

OPTIMAL ROUTING OPTIONS FOR THE TELUPID SECTION OF THE PAN BORNEO HIGHWAY

by Coalition 3H - 2 March 2020

Summary

- The Pan Borneo Highway (PBH) is one of the most significant infrastructure projects in Sabah, and ensuring implementation has maximum positive impact is the subject of considerable government and non-government effort in Sabah. One aspect is avoiding unnecessary environmental impact.
- The current alignment of the Telupid section of the Pan Borneo Highway would run through 30 km of Bornean Elephant range including their usual path through Tawai Protection Forest Reserve, resulting in an endless stream of high-profile harrowing incidents in which people and elephants are harmed on the road, generating public criticism and impacting tourism.
- Tawai Forest Reserve is a high biodiversity and high El Niño fire risk area due to its ultramafic geology so a road would greatly increase risk of fire, smoke and haze as happened here in 1983.
- There is therefore an urgent need to identify alternative routes which can deliver socio-economic benefits without major environmental costs or engineering and financial challenges.
- The Sabah NGOs and research institutions associated with Coalition Humans Habitats and Highways (3H) suggest for Cabinet deliberation two alternative routes that meet these criteria.

Purpose

- Chief Minister Datuk Seri Panglima Haji Mohd Shafie Apdal announced at the Heart of Borneo International Conference in March 2019 that in regards to these elephants in Telupid: *“the construction of the Pan Borneo Highway should only involve expansion of existing roads and not opening up or constructing new alignments that will affect forested areas in the State”*; a position reinforced by Cabinet’s approval of the Bornean Elephant Action Plan for Sabah 2020-2029.
- Since this announcement there has been no resolution concerning alternative routes in the Telupid area.
- The purpose of this paper is to provide Cabinet with data on options and a united recommendation on the best choice for the alignment of the Telupid section of the Pan Borneo Highway.

Introduction: History of the Initial and Current Pan Borneo Highway Alignments in Telupid

- The initial alignment for WP31 (Work Package) and parts of WP30 and WP32 of the PBH in Telupid was to upgrade the existing Ranau-Sandakan road to a four-lane highway (Route 2: Grey Road on attached maps).
- Opposition to this alignment emerged from villages who would be displaced from their homes and land because these are in ribbon development along the existing road (see maps).
- The community petitioned that the road should pass through Tawai Protection Forest Reserve instead and the previous Government responded by rejecting road widening and authorized surveying the current alignment that runs through the Forest Reserve (Route 1; Red Road on maps).

- Consequently, a community consultation organized by the Telupid District authorities and Forever Sabah on 11th March 2019 re-affirmed the rejection of the initial Grey route (Route 2) by Kg. Bauto and Kg. Gambaron, in favour of the current Red route (Route 1) coupled with aspirations of access to land and opportunities in Tawai Protection Forest Reserve.
- Northern villages, however, favoured a new route proposed on the opposite bank of Sg. Labuk (Route 4; Yellow on maps) designed to avoid elephant range that would improve their access to the outside world because the road would replace ferries over Sg. Labuk.
- Other comments from local officials and community members included that the highway should not bypass Pekan Telupid in the way proposed by the Red and Yellow routes (Routes 1 & 4).
- In response we add a new suggestion (Route 3; in Blue). It would use the proposed (Yellow) route to avoid disrupting village lands but then pass near Pekan Telupid (to help the town).

The Elephant and Environmental Issues

- The current alignment (Red Route 1), dangerously runs through 30 kms of elephant range, with a long section of this being on a migration route along a steep-sided valley in Tawai Forest Reserve.
- Experience from Malaysia and elsewhere show the dangers in putting highways in elephant ranges for construction workers, for road users, and for elephants.
- The Telupid Forest Complex is an important mosaic of Forest Reserves host to endemic plants and Sabah's iconic species such as elephants, orangutans, sun bears, gibbons and clouded leopards.
- The Sabah Structure Plan 2033 (11.2; 11.7; 14.2.2 and 14.3.2) emphasizes maintenance of Total Protected Area integrity in infrastructural development to avoid fragmentation of forest and wildlife habitat. The Plan prioritizes protecting from infrastructure the three most important High Conservation Value contiguous forests in Sabah, and one of these is the Ulu Telupid-Trus Madi block (Map 14.11; page 289). The Structure Plan recommends the use of tunnels and overpasses when necessary to traverse environmentally important areas like this one. We believe re-routing this particular road away from elephant habitat is much cheaper and more effective than seeking to mitigate a road with expensive tunnels or over-passes.
- Fragmentation of Tawai Protection Forest Reserve will cause other environmental issues including increased access for poachers and increased danger of forest fires during dry periods on these ultramafic soils. This Forest Reserve is also the source of Pekan Telupid's public water supply.
- The Environmental Impact Assessment for WPs 28-35 has not yet been approved by the Environment Protection Department.
- Routes 3 & 4 (Yellow & Blue) avoid most elephant habitat and do not pass through Forest Reserves.

Much success is being achieved in Telupid with managing Human-Elephant Conflict by collaboration between Sabah Wildlife Department, Sabah Forestry Department and Kopisuladan di Aki (the local Community Elephant Ranger Team), with support from Forever Sabah, Seratu Aatai, Hutan and Danau Girang Field Centre. Meanwhile, Kopisuladan di Aki and the Responsible Elephant Conservation Trust (RESPECT) are planning restoration efforts to increase the availability of elephant foodplants at Laju Cahaya, a former sawmill and log storage site and along the old logging road

within Tawai FR; this can only be undertaken if the Pan Borneo Highway is re-routed. These elephant conservation efforts are in connection with the development of community-based elephant tourism in the Telupid region.

Evaluation of Route Options

The Attached Table summarises the differences between the initial, current and two new options for the Telupid Route. We compare factors related to (a) length, engineering challenges and likely costs, (b) local socio-economic impacts (positive and negative), and, (c) elephant & environmental impact. The cadastral information on the maps enables stakeholders to see precisely on whom the impacts will fall and potential scale of land compensation requirements. Every option has advantages, disadvantages, while savings and costs for the different options are incompletely known, but Routes 3 & 4 emerge as the strongest options.

- **Environment:** The new options (Routes 3 & 4; Blue & Yellow) successfully mitigate elephant, forest fire and other environmental risks around Tawai Protection Forest Reserve;
- **Local impact:** The new Route 4 avoids significant loss of land by resident Indigenous communities; Routes 1 and 4 require least land acquisition and associated costs; bridges on Routes 3 & 4 over Sg. Labuk replace busy ferry crossings and so deliver major developmental benefits for palm oil companies & communities alike isolated north of the river;
- **Impact on Pekan Telupid:** The current option (Route 1) and one of the northern routes (Route 4) avoid Pekan Telupid – reducing traffic but damaging local business; the original road (Route 2) and new Blue option (Route 3) enable town access; and
- **Engineering & costs:** Routes 3 & 4 require construction of two bridges across Sg. Labuk; initial assessment of prospective bridge sites indicates that underlying geology and topography are favourable, but that the bridges will need to be high and long to deal with flooding events, likely with midstream piers to reduce span length; on the other hand, Route 4 is 8 kms shorter than other routes saving time and money during construction and for road users, it also has many fewer small bridges; Route 1 has already been surveyed, saving time and costs.

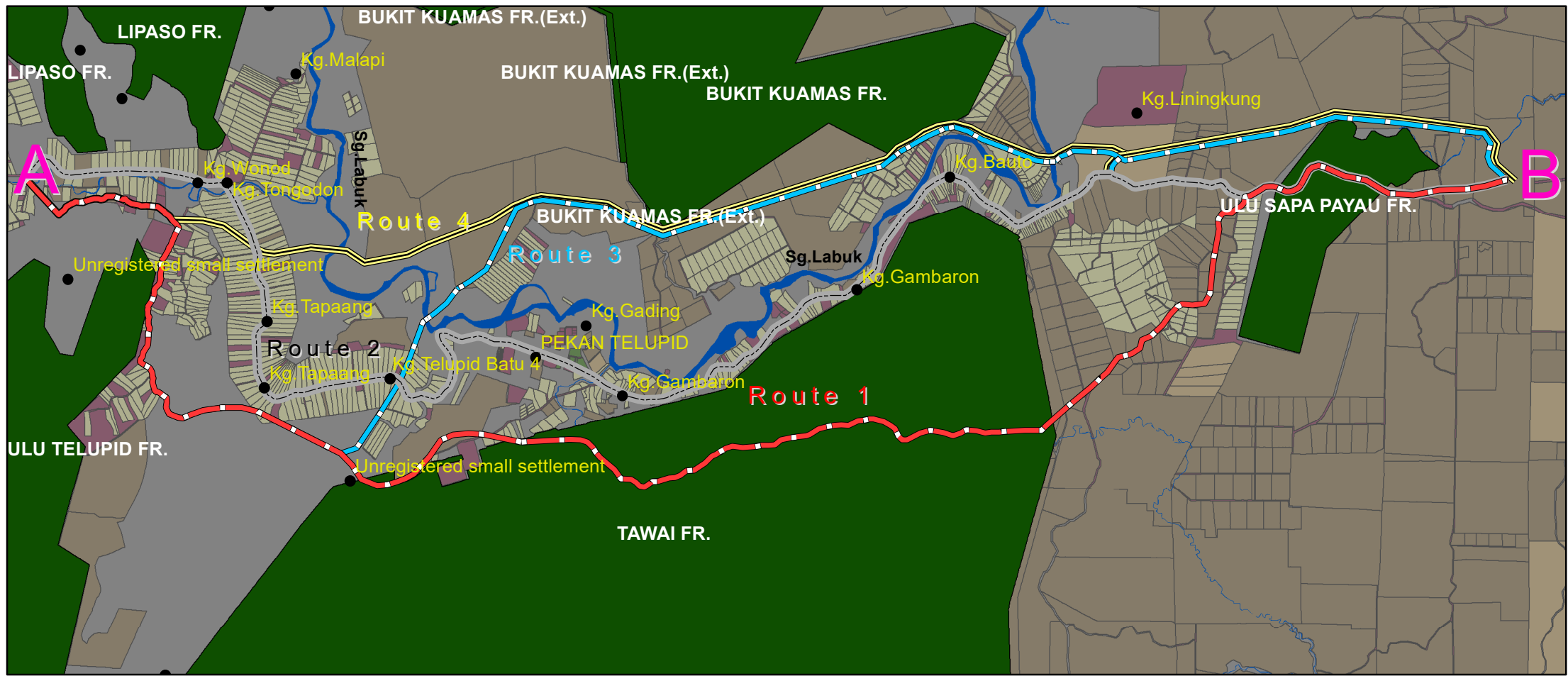
Financial Implications

Financial implications are unknown pending a comparison by qualified experts. The direct (yellow) Route 4 is likely significantly cheaper than (blue) Route 3, and likely not much more expensive than existing Route 1. Re-routing the road north of Sg. Labuk and out of elephant range would be much cheaper than mitigation with over-passes etc. as per Sabah Structure Plan recommendations. Oil Palm plantations north of Sg. Labuk benefiting from new access might agree to cost share.

Recommendations

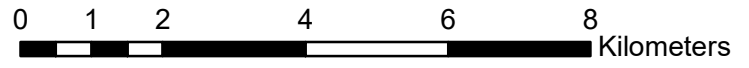
We recommend cancellation of Routes 1 & 2 on grounds of environmental and socio-economic impact.

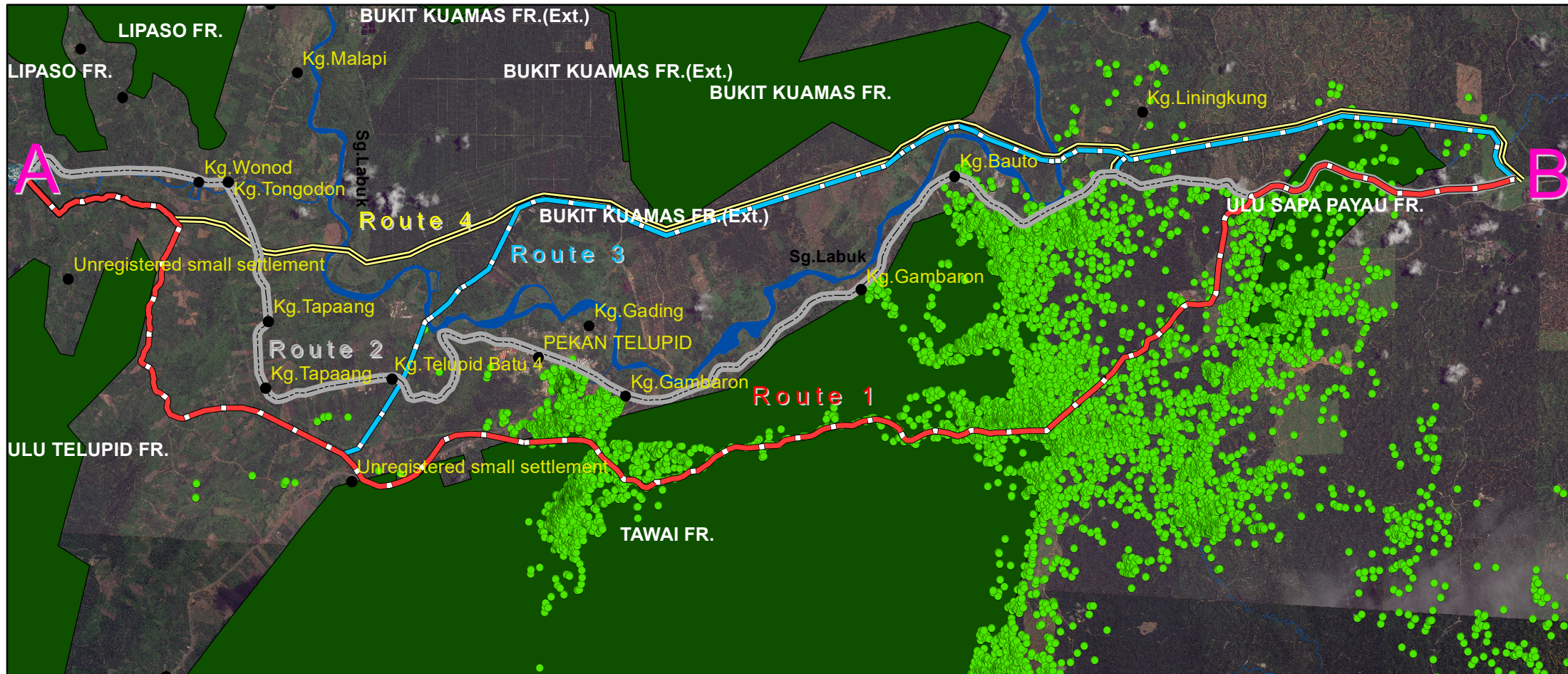
We recommend Cabinet discuss the importance of PBH access to Pekan Telupid and approve for detailed study of engineering & cost assessments either Route 3 (Blue) if connection with Pekan Telupid is considered important and worth the likely extra expense and Route 4 (Yellow) if this is not.



Legend

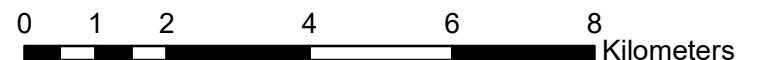
- Villages
- ▬ Route 1: PBH as current proposed alignment
- ▬ Route 2: PBH as initially planned along existing road
- ▬ Route 3: PBH new proposal to minimise risks with elephants and connect Telupid
- ▬ Route 4: PBH new proposal to minimise risks with elephants
- Totally Protected Forest Reserves
- Rivers
- Unknown title type
- Country Lease
- Provisional Lease
- Native Title
- Field Register
- Town Land
- Unknown title/state land





Legend

- Villages
- Elephant locations from GPS collared elephants (DGFC) & field data (CERT)
- ▬ Route 1: PBH as current proposed alignment
- ▬ Route 2: PBH as initially planned along existing road
- ▬ Route 3: PBH new proposal to minimise risks with elephants and connect Telupid
- ▬ Route 4: PBH new proposal to minimise risks with elephants
- Totally Protected Forest Reserves
- Rivers



Comparison of Environmental, Socio-Economic and Potential Costs of Routing Options for Telupid Section of Pan Borneo Highway					
		Route 1	Route 2	Route 3	Route 4
	Route Description	Current Alignment: runs through Class I Tawai Forest Reserve	Original Alignment: follows existing Ranau to Sandakan road	New Proposal: combines current alignment with a Northern Bypass to avoid key elephant areas & Tawai FR	New Proposal: runs north of Labuk river avoiding most known elephant range & Protected Areas
Alignment and Costing	Section Length (from A to B on Map)	40km	39km	39km	32km
	Survey Status	Already surveyed.	Unclear if any survey was made (potentially 33km still needed).	Survey required for new section (27km needed).	Survey required for new section (28.5km needed)
	Minor bridges	8 minor bridges (7 new, 1 existing)	3 minor bridges (all existing)	7 minor bridges (4 new that would be in the Route 1 section; 2 new, and 1 existing on the blue alignment)	3 minor bridges (2 new that would be in Route 1 section; 1 existing on the yellow alignment)
	Major bridges	No major bridges required.	No major bridges required.	Two major bridges required: (1) new site across Sg.Labuk (river approx. 83m); (2) IJM Ferry Terminal (river approx 115m).	Two major bridges required: (1) new site across Sg.Labuk (river approx. 157m); (2) IJM Ferry Terminal (river approx 115m).
	Land acquisition (linear kms, prelim estimate)	Identified: 12km of Country Lease title; 3.5km of Native Title; 8.8km is unknown (likely LA, NT or State land). 15kms is Class I Forest Reserve.	Identified: 5km of Country Lease title; 25.5km of Native Title; 2.5km of Town Land; 3km is unknown (likely LA, NT or State land); 2.5km is in Forest Reserve.	Identified: 19.6kms of Country Lease titles; 6.1kms Native Title; 13km unknown (likely LA, NT or State land).	Identified: 18.6km of Country Lease title; 5.1km of Native Title; 8km is unknown (likely LA, NT or State land).
Environmental/Biodiversity	Cutting into Protection Forest Reserves	Runs through Tawai Class I Protection Forest Reserve; and expands existing road in Ulu Sapa Payau Virgin Jungle Forest Reserve.	Runs through Sapa Payau Virgin Jungle Forest Reserve expanding existing road.	Avoids all Forest Reserves	Avoids all Forest Reserves
	Elephant Range	Runs through known elephant hotspot areas of high elephant usage, totalling around 30km of highway through known elephant range. Devastating.	Avoids some elephant hotspot areas. Runs through around 17km of known elephant range. High risk.	Avoids all elephant hotspot areas. Runs through around 8km of most northerly elephant range, and 4km of westerly range. Low risk.	Avoids all elephant hotspot areas. Runs through around 8km of most northerly elephant range. Low risk.
	Orangutan & Other Protected Species	Substantial negative impact.	Some negative impact.	Minimal negative impact.	Minimal negative impact.
Social & Economic	Impact on Pekan Telupid	Bypasses/marginalises Pekan Telupid & puts town water supply catchment in Tawai Forest Reserve at risk.	Serves Pekan Telupid but will bring heavy traffic.	Could serve Pekan Telupid.	Bypasses/Marginalises Pekan Telupid.
	Impact on Villages & Community Land	MEDIUM: Cadastral data is limited in parts of this section but smallholdings occur along western areas of proposed route.	WORST: Will significantly displace villages along existing highway (Kg. Wonod, Tongudon, Kg. Tapaang, Kg. Telupid Batu 4, Kg. Gamabron & Kg. Bauto).	MEDIUM: Will impact some Native Titles and smallholdings (unknown if alienated land), especially when it joins the Route 1 (Current Proposed Alignment). Will improve access to smallholdings north of Sg. Labuk but may go through some smallholdings.	LEAST: Will impact some Native Titles and smallholdings (unknown if alienated land). Will improve access to smallholdings north of Sg. Labuk but replace some smallholdings.
	Impact on Highway Connectivity of Villages and Oil Palm Estates North of Sg. Labuk	No benefit	No benefit	Increase access to markets for oil palm estates and smallholders located north of Sg.Labuk, due to construction of 2 new bridges.	Increase access to markets for oil palm estates and smallholders located north of Sg.Labuk, due to construction of 2 new bridges.
	Impact on Oil Palm Estate Land	12km through oil palm estates and require, new highway construction and road widening.	5km through oil palm estate.	19.6km through oil palm estates and require, new highway construction and road widening.	18.6km through oil palm estates and require, new highway construction and road widening.
SUMMARY	Environmental Impact	DEVASTATING	VERY NEGATIVE	MINIMAL	MINIMAL
	Socio-Economic Impact	MIXED - NEGATIVE	MIXED - NEGATIVE	MIXED - POSITIVE	MIXED - POSITIVE
	Additional Road Construction Costs	Significant costs of managing elephants during construction.	Further surveying & costs of managing elephants during construction. Savings as expanding existing 2-lane highway and fewer minor bridges.	Significant further surveying & costs of two major bridges.	Significant new surveying costs; road shorter; two major bridges, fewer minor bridges.

Note: Lengths are approximate measured using ArcGIS tools