HCV 2: Large landscapes	a.	2.1												
3	HCV 3: Rare ecosystems	a.	3.1												
			3.2												
			3.3												
4	HCV 4: Ecosystem services in critical situations	a.	1.1.												
			1.2.												
			1.3.												
5	HCV 5: Local people's basic needs	a.	5.1												
			5.2												
6	HCV 6: Cultural values	a.	6.1												
			6.2												

15.8 Appendix H: Stakeholder Discussion Templates (minutes, photo, attendance list)

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Stakeholder Discussion Minutes Template

Date:	
Location:	
Topic:	Stakeholder Discussion for HCV Assessment
<insert photo of Stakeholder Discussion >	

No.	Name	Full name of Organisation/ Department/ Village/ *Rumah Panjang* (Longhouse)	Concerns and Recommendations
1.			
2.			
3.			
4.			
5.			
6.			

Stakeholder Discussion Attendance List Template

No.	Name	Organisation/ Department/ Village/ *Rumah Panjang* (Longhouse)	Signature
1.			
2.			
3.			
4.			
5.			
6.			

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