

ACEH RHINO BREEDING CENTRE

AN ASSESSMENT OF SITE SUITABILITY

John Payne & Zainal Zahari Zainuddin



January 2018

Purpose

The purpose of this report is to provide an assessment of the suitability of seven sites in Aceh province for construction and maintenance of a facility (referred to in this report as “Aceh Rhino Breeding Centre”) to hold a small number of Sumatran rhinos, for breeding purposes, and to house necessary staff to care for them.

Background & methods

With the prospect in year 2018 of Government of Indonesia endorsement of capture of Sumatran rhinos to form part of a captive breeding programme, the need to identify a suitable site for a fenced, managed Sumatran rhino facility in Aceh is urgent.

Two factors need to be stressed. Firstly, every Sumatran rhino is extremely precious – much more precious than, for example, giant pandas. Care and management of the rhinos has to be up to the world’s best possible standards at all times. This necessitates excellent full-time veterinary supervision. Secondly, it is very likely that some rhinos will have reproductive pathology. This necessitates that gamete harvesting be done from time to time, involving international expertise and state of the art equipment, and the need to quickly transport gametes to a specialist in vitro laboratory.

Seven sites were visited to assess their suitability for building and maintaining Aceh Rhino Breeding Centre (Appendix 1, Maps 1 – 4, Figures 1-8). The sites were proposed by Forum Konservasi Leuser (FKL) and others (Appendix 2). Four sites were visited by one author (John Payne) with FKL in 2017, and three more in January 2018 by John Payne & Dr Zainal Zahari Zainuddin, of Borneo Rhino Alliance (BORA; Appendix 3). The four sites visited in 2017 were found to be too remote and lack certain basic requirements. Accordingly, three additional sites closer to major towns with international airports were visited in January 2018 (Appendix 4). All site visits were arranged and hosted by FKL, except for the visit to Batang Ara estate in Aceh Tamiang district, which was arranged and hosted by an oil palm plantation company, PT. Minamas.

Each site was assessed based on 19 criteria of suitability. A score of one point was allocated for the confirmed presence of each criterion. Where the criterion was absent or uncertain, a score of 0 was recorded. The total number of points per site indicates suitability, with a maximum possible score of 19. To qualify as suitable, a site has to score 19 or, if no such site exists, at least 17 or 18, so that absent criteria can be rectified.

Results

All sites except Batang Ara estate in Aceh Tamiang were found to have at least nine criteria lacking or uncertain (Table 1). Accordingly, those six sites other than Tamiang are not suitable

for Aceh Rhino Breeding Centre. Except for poor mobile phone connection, the remaining site, at Aceh Tamiang, was found to be ideal.

Table 1. Site suitability based on nineteen criteria

0 = negative or uncertain 1 = positive

	Criterion	S	D	P	C	T	KL	B
1	Existing guaranteed year-round road access	0	1	1	0	1	0	0
2	Within a few hours' drive of major airport with daily scheduled flights	0	0	0	0	1	1	1
3	Flood-free and tsunami-free	1	0	1	1	1	0	1
4	Reliable clean water supply	1	0	0	0	1	1	1
5	Diverse rhino food plant species locally	1	0	0	1	1	1	0
6	High biomass of rhino food plants	0	0	0	0	1	0	0
7	Rhino food plants easily harvestable daily (50 kg per rhino)	0	0	0	0	1	0	0
8	Soil fertility adequate to quickly develop rhino food garden	1	1	1	1	1	1	0
9	Soil suitable for rhino wallows	1	1	1	1	1	1	0
10	Adequate shade trees	0	0	0	1	1	1	0
11	Total available area initially 5 hectares (ha) and can be expanded up to about 30 ha	1	1	0	1	1	0	1
12	Local topography suitable for rhino fencing	1	1	1	0	1	0	1
13	Ownership or use rights of land clear, and land available from land-owner	0	0	1	0	1	1	1
14	Reliable back-up for logistics and maintenance of utilities	0	0	0	0	1	0	0
15	Reliable security (against poachers)	0	0	0	0	1	1	0
16	Threat of future encroachment minimal	0	0	0	0	1	1	1
17	Mobile phone connection available	0	0	0	0	0	0	0
18	Pleasant atmosphere for resident veterinarian	0	0	0	0	1	0	0
19	Basic veterinary supplies available within one day	0	0	0	0	1	1	1
	Total	7	5	6	6	18	10	8

S = Samarkilang D = Djabat P = Pameue C = CRU at Peunaron T= Tamiang KL = Krueng Linteung B = Bueng

Discussion

All sites other than Tamiang have characteristics which make them unsuitable for a rhino breeding centre. Absence of mobile phone connection at the proposed Tamiang site is not a major constraint, as several points exist with 2 to 4 km where connection can be made currently. Additional communications mechanisms could be established at the Tamiang site, if necessary.

There are four essential points about the Tamiang site. Firstly, the management of Sime Darby Plantation Berhad, the parent company of PT. Minamas, have already made a decision to allow the Batang Ara division (about 650 hectares) to be abandoned as a productive oil palm plantation, and instead manage the site for a long-term research programme on methods to restore forest from oil palm plantation. Secondly, the roughly 20 year old oil palms within Batang Ara division provide not only good shade for rhinos, but numerous options for constructing fences along roads and along palm planting lines and terraces (see Figure 9 for a Sabah example). Indeed, some palms might be used as fence posts. Thirdly, PT. Minamas has about 2,000 ha of managed oil palm plantation between Kuala Simpang town and the Batang Area division, most now being replanted, so future prospects for site management, road maintenance, security and other support can be assured. Fourthly, Sime Darby has expressed a strong interest in hosting a rhino breeding centre within the Batang Ara plantation. These points make the site a prime candidate for Aceh Rhino Breeding Centre.

Additional points to note on this Tamiang site are as follows :

Road access already exists, and the site (Batang Ara estate) can be reached from Kuala Simpang town within just over one hour. The HGU (land use rights) holder (PT. Minamas) can be requested to maintain the road. The journey time from Medan city and international airport to the site is about five hours, and will likely be less in the future once the new south-north highway is complete.

Low-lying parts of the site may experience occasional minor flooding from the stream that runs through the central part of the HGU area, but this problem can be averted by appropriate siting of facilities above maximum flood levels. The headwaters of the stream are entirely within the HGU boundary, so water quality can be assured. The local soil is ideal for rhino wallows (like buffaloes, Sumatran rhinos need to wallow in liquid clay for several hours daily in the middle part of the day, to stay cool and to maintain good skin condition).

If rhinos are held in small paddocks, it is necessary that about 50 kg of fresh leaves and twigs of a variety of woody plant species have to be harvested daily as food for each rhino. At the Batang Ara site, many Sumatran rhino food plant species were observed, the great majority growing naturally on the ground and also as epiphytes on old palm trees within the HGU boundary, following the abandonment of active management of the area in 2016. Rhino food can potentially be supplemented by obtaining leafy twigs of nangka trees (*Artocarpus heterophyllus*, jackfruit) a favourite food of Sumatran rhinos, from community land owners nearby. In any case, while current natural total rhino food biomass and productivity is estimated to be adequate initially, as soon as agreement is reached, it would be advisable to initiate a “rhino food garden” within the HGU, by planting fast-growing trees and strangling figs that can be pruned.

Regarding back-up for logistics and maintenance of utilities, security, and threat of future encroachment, the existence of an established company with HGU, security staff and

maintenance capabilities is ideal. It was noted that there is currently no encroachment into the HGU by the local community.

It is suggested that facilities for two rhinos be built initially, and aligned so that additional paddocks can be added in the future. A paddock of 2 to 3 ha per rhino is adequate. Although the Sumatran Rhino Sanctuary at Way Kambas, Lampung, has 2 x 10 ha paddock per rhino, experience in Sabah is that paddocks of less than 1 ha per rhino are adequate over periods of many years.

There are about 20 hard-walled buildings within Batang Ara estate, seven of which house workers that harvest palm fruits, the remainder currently unused. (Harvesting of palm fruit bunches is currently contracted out, although no weeding, fertilization or other maintenance is done).

It is very unlikely that any better site can be found for a rhino breeding facility within Aceh province.

Conclusion

It is recommended that the Batang Ara division of the Sri Kuala estate owned by PT. Minamas be targeted as the locality for Aceh Rhino Breeding Centre.

Appendix 1. Sites visited to assess suitability for Aceh Rhino Breeding Centre

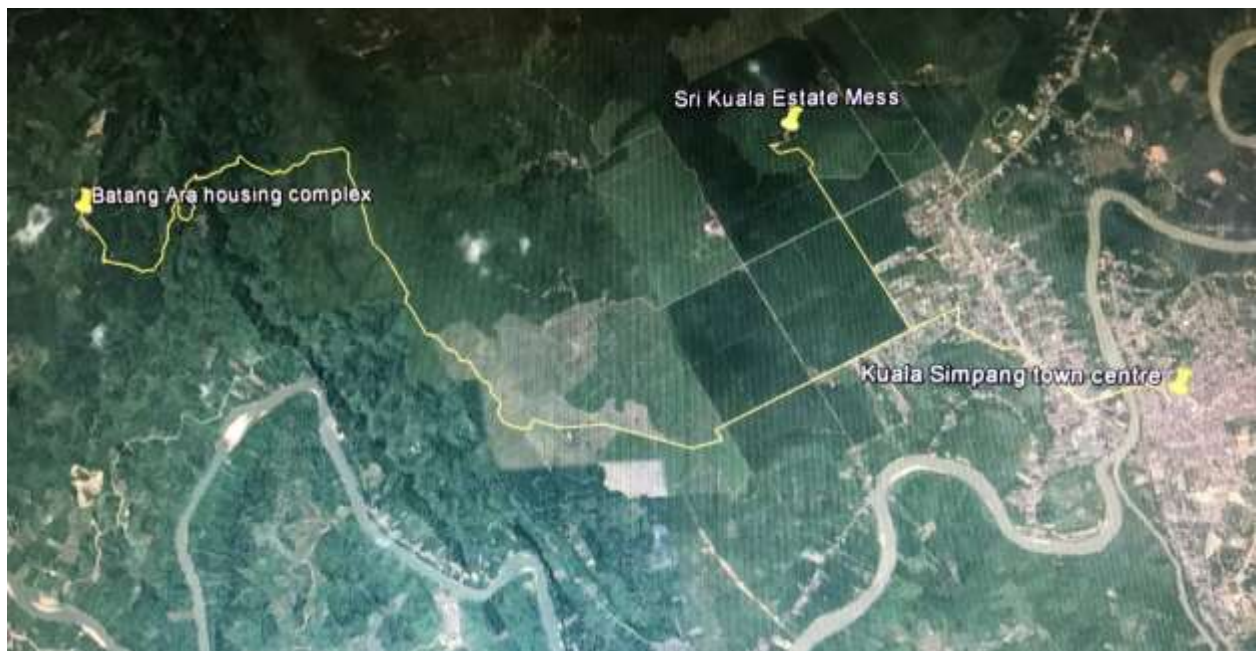
Site name	Map coordinates	Land status	Date of visit	Host
Samarkilang	4 39 01 N, 97 12 04 E	Rural community bordering to government-owned limited production and protection forest	15-17 April 17	FKL
Djamat	4 25 48 N, 97 14 28 E	Rural community	18 April 17	FKL
Pameue (also spelled Pameur and Pamene)	4 45 01 N, 96 25 43 E	Rural community	21 November 17	FKL
Conservation Response Unit (CRU) at Peunaron (also referred to as Peureulak)	4 33 00 N, 97 37 13 E	Government elephant sanctuary surrounded by rural community land	22 – 23 November 17	FKL
Tamiang (Batang Ara estate)	4 18 50 N, 97 58 30	Leased for oil palm (HGU until 2037)	24 January 18	PT Minamas
Krueng Linteung	5 13 14 95 40 55	Government-owned Cagar Alam Jantho. Sumatran Orangutan Conservation Project has its reintroduction site here	27 January 18	FKL & SOCP
Bueng	5 15 41 95 3842	Research forest; Hak Milik Sekolah Tinggi Ilmu Kehutanan Aceh	27 January 18	FKL & SOCP



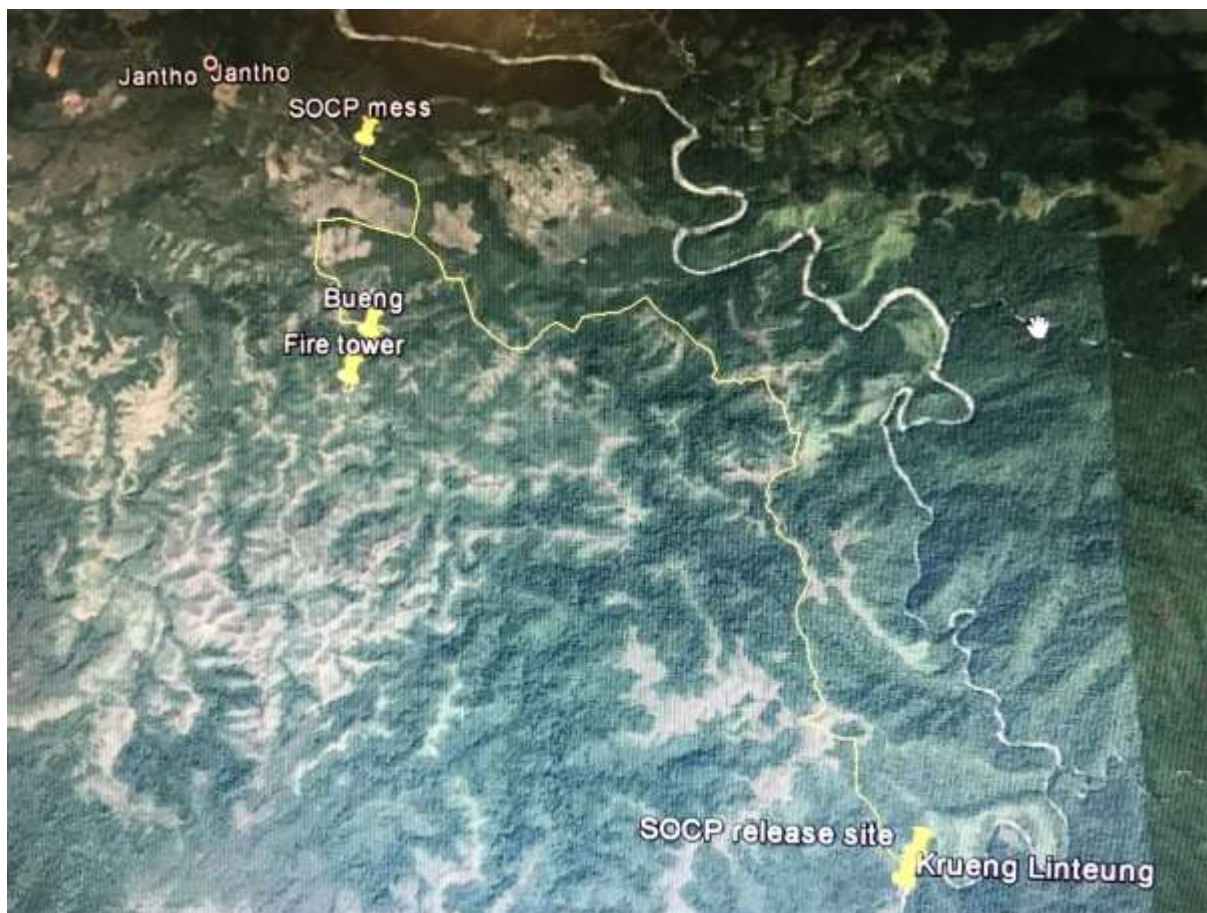
Map 1. Locations of all sites visited



Map 2. Sites visited in year 2017



Map 3. Tamiang



Map 4. Jantho



Figure 1. (left) discussion in Samarkilang village (15 April 2017), (right) footbridge across the Jambu Aye river at Samarkilang



Figure 2. (left) typical land cover at Samarkilang and Djamat, (right) Djamat, 18 April 2017



Figure 3. (left) planning site visits at Takengon (21 November 2017), (right) Pameue village centre



Figure 4.(left) Conservation Response Unit (CRU) access road at Peunaron (right) land behind the housing at CRU



Figure 5. Tamiang (left) notice board at Batang Ara estate, (right) examples of the currently unused buildings within the estate



Figure 6. Inside Batang Ara estate (left) natural regrowth of woody plants, some of which are Sumatran rhino food species, (right) there are numerous choices for alignment of fences, including along terraces



Figure 7. (left typical views of the hills above Jantho, headwaters of Krueng Aceh, (right) the research forest land at Bueng owned by Sekolah Tinggi Ilmu Kehutanan Aceh



Figure 8. (left) Sumatran Orangutan Conservation Project reintroduction site at Krueng Linteung, (right) a typical section of the 12 km access road to Krueng Linteung from the project mess

Appendix 2. Acknowledgements

The authors acknowledge with thanks the following personnel who participated in the site visits and/or hosted the authors : (BORA) Alvin Erut, (FKL and government) Rudi Putra, Dedi Yansyah, Ridha Abdullah, Juarsyah, Mahli Gayo, Jasa Hadi, Astra, Syaripudin, Nurdaini, Muslim, Purnomo, Tezar, Ilham Ananda, Sabri, Wong, (CRU) camp manager Dedi and staff, (PT Minamas / Sime Darby Plantation) Tan Meng Kon, M. Pirabaharan Abdullah, Irwansyah, Muammar, Wendy, Rajali, Syamsul, Azmi Jaafar, Suparmardi, (SOCP) Asriadi, Tabuna, Muklis.



Figure 9. Sumatran rhino facility in Sabah, Malaysia, showing some key elements (left) strong fencing on flat or moderate topography and shade to minimize day time temperatures for the rhinos, (right) night stalls to permit daily monitoring of rhinos and administration of medication when necessary (here, a synthetic gonadotropin-releasing hormone vaccine to manage oestrus cycle)



Figure 10. FKL and the report authors (26 January 2017) visit Head of BKSDA Aceh (Sapto Aji Prabowo) and Dr Drh Sugito (Vice Dean I), Faculty of Veterinary Medicine, Syiah Kuala University

Appendix 3. Biodata of John Payne and Zainal Zahari Zainuddin

Dr John Payne is a biologist, resident in Malaysia since 1975, with degrees in zoology (London, 1975) and tropical ecology (Cambridge, 1980). He conducted extensive surveys of Sumatran rhinos from 1980 to 1990, and was instrumental in securing agreement of Government of Sabah in 1984 for a Sumatran rhino captive breeding programme, and in establishment of Tabin Wildlife Reserve (120,000 ha) for the same species. He has been executive director of Borneo Rhino Alliance (BORA), a non-governmental organization engaged by Government of Sabah to prevent the extinction of the Sumatran rhino, since 2009 to present.

Dr Zainal Zahari Zainuddin is Malaysia's most experienced wildlife veterinarian, with a degree in veterinary medicine from Universiti Pertanian Malaysia (1985) and a MSc degree in Sumatran rhino reproduction (1995). He worked as senior veterinarian in the Malaysian Wildlife and National Parks Department from 1985 to 2010, including work on the capture, post-capture care, translocation, captive management, husbandry and breeding attempts for Sumatran rhino, both in Malaysia and Sumatra from 1980s to 2001. During that time, he authored or co-authored over 20 scientific papers on Sumatran rhino. He has been senior veterinarian and project manager for BORA from April 2010 to the present time, working on capture, translocation, care, health, monitoring and reproduction of Sumatran rhino in Sabah, Malaysia. He designed the captive rhino facilities in Peninsular Malaysia (1990s) and Sabah (2010), and was in charge of the capture of the last two remaining wild rhinos in Malaysia.

Appendix 4. January 2018 visit itinerary

Date	Action
Tues 23 January	John Payne & Zainal Zahari Zainuddin travel Kota Kinabalu – Kuala Lumpur – Medan. 19.00 meet Sime Darby Plantation (SDP) staff (Tang Meng Kon) & others, Hotel Santika. Overnight Medan.
Wed 24 January	Pickup by SDP. To Sri Kuala Estate, Batang Ara Division, Aceh Tamiang District. Meet PT. Minamas staff. View estate and maps. Overnight in Kuala Simpang.
Thurs 25 January	Visit Kuala Simpang town. Drive to Medan (SDP). Fly Medan to Banda Aceh with Forum Konservasi Leuser (FKL; Dedi Yansyah).
Fri 26 January	Visit Head of BKSDA Aceh (Sapto Aji Prabowo) and Dr Drh Sugito (Vice Dean I) & Dr Drh. Razali (Vice Dean III), Faculty of Veterinary Medicine, Syiah Kuala University (Figure 10). Overnight Banda Aceh.
Sat 27 January	Whole day visit to Jantho area with FKL and Sumatran Orangutan Project (SOCP). Inspect two potential Sanctuary sites. 20.00 meet WWF-Indonesia staff Dede Suhendra. Overnight Banda Aceh.
Sun 28 January	Travel Banda Aceh to Kuala Lumpur to Kota Kinabalu.