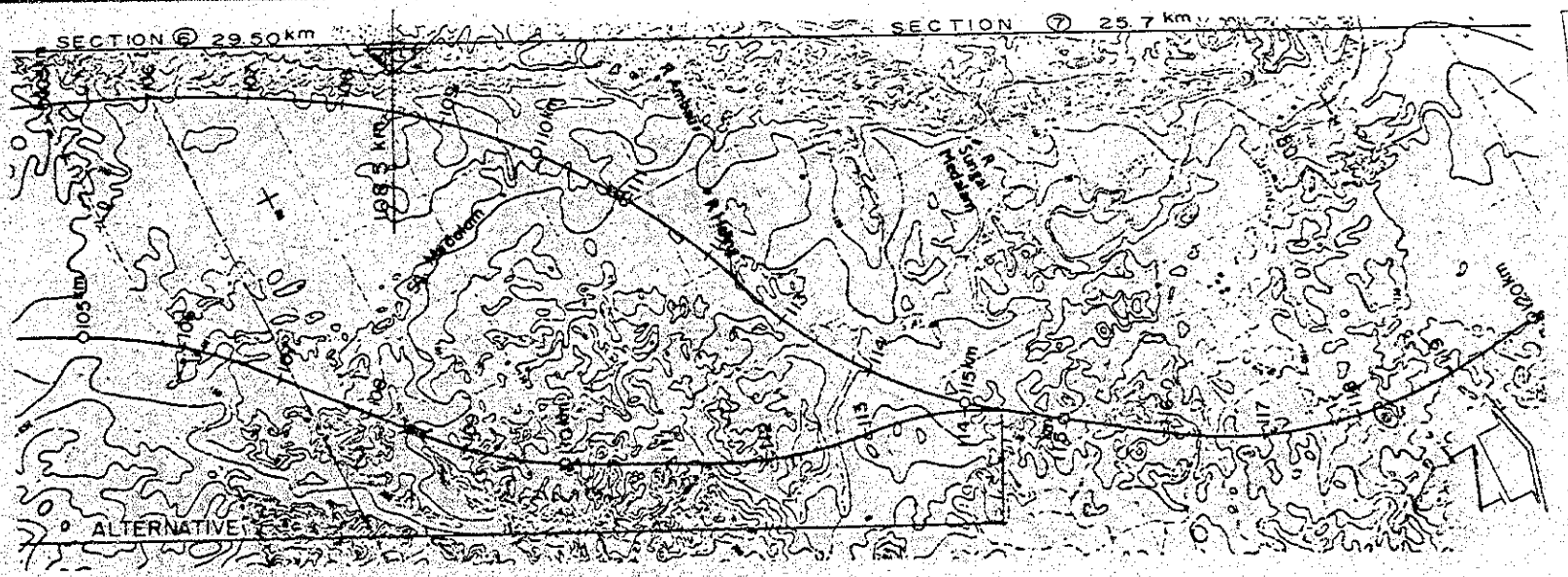
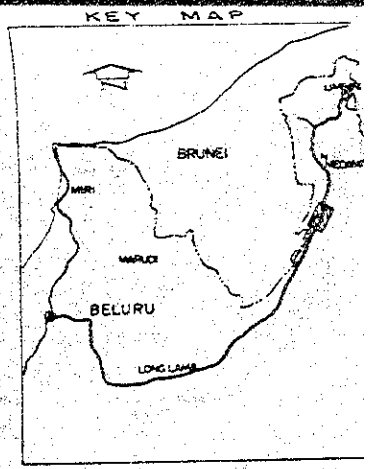
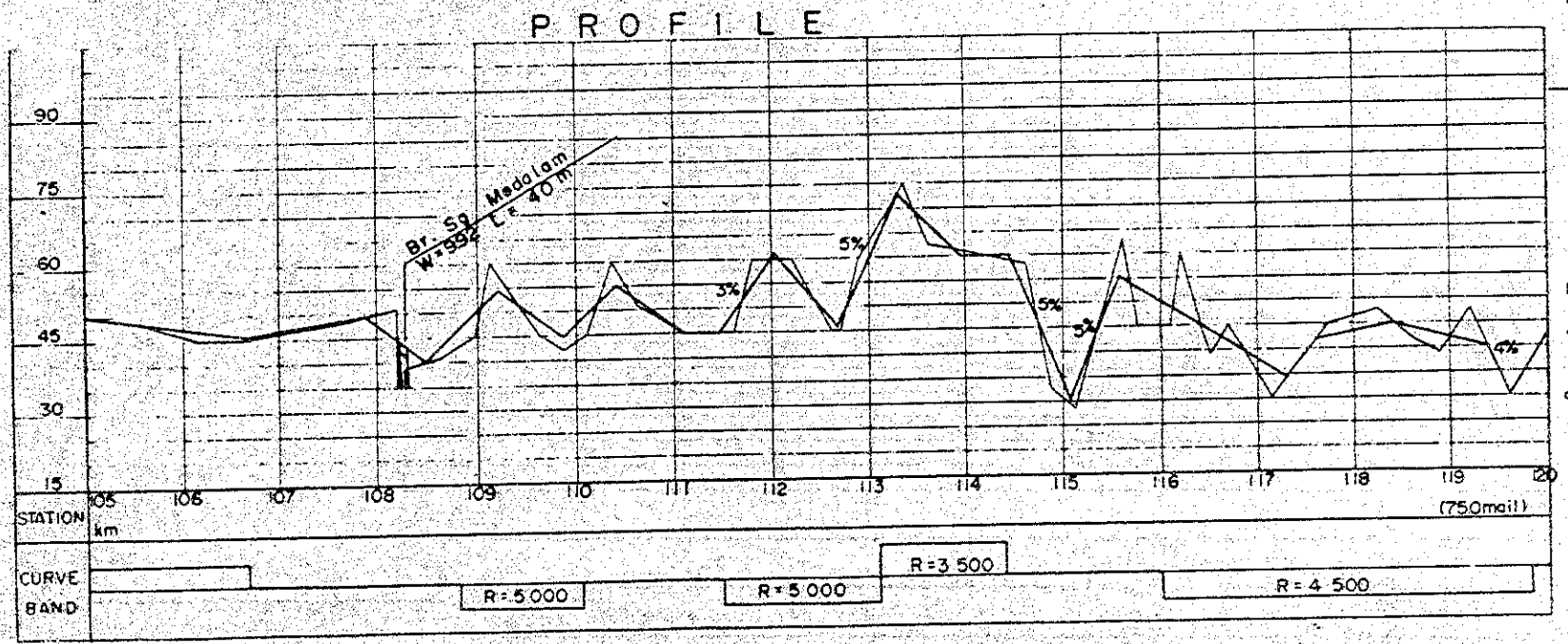






HORIZONTAL ALIGNMENT

SCALE 1 : 50,000

CENTER LINE

BRIGE

VERTICAL ALIGNMENT

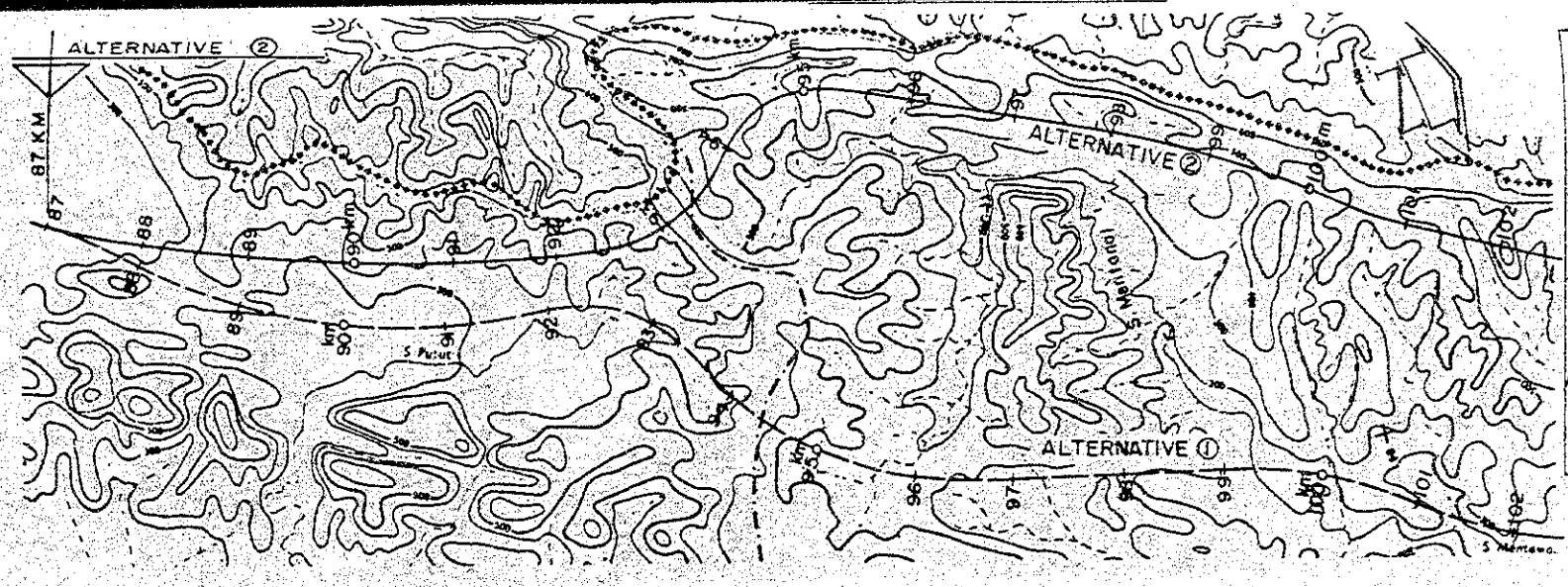
HORIZONTAL SCALE 1 : 50,000

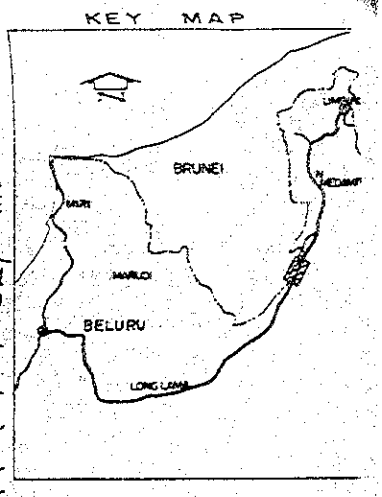
VERTICAL SCALE 1 : 1,000

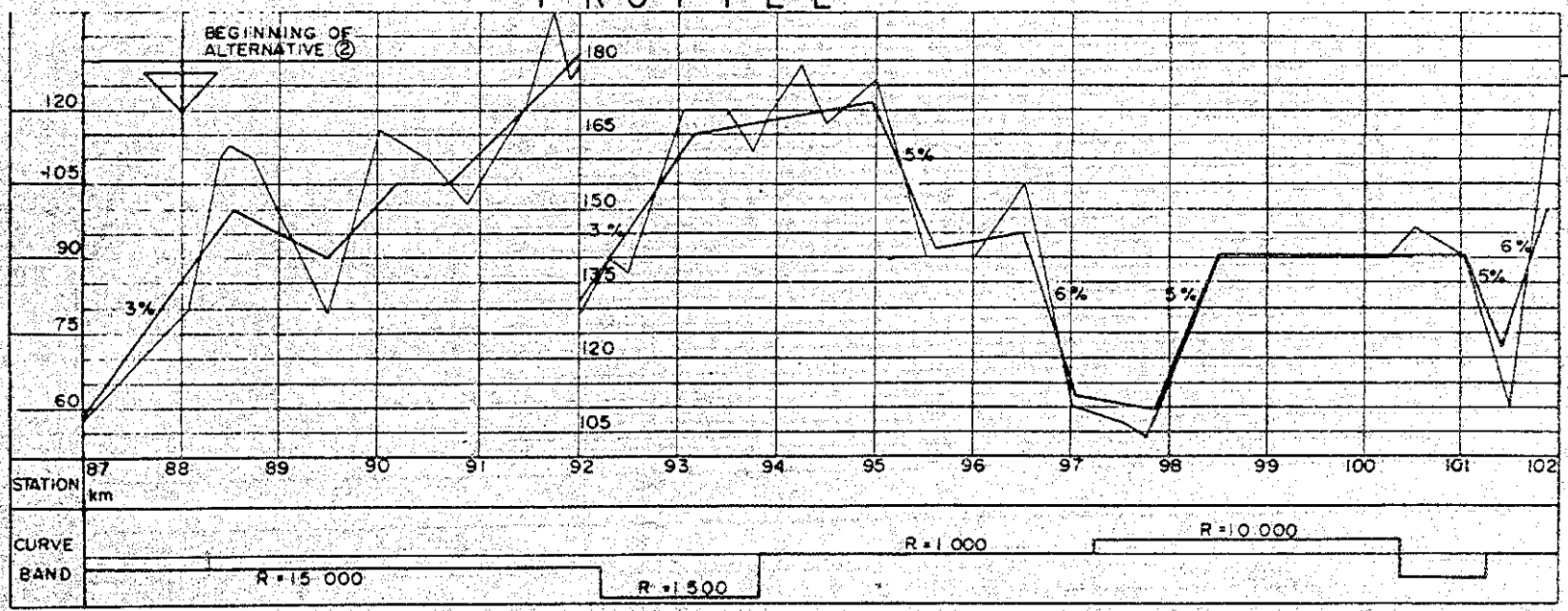
BRIGE

±10% : GRADIENT OF RECOMMEDED

EXSTING GROUND







HORIZONTAL ALIGNMENT

SCALE 1: 50,000

: CENTER LINE

: BRIGE

VERTICAL ALIGNMENT

HORIZONTAL SCALE 1: 50,000

VERTICAL SCALE 1: 1,000

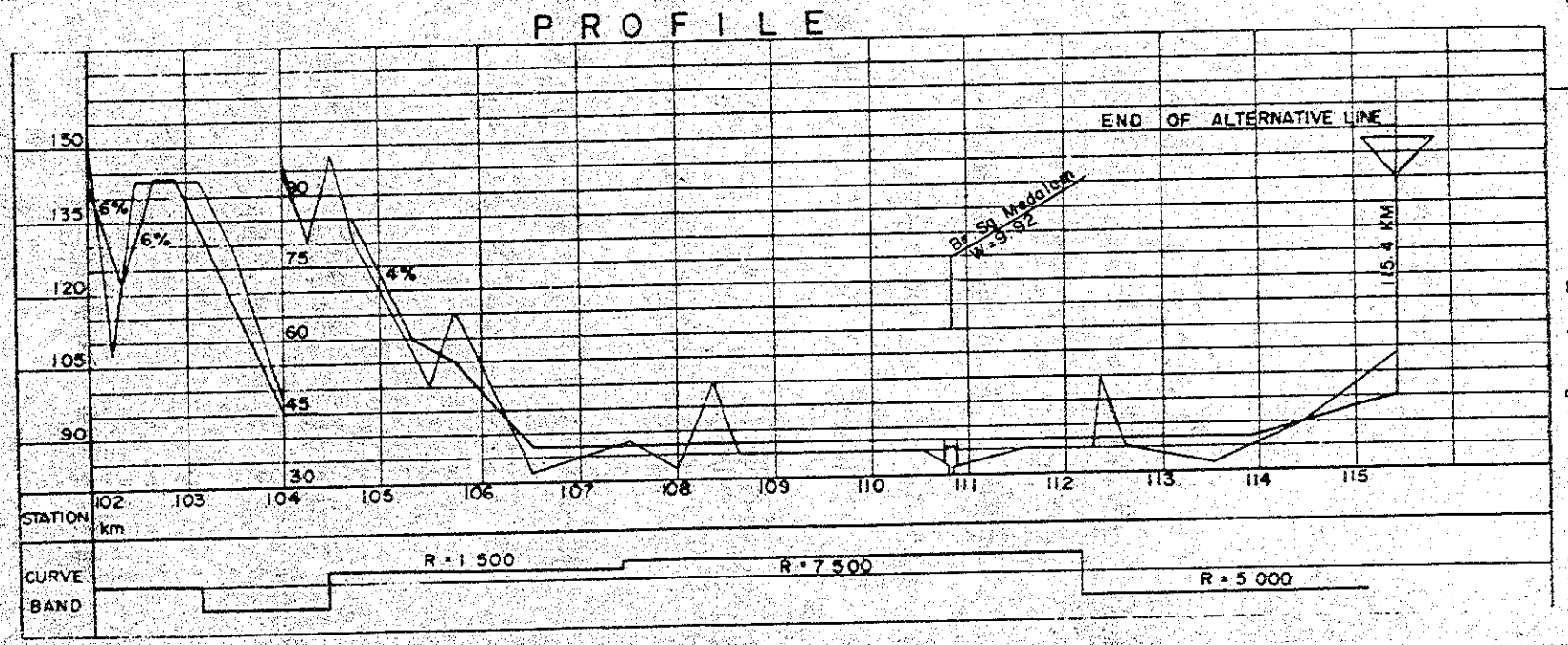
: BRIGE

+1.0% : GRADIENT OF RECOMMEDED

: EXSTING GROUND

x x x x x : INTERNATIONAL BOUNDARY

11-01



HORIZONTAL ALIGNMENT

SCALE 1 50,000

CENTER LINE

BRIGE

VERTICAL ALIGNMENT

HORIZONTAL SCALE 1: 50,000

VERTICAL SCALE 1: 1,000

BRIGE

+10% : GRADIENT OF RECOMMEDED

EXSTING GROUND

x x x x x : INTERNATIONAL BOUNDARY

10-2　比較ルートの検討

Mulu 国立公園指定地内を通る比較ルート B及び C について、自然条件、線形設計及び建設費についての比較を行う。

比較ルートについては 図 10－2、3、4、5、6 に図示した通りである。

10-2-1　自然条件

熱帯性ジャングルに覆われる比較ルート B 及び C は、両ルート共 標高 100m～200m (300ft～600ft) の丘陵地及び山地部を北上すると共に年間降雨量 2500mm～4000mm (140inch～160inch) と熱帯多雨地に属し、高温多湿地である。地質、土質に於いても、両ルート共、赤黄色ポドゾル性土及び白亜紀後期の堆積岩に覆われている。

人口分布は当地域平均 5人/マイル より低い 2.3人/マイル であり、開発事業も多く見られない。

比較ルート C は、ブルネイ国境に近接したルートであり、未確定な国境線と路線と交叉する懸念があるし、地形が非常に褶曲されている。

比較ルート B は ルート C より平均 3 Km 東側の鞍部を通り 将来の Mulu 公園への取付に使なるルートである。

10-2-2　線形

比較ルート B 及び C 共に 地形条件を 丘陵地 及び山地部

を適用して、サービスレベルの低下しない様に考慮して設計した。

平面線形については、ルートBは Sg. Putut 及び Sg. Mentawai の分水嶺地点に於ける曲線半径を最少に設計し、他の部分は、Sg. Mentawai の蛇行との交叉を少なくするように考慮し、ルートCは第4 Division と第5 Division との地区境界附近に於ける曲線半径と縦断勾配との組合せにポイントが置かれた。

縦断線形は土工量の低減を考え、5～6%を最急勾配とし、大型混合率の高い交通容量に対処する様に設計した。

之等の線形要素を比較すれば、表 10－1 通りである。

Table 10-1 COMPARISON OF ALIGNMENT

		Route B	Route C
i.	Length of Route	27.4km	28.4 kms
ii.	Train	Rolling/mountainous	Rolling/mountainous
iii.	Min. Radius	1,500 m	1,000 m
iv.	Max. Gradient	6%	6%
v.	Length of Bridge	340 m	280 m
vi.	Nos. of Culvert		
	Box Culvert	14	14
	Pipe Culvert	65	67

10-2-3 建設費

比較ルート B, C についての工事数量は Table 10- であり建設費を積算すれば Table 10- の通りである。

Table 10-2 COMPARISON OF WORK QUANTITY

		Route B	Route C
i.	Clearing/Grubbing	495,940 m^2	651,360 m^2
ii.	Excavation/Filling		
	Cut. Soil	65,000 m^3	846,675 m^3
	Soft - Rock	-	225,825 m^3
	Hard - Rock	-	56,400 m^3
	Embankment	45,000 m^3	533,030 m^3
iii.	Pavement		
	Subgrade preparation	200,600 m^3	207,900 m^2
	Sub-Base/Base Course	40,100 m^3	41,600 m^3
	Bituminus		
	Primcoat/Surface	200,600 m^2	207,900 m^2
iv.	Bridges		
	Short-Span	1,190.4 m^2	892.8 m^2
	Intermediate-Span	992 m^2	992 m^2
	Long-Span	-	-
v.	Drainage Structure		
	Box-Culvert		
	2.0 x 2.0	72 m	72 m
	3.0 x 2.0	72 m	72 m
	3.0 x 3.0	72 m	72 m
	Pipe-Culvert		
	ϕ 900 m/m	924 m	966 m
	ϕ 1,500 m/m	672 m	672 m
vi.	Guard Rail	14,800 m	17,650 m
vii.	Marking	54,800 m	56,800 m
viii.	Traffic Sign	3 ech	3 ech

Table 10-3 COMPARISON OF CONSTRUCTION COST
(Unit; 1,000 M$)

		Route B	Route C
i.	Construction Cost (a)	15,524	28,813
	Clearing/Grubbing	2,400	3,167
	Excavation/Filling	671	13,329
	Pavement	6,632	6,877
	Bridges	4,487	3,910
	Drainage Structures	289	294
	Guard Rail	977	1,165
	Marking	66	69
	Traffic Sign	2	2
ii.	Contingencies (b) (a x 10%)	1,553	2,882
iii.	Survey and Administration Fees (c) (a + b x 10%)	1,708	3,170
iv.	Total Construction Cost (a + b + c)	18,785	34,869

10-3. 比較ルートの経済交通についての検討

路線選定に当って、対象地域の開発をより効果的に進めるために、交通/経済的観点から考慮した基本的事項は下記の通りである。

(1) Banam地域の開発枢要と12の Long Lania を包囲すること。

(2) 農業開発ポテンシャルの高い地域を囲繞すること。

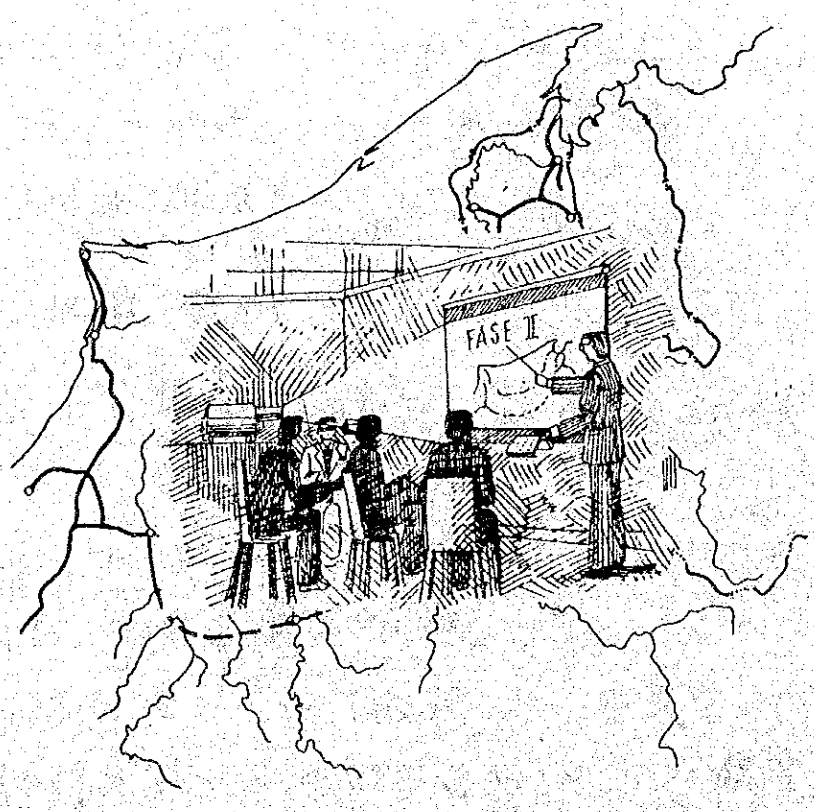
(3) 主要コミュニティに対して、必要に応じて、フィーダー道路によるアクセスができる限り可能になること。

(4) 主要河川とプロジェクト道路が交差地点附近に平坦ないしは、将来のコミュニティ開発用地として開発可能な土地が一定規模であること。

(5) 保存すべき自然、資源、生態に悪影響を與えないこと。

10-1項で選定されたルートは、上記諸点を一応満足するものであり、ルート選定の過程で特にこれに対応し得る有力な比較ルートは、交通ならびに経済的観点からは、発生しなかった。

第11章　フェーズII調査の実施方針



第11章　フェーズII調査の実施方針

フェーズIIに於ける現地調査は本レポートにて選定された最適ルートについて、航空写真測量により作成された縮尺1:10,000地形図に基づいて極地的な詳細技術調査を行なうと共に、農林業開発調査を補足し、季節的交通量の変動を調査すると共に、最適ルート確定のための便益算定のための資料の収集を目的とする。

11-1　技術調査

最適ルート確定のために、フェーズII現地技術調査は下記の項目について詳細な調査を行なう。

11-1-1　水文

a. 橋梁架設地点の水理解析方法の調査
b. 各河川の貯留量（Storage）の調査
c. 過去の洪水の状況及び地域の確認
d. 中小河川の調査

11-1-2　土質，地質，骨材

a. 最適ルートに於ける路床上のCBR試験の補足
b. 最適ルートに於ける架橋地点に於ける基礎地盤調査（標準貫入試験）
c. 石灰岩採石場への取付道路及び埋蔵量の調査
d. 砂利採取可能地点の取付道路及び埋蔵量の調査並びに骨材試験

11-1-3 建設コスト

a. 建設材料の市場価格に示める税率及びその種類

b. Economic Life, Major Repairs 及び Overhaul についての調査

11-1-4 施工法

a. P.W.D保有機械設備，建設機械のリース会社（シンガポールを予定する），及び現地建設会社の規模能力及び技術経験等の調査

b. 類似工事に於ける工事工程及び管理，並びに施工法についての調査

11-2 経済 交通調査

最適ルートの確定のために、下記の点について補足及び調査を行なう。

a. 農業開発ポテンシャルについての補足調査
b. 農産物の生産量についての調査
c. 農家経済についての調査
d. Long Lama を始めとする沿線拠点整備の計画と可能性
e. Mulu National Park の観光開発についての可能性
f. 輸送費用データの精度アップのための調査
g. 林業開発ポテンシャルの補足及び工業化への検討
h. 道路が従来なかった地域に、道路が建設されたことで、どの様な変化があったかについてのケーススタディの実施（サラワク、Miri/Bintulu, Simmangang, Sibu 道路等について）

現地調査の結果に基づき、より詳細な概略設計及び経済分析を行ない、本幹線道路建設計画の総合評価と提案を最終報告書にて行なう。

資　料　篇

Appendix Table A-1-1 SARAWAK GROSS DOMESTIC PRODUCT AND PER CAPITA GDP, 1967-1975

Sector	1970 Prices									Average Annual Growth Rate (%)			
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1967-1975	67-70	67-73	70-75
Agriculture, Forestry and Fishery	267	305	343	319	292	282	327	–	355	2.0	6.7	1.0	3.1
a) agriculture/livestock				168									
b) forestry/logging				133									
c) fishery				18									
Manufacturing	69	73	77	77	66	62	50	–	92	-0.1	3.9	-5.0	2.6
Building and Construction	43	44	41	45	49	51	55	–	68	5.9	0.7	4.4	8.4
Commerce	191	210	233	222	256	279	294	–	270	5.2	5.7	7.2	3.8
a) transport/communication	37	42	50	31	63	72	78	–	57	7.3	-3.5	13.5	10.1
b) whole sale/retail trade	90	103	117	125	126	135	143	–	138	5.6	11.5	7.5	2.5
c) banking/insurance	11	12	13	13	14	17	18	–	17	6.5	6.0	8.4	6.0
d) ownership of dwellings	53	53	53	53	53	55	55	–	58	1.1	0.0	0.7	1.9
Services	140	141	145	127	150	170	176	–	210	5.3	-2.6	4.0	10.0
a) public administration/defence	44	45	45	45	46	62	62	–	63	5.7	0.7	6.2	7.8
b) electricity/water	9	9	10	12	12	14	15	–	22	11.6	10.2	9.7	13.3
c) services	87	87	90	70	92	94	99	–	125	4.3	-6.0	2.0	10.8
Sub-total	710	773	839	790	813	844	902	–	995	3.6	4.1	3.1	4.9
Mining and Quarrying	2	7	16	30	114	155	152	–	157	77.1	144.8	112.8	31.0
Grand Total	712	780	855	820	927	999	1,054	1,177	1,152	6.5	5.3	6.5	7.3
Population (Mid-year Estimates)	901,663	923,592	944,029	967,274	994,535	1,022,382	1,063,300	–	1,102,956	2.6			
Per. Capita GDP (M$)	790	845	906	889	932	977	991	–	1,044	3.3			
Annual Rate of Growth													
a) GDP (%)		9.6	9.6	0.6	7.8	7.8	5.5	–	4.5				
b) Per Capita GDP (%)		7.0	7.2	-1.9	4.8	4.8	1.4	–	2.6				

Source: State Planning Unit, Sarawak

Appendix Table A-1-2 EXPORTS OF MAJOR COMMODITIES, SARAWAK

Commodity Section	Unit of Measurement	1975 Quantity	1975 Value (M$000)	1977 Quantity	1977 Value (M$000)
0. Food		53,234	111,323	58,145	155,255
(1) White Pepper	(ton)	9,644	39,041	7,363	42,494
(2) Black Pepper	(ton)	20,229	61,854	19,432	90,208
(3) Sago Flour	(ton)	22,506	5,305	29,717	8,312
(4) Prawns, Fresh and Frozen	(ton)	855	5,123	1,633	14,241
2. Crude Materials Inedible		-	161,779	-	405,816
(1) Sawlogs	(H.ton)	696,989	63,729	3,470,109	254,200
(2) Sawn Timber	(H.ton)	170,823	62,184	231,589	88,755
(3) Rubber	(ton)	28,579	35,866	37,665	62,861
3. Mineral Fuels		4,398,306	1,025,319	5,387,587	1,423,247
(1) Petroleum, Crude and Partly Refined	(ton)	3,963,204	917,292	4,995,242	1,310,089
(2) Petroleum Products	(ton)	435,102	108,027	392,345	113,158
4. Animal/Vegetable Oils and Fats		8,007	8,293	16,538	24,645
(1) Coconut Oils, Crude and Refined	(ton)	3,717	4,128	2,198	3,976
(2) Palm Oil	(ton)	3,592	3,887	12,497	19,620
(3) Palm Kernel	(ton)	698	278	1,843	1,049
6. Manufactured Goods			33,157		60,867
(1) Wooden Mouldings and Moulded Board	-	-	8,764	-	16,182
(2) Wooden Dowels	-	-	13,286	-	27,870
(3) Chipwood	-	-	8,588	-	9,327
(4) Veneer Sheets: max 1/5"thick	(000 sq.ft.)	544	37	n.a.	n.a.
(5) Plywood Plain; 5mm	(000 sq.ft.)	16,211	2,482	2,901	7,488
Total of Major Exports	-	-	1,339,871	-	2,070,912
Other Exports	-	-	47,524		82,336
TOTAL			1,387,395		2,153,248

Source: Preliminary Figures of External Trade, Dept. of Statistics

Appendix Table A-1-3 IMPORT COMMODITY DIVISION AND SECTION

(M$ million)

	Commodity Section/Division	1975	1977
0	Live animals, other pets and animals for zoos	1.71	1.43
1	Meat, edible offal and meat preparations	7.16	10.13
2	Daily produce and birds' eggs	19.71	23.41
3	Fish and other marine animals, except mammals and preparations thereof	9.61	11.81
4	Cereals and cereal preparations	67.14	89.91
5	Fruits and vegetables	13.27	15.96
6	Sugar, sugar preparations and honey	31.36	33.35
7	Coffee, tea, cocoa, spices and manufactures thereof	4.91	7.12
8	Feeding stuffs for animals, excluding unmilled cereals	21.60	32.32
9	Miscellaneous food preparations	6.18	8.70
0*	FOOD AND LIVE ANIMALS	182.65	234.15
11	Beverages	11.29	16.18
12	Tobacco and tobacco manufactures	27.25	35.51
1*	BEVERAGES AND TOBACCO	38.54	51.69
21	Hides, skins and furskins, undressed	-	-
22	Oil-seeds, oil-nuts and oil kernels	3.81	3.98
23	Crude rubber and similar natural gums and synthetic rubber	0.04	0.09
24	Wood	11.12	23.04
25	Paper-making material	0.36	0.27
26	Textile fibres and waste	0.45	0.68
27	Crude fertilizers and minerals other than fuels and precious stones	4.99	5.50
28	Matallic ores and concentrates	0.17	0.06
29	Crude animal and vegetable materials, inedible	1.44	1.55
2*	CRUDE MATERIALS, INEDIBLE, EXCEPT FUELS	22.38	35.17
32	Coal, coke and related fuels	0.05	0.02
33	Petroleum and petroleum products	140.69	123.72
34	Gas	1.62	1.40
3*	MINERAL FUELS, LUBRICANTS AND RELATED MATERIALS	142.41	125.14
41	Animal oils and fats, unprocessed	0.48	0.40
42	Vegetable oils and fats, unprocessed	1.89	2.08
43	Animal and vegetable oils and fats, processed and waxes of animal or vegetable origin	0.03	0.04
4*	ANIMAL AND VEGETABLE OILS AND FATS	2.40	2.52
51	Chemical elements and compounds	8.33	9.12
52	Mineral tar and crude chemicals obtained from coal, petroleum and natural gas	0.08	4.68
53	Dyeing, tanning and colouring materials	6.20	8.79
54	Medicinal and pharmaceutical products	8.62	13.26
55	Essential oils and perfume materials, toilet, polishing and cleaning preparations	12.48	20.22
56	Fertilizers, manufactured	15.87	15.64

Appendix Table A-1-3 (continued) (M$ million)

	Commodity Section/Division	1975	1977
57	Explosives	1.54	0.94
58	Artificial plastic materials, regenerated cellulose, artificial resins and related materials	6.15	8.15
59	Miscellaneous chemical materials and products	9.23	11.89
5*	CHEMICALS AND PRODUCTS OF CHEMICALS INDUSTRIES	68.50	92.69
61	Leather, leather manufactures not elsewhere specified, dressed furs and parts of footwear and saddlery of any material	0.04	0.05
62	Rubber manufactures not elsewhere specified	8.32	11.25
63	Wood or cork manufactures, not elsewhere specified or included	2.01	2.91
64	Paper, paperboard and manufactures thereof	9.25	12.47
65	Textile yarn, fabrics and made-up articles related products, except clothing	21.64	23.50
66	Non-metallic mineral manufactures, not elsewhere specified or included	28.12	28.94
67	Iron and steel and alloys of iron except cerium alloys	47.04	48.02
68	Non-ferrous metals	2.73	3.43
69	Manufactures of metals	22.62	31.67
6*	MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIALS	141.77	162.24
71	Machinery other than electric but not excluding machinery driven by electric motors	74.84	176.20
72	Electric machinery, apparatus and appliances	60.77	71.04
73	Transport equipment	41.48	85.39
7*	MACHINERY AND TRANSPORT EQUIPMENT	177.09	332.63
81	Sanitary, plumbing, heating and lighting fixtures and fittings and blinds	2.42	2.74
82	Furniture	2.53	2.82
83	Travel goods, handbags and similar articles	1.16	1.80
84	Clothing	12.16	15.84
85	Footwear	7.54	8.67
86	Professional, scientific and controlling instruments, optical and photographic goods, watches and clocks	5.73	8.00
89	Miscellaneous manufactured articles	14.81	20.64
8*	MISCELLANEOUS MANUFACTURED ARTICLES	49.95	60.51
91	Postal packages	15.23	14.64
93	Special transactions	9.01	3.48
94	Live animals not commonly used for food	0.02	0.01
95	Weapons except military	0.02	0.02
96	Unissued coins	0.94	1.69
97	Gold	-	0.99
9*	TRANSACTIONS AND COMMODITIES NOT ELSEWHERE SPECIFIED	25.22	20.83
**	TOTAL OF IMPORT	850.91	1,117.56

Appendix Table A-1-4 DISTRIBUTION OF POPULATION BY AGE-GROUP, 1970, SARAWAK

Age-group	Urban		Rural		Total	
	Number	(%)	Number	(%)	Number	(%)
0 - 4	21,890	(14.5)	141,976	(17.2)	163,866	(16.8)
5 - 9	21,172	(14.0)	143,733	(17.4)	164,905	(16.9)
10 - 14	20,190	(13.3)	101,124	(12.3)	121,314	(12.4)
15 - 19	19,896	(13.2)	79,849	(9.7)	99,745	(10.2)
20 - 24	14,851	(9.8)	61,253	(7.4)	76,104	(7.8)
25 - 29	11,172	(7.4)	52,966	(6.4)	64,138	(6.6)
30 - 34	9,023	(6.0)	44,937	(5.4)	53,960	(5.5)
35 - 39	7,170	(4.7)	41,440	(5.0)	48,610	(5.0)
40 - 44	6,001	(4.0)	36,286	(4.4)	42,287	(4.3)
45 - 49	4,680	(3.1)	30,987	(3.8)	35,667	(3.6)
50 - 54	4,248	(2.8)	29,500	(3.6)	33,748	(3.5)
55 and Over	10,844	(7.2)	61,081	(7.4)	71,925	(7.4)
Total	151,137	(100.0)	825,132	(100.0)	976,265	(100.0)

Appendix Table A-1-5 LABOUR FORCE DISTRIBUTION BY INDUSTRIAL SECTOR, 1970 SARAWAK

(%)

	Malay	Melanau	Iban	Land Dayak	Other Indigenous	Chinese	Others	Total
Agriculture, Forestry and Fishery	21.9	26.4	61.0	48.6	55.7	11.2	10.2	34.4
Mining and Quarrying	0.3	0.1	0.03	0.4	0.4	0.2	0.2	0.2
Manufacturing	6.6	10.2	6.1	5.2	3.6	8.7	8.8	7.1
- agricultural products requiring substantial processing	3.0	4.2	5.4	4.9	2.8	3.7	6.9	4.2
- others	3.6	6.0	0.7	0.3	0.8	5.0	1.9	2.9
Building and Construction	0.8	0.6	0.2	0.4	0.2	1.9	1.5	0.9
Commerce	2.9	1.9	0.4	0.6	0.7	9.3	6.8	3.8
- transport/storage/communication	1.5	0.5	0.1	0.2	0.2	2.1	2.2	1.0
- others	1.4	1.4	0.3	0.4	0.5	7.2	4.7	2.8
Services	11.9	4.0	2.4	4.6	3.0	8.2	21.9	6.4
- electricity/gas/water/sanitary services	0.5	0.2	0.1	0.1	0.1	0.2	0.8	0.2
- others	11.4	3.8	2.3	4.5	2.9	8.0	21.1	6.2
Industry not adequately described	3.5	2.5	3.0	7.5	3.8	4.5	4.2	4.0
Total Experienced Labour Force	47.9	45.7	73.1	67.3	67.4	44.0	53.6	56.8
Not working but looking for first job	1.4	1.0	0.8	0.6	0.5	1.7	1.5	1.2
Total Labour Force	49.3	46.7	73.9	67.9	67.9	45.7	55.1	58.0
Not in Labour Force	50.7	53.3	26.1	32.1	32.1	54.3	44.9	42.0
Grand Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Appendix Table A-1-6 LABOUR FORCE DISTRIBUTION BY OCCUPATIONAL SECTOR, 1970 SARAWAK

(%)

	Malay	Melanau	Iban	Land Dayak	Other Indigenous	Chinese	Others	Total
Professional, Technical & Related Workers	1.5	1.3	0.7	1.2	1.0	2.8	10.8	1.7
Administrative & Managerial Workers	0.2	0.1	0.1	0.03	0.1	0.7	1.1	0.3
Clerical & Related Workers	2.2	0.9	0.4	0.6	0.5	3.4	3.1	1.7
Sales Workers	0.9	0.8	0.2	0.4	0.3	6.0	3.7	2.2
Service Workers	6.3	1.3	1.1	2.4	1.0	3.0	6.8	2.8
Agricultural, Animal Husbandry & Forestry Workers, Fishermen & Hunters	25.0	31.6	66.4	53.2	58.2	14.3	16.5	38.5
Production & Related Workers, Transport Equipment Operators & Labourers	8.3	7.2	1.2	1.9	2.4	9.3	7.4	5.6
Occupation not adequately Described	3.5	2.5	3.0	7.5	3.9	4.5	4.2	4.0
Total Experienced Labour Force	47.9	45.7	73.1	67.2	67.4	44.0	53.6	56.8
Not Working but looking for first job	1.3	1.0	0.8	0.7	0.5	1.7	1.5	1.2
Total Labour Force	49.2	46.7	73.9	67.9	67.9	45.7	55.1	58.0
Not In Labour Force	50.8	53.3	26.1	32.1	32.1	54.3	44.9	42.0
Grand Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Appendix Table A-1-7 PRODUCTION OF SAWLOGS, 1976

Timbers	Section				: Tons/CF	
	Kuching	Sibu	Bintulu	Miri	Total	(%)
Belian	330	1,103	4,511	2,258	8,202	(0.3)
Others, Class A	4	106	20	14	144	(0.0)
Ramin	162,170	75,655	51,497	90,694	380,016	(15.5)
Class C	14,456	73,969	89,290	318,996	496,711	(20.2)
Class D	107,801	74,000	131,808	220,740	534,349	(21.7)
Alan	113,924	102,600	16,295	353,371	586,190	(23.9)
Others, Class E	94,757	175,777	107,216	74,256	452,006	(18.4)
Total	493,442	503,210	400,637	1,060,329	2,457,618	(100.0)
(%)	(20.1)	(20.5)	(16.3)	(43.1)	(100.0)	

Appendix Table A-1-8 SAWMILL OPERATION IN SARAWAK, 1976 1/

Section	Number of mills				Average Monthly Labour Employment					Timber Conversion		Recovery Rate
	Vertical Bandmill	Horizontal Bandmill	Circular Saw	Total	Chinese	Iban	Malay	Others	Total	Input (Hoppus Tons)	Output (Cubic Tons)	%
Kuching	3	17	14	34	583	509	602	72	1,766	207,455.77	98,519.47	47.49
Sibu	14	15	5	34	733	336	486	277	1,832	158,693.00	86,058.48	54.23
Bintulu	11 2/	1	11 3/	21	81	43	89	6	219	62,466.67	24,621.18	39.41
Miri	13	2	16	31	333	288	259	68	948	112,920.68	46,491.22	41.17
Total	39	35	46	120	1,730	1,176	1,436	423	4,765	541,536.12	255,690.35	47.22

Source: Annual Report of the Forest Department, 1976

1/ The input-output statistics of Sarawak Woodchip Co. Sdn. Bhd. (Factory) is not included in the above Table. The input was 228,449.5 metric tons and its output was 159,515.0 metric tons. The recovery rate was 70%.

2/ Includes 3 Belian Sawmills

3/ Includes 8 Belian Sawmills

Appendix Table A-1-9 EXPORT OF TIMBER BY PORT OF CLEARANCE

Tons/CF

Port of Clearance	Sawn Timber		Round Timber		Total	
	1975	1976	1975	1976	1975	1976
Kuching	274	357	34,821	71,860	35,095	72,217
Sibu	6,166	1,268	3,351	20,629	9,517	21,897
Tg. Mani	148,899	191,774	187,840	423,718	336,739	615,492
Bintulu	1,263	1,002	99,871	237,828	101,134	238,830
Miri	10,621	6,392	299,598	800,266	310,219	806,658
Marudi	2,548	2,207	-	-	2,548	2,207
Limbang	344	414	39,784	47,854	40,128	48,268
Lawas	569	72	10,612	15,575	11,181	15,647
Sundar	139	0	21,112	20,862	21,251	20,862
Total	170,823	203,486	696,989	1,638,592	867,812	1,842,078

Appendix Table A-1-10 EXPORTS OF TIMBER

Year	Round Timber						Sawn Timber					
	Ramin	Meranti	Other Non-Conifer Wood	Conifer Wood	Total (000 Tons/CF)	Export Value (M$ million)	Ramin	Meranti	Other Non-Conifer Wood	Conifer Wood	Total (000 Tons/CF)	Export Value (M$ million)
1965	62.5	131.6	476.3	4.2	672.6	47.3	170.3	10.3	10.7	0.5	191.8	35.2
1966	100.3	303.6	667.0	0.3	1,071.2	82.5	142.3	3.4	10.9	0.0	156.6	26.3
1967	89.0	480.2	673.2	0.7	1,243.1	99.8	176.3	4.9	13.1	0.0	194.3	36.2
1968	87.5	563.2	1,004.5	0.7	1,655.9	138.7	198.7	4.6	16.3	0.0	219.6	42.4
1969	41.0	743.9	911.2	1.2	1,697.3	143.4	199.6	4.1	11.4	0.1	215.2	43.2
1970	18.4	661.0	1,053.2	0.3	1,732.9	148.4	207.1	4.0	11.0	0.0	222.1	49.8
1971	1.3	573.6	836.9	0.2	1,412.0	120.8	184.0	4.1	11.0	-	199.1	47.1
1972	-	333.3	769.3	4.8	1,107.4	83.5	186.9	5.1	22.7	0.0	214.7	50.9
1973	0.9	242.2	800.4	6.4	1,049.9	123.9	161.7	6.9	13.0	0.0	181.6	87.0
1974	-	197.2	733.9	3.4	934.5	108.2	128.2	5.2	18.0	0.5	151.9	57.7
1975	0.3	210.1	485.9	0.7	697.0	63.7	147.3	3.9	19.4	0.3	170.9	62.2
1976	-	450.6	1,181.7	6.3	1,638.6	242.1	187.8	3.6	11.6	0.5	203.5	117.0

Appendix Table A-2-1 POPULATION DISTRIBUTION BY RACE, 1970

Race	Sarawak		4th Div.		5th Div.	
	Number	(%)	Number	(%)	Number	(%)
Malay	182,709	(18.7)	17,371	(12.8)	12,713	(34.6)
Melanau	53,234	(5.5)	7,837	(5.8)	66	(0.2)
Sea Dayak (Iban)	302,984	(31.1)	47,544	(35.0)	4,734	(12.9)
Land Dayak (Bidayuh)	83,276	(8.5)	645	(0.5)	90	(0.2)
Other Indigenous 1/	49,960	(5.1)	27,144	(20.0)	13,747	(37.4)
Chinese	294,020	(30.1)	34,230	(25.1)	5,131	(14.0)
Others	9,735	(1.0)	1,147	(0.8)	250	(0.7)
TOTAL	975,918	(100.0)	135,918	(100.0)	36,731	(100.0)

Source; Sarawak Annual Statistical Bulletin, 1976

1/ Including Bisayas, Kedayans, Kayans, Kelabits, Dusun etc.

Race	Miri Sub-dist.		Niah-Suai-Siburti Sub-dist.		Baram Dist.		Limbang Dist.	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Malay	9,311	(26.1)	3,334	(15.2)	2,255	(5.7)	5,941	(30.0)
Melanau	1,561	(4.4)	606	(2.7)	135	(0.3)	47	(0.2)
Sea Dayak(Iban)	2,722	(7.6)	10,554	(48.0)	11,940	(30.2)	4,551	(23.0)
Land Dayak(Bidayuh)	264	(0.7)	34	(0.2)	43	(0.1)	55	(0.3)
Other Indigenous	1,039	(2.9)	4,219	(19.2)	19,628 2/	(49.7)	5,982 1/	(30.2)
Chinese	20,059	(56.2)	3,178	(14.4)	5,361	(13.6)	3,167	(16.0)
Others	746	(2.1)	61	(0.3)	146	(0.4)	64	(0.3)
TOTAL	35,702	(100.0)	21,986	(100.0)	39,508	(100.0)	19,807	(100.0)

Source; 1970 Census of Population and Housing, Dept. of Statistics

1/ Including Bisayas (2,827), Kedayans (2,267), Murut (482) and Kelabit/Tabun (453).

2/ Including Kayan (6,936), Kenyah (6,587), Kelabit (2,003), Penan (2,221), etc.

Appendix Table A-2-2 KAMPONGS WITH THE POPULATION OF 500 AND MORE IN BARAM DISTRICT, 1977/1978

Name of Kampong	Population 1977	Population 1978	Race 1/
Lubok Nibong	n.a.	1,290	Ma/CH
Sg. Selipin	533	600	I/mixed
Lg. Pilah	702	702	KN
Lg. Miri	539	539	KN
Lg. Laput	713	713	KN
Lg. Bemang	944	1,044	KN
Lg. Terawan	614	614	Ky
Lg. Atip	624	624	KN
Lg. Bedian	578	578	Ky
Lg. Jee	587	587	Ky
Lg. Moh	651	651	Ky

1/ Ma; Malay, CH; Chinese, KN; Keniah, Ky; Kayan, I; Iban

Appendix Table A-2-3 ESTIMATED FUTURE POPULATION BY DIVISION

Division	Population 1977	1982	1987	1992	2002	Annual Growth Rate (%) 77-82	82-92	92-02
First Div.	430,670 (37.1)	501,959 (38.2)	581,561 (39.4)	673,113 (40.5)	890,233 (42.6)	3.11	2.98	2.84
Second Div.	157,758 (13.6)	174,044 (13.3)	190,834 (12.9)	209,022 (12.6)	247,564 (11.8)	1.98	1.85	1.71
Third Sixth Seventh Div.	359,713 (31.0)	391,446 (29.8)	423,558 (28.7)	457,810 (27.5)	528,024 (25.3)	1.71	1.58	1.44
Fourth Div.	169,276 (14.6)	197,774 (15.1)	229,694 (15.5)	266,500 (16.0)	354,177 (17.0)	3.16	3.03	2.89
Fifth Div.	42,507 (3.7)	47,125 (3.6)	51,925 (3.5)	57,153 (3.4)	68,359 (3.3)	2.08	1.95	1.81
TOTAL	1,159,924 (100.0)	1,312,348 (100.0)	1,477,572 (100.0)	1,663,598 (100.0)	2,088,357 (100.0)	2.50	2.40	2.30

Appendix Table A-2-4 EXPORTS OF AGRICULTURAL PRODUCTS BY PORT IN THE STUDY AREA

Tons

	Miri		Marudi		Limbang	
Commodity	1976	1977	1976	1977	1976	1977
Rubber	664	1,023	718	531	552	659
White Pepper	999	1,122	102	53	3	5
Black Pepper	112	214	54	61	11	53
Sago Flour	2	2	-	-	-	-
Coconut Oils	1,042	767	18	1	-	-
Total	2,819	3,128	892	646	566	717

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	1. UINEI PUTEH	2. KUALA TINJAR
Area (Acre)	3,400. The area could possibly be extended east into the Buang River system. Acreage under primary forest: 4,300 Acreage under title: nil.	9,700. The area could be extended down the Baram River slightly. Acreage under primary forest: 5,000. Some is possible old secondary forest. Acreage under title: 313
Dominant Topography	Low to moderately high and steep ridges and hills of Terrain Classes 4 and 6. Slope facets of Terrain Class 8 are common and small areas of Terrain Class 1 probably occur in places.	Flat to gently sloping alluvial basins of Terrain Class 1.
Main Soils	The Nyalau Family of soils is dominant in hill areas, with subordinate Merit Family soils in places. River levees contain Semilajau soils and river basins Malang soils.	The Bijat Family of soils is dominant except on the levees of main rivers and ox-bow lakes where Malang soils occur. Patches of Anderson Family peat, both at the surface and beneath the clay soils may be present in the Tasong area.
Present Cultivation	Mainly hill rice, some swamp rice and seedling rubber close to rivers.	Mainly swamp and hill rice; scattered fruit and vegetable gardens near villages; small patches of seedling rubber close to rivers.
Main Hazards	Low soil fertility and strong risk of gully erosion with Nyalau soils on slopes exceeding 15-20, areas which should be avoided where possible.	Periodic flooding and the presence of deep peat.
Land Suitability	Many small hill areas are too steep for agriculture; large areas are marginal; alluvial valleys and low hills are the most suitable for agriculture. A semi-detailed soil survey would be necessary to delimit the small areas of steep land with shallow soils.	Most is suitable for the cultivation of mainly irrigated crops; the patches of deep peat, are unsuitable for cultivation and are probably most common in the Tasong area. A thorough appreciation of the flooding, drainage and irrigation problems is required before development.

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	3. KUALA TUTOH	4. KUALA PEKING	5. IKANG
Area (Acre)	6,300. The area could be extended considerably up the Tutoh River. Acreage under primary forest: 300. Some is possible old secondary forest. Acreage under title: 279.	5,700. There is little scope for extension. Acreage under primary forest: 2,000. Small areas are possibly old secondary forest. Acreage under title: nil.	7,500. The area could be extended up the Baram River considerably. Acreage under primary forest: 200. Small areas are possibly old secondary forest. Acreage under title: nil.
Dominant Topography	Flat to gently sloping alluvial land of Terrain Class 1.	Flat to gently sloping alluvial land of Terrain Class 1.	Flat to undulating alluvial land of Terrain Class 1.
Main Soils	Bijat and Malang Family soils are dominant with possibly small patches of surface peat, and sandy levee soils of the Semilajau Family.	Bijat family soils are dominant with the possibility of shallow surface peat and deep peat beneath shallow clay south of the Peking River.	Bijat and Malang family soils are dominant, the latter on river banks and close to streams. Patches of Anderson Family peat soils may occur, particularly close to swamp margins.
Present Cultivation	Mainly swamp and hill rice; scattered fruit and vegetable gardens near villages; a few small seedling rubber gardens close to rivers.	Mainly swamp rice and small scattered seedling rubber gardens close to rivers.	Mainly swamp rice with vegetable, fruit and rubber gardens adjacent to rivers.
Main Hazards	Periodic flooding.	Periodic flooding.	Periodic flooding.
Land Suitability	Most is suitable for cultivation, partly of irrigated crops, partly for dry land crops. A through appreciation of the flooding, drainage and irrigation problems is required before development.	Most land is suitable for the cultivation of irrigated crops. Areas south of the Peking River may be marginal or unsuitable due to the presence of peat. A through appreciation of the flooding, drainage and irrigation problems is required before development.	Most land is suitable of cultivation, partly of irrigated crops, partly of dry land crops. There are possibly patches of peat unsuitable for cultivation. A through appreciation of the flooding, drainage and irrigation problems is required before development.

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	6. IERU	7. PEKING	8. SAIN-LAMA
Area (Acre)	3,000. The area could be extended west considerably into the upper Kerap River. Acreage under primary forest: 400. Some is possibly old secondary forest. Acreage under title: nil.	10,000. There is a little scope for extension of the block onto low hills on all margins. Acreage under primary forest: 5,000. Acreage under title: nil.	21,700. The area could be extended onto rather high hill land mainly in the south. Acreage under primary forest: 11,500. Acreage under title: nil.
Dominant Topography	Flat to gently sloping alluvial land of Terrain Class 1.	Low to moderately high, gentle to steeply sloping hills. Small slope facets of Terrain Class 8 are probably common.	Low to moderately high hills and ridges with gentle to steep slopes of Terrain Classes 4 and 6. Many small slope facets occur of Terrain Class 8.
Main Soils	Bijat soils are dominant with subordinate Mukah, and probably Anderson family peat, in places.	Merit Family soils are dominant with subordinate Malang, Bijat and Anderson soils in small valleys.	Merit family clayey soils are dominant, with locally Nyalau soils and Merit soils with sandy upper subsoils. Small valleys contain Malang and Bijat family soils with a few patches of Anderson Family peat.
Present Cultivation	Mainly swamp rice and a few seedling rubber gardens close to rivers.	Mainly hill rice, and seedling rubber gardens close to villages.	Largely hill rice with a few small seedling rubber gardens close to villages.
Main Hazards	Periodic flooding and the presence of deep peat close to swamp margins.	Low to moderately high, gently to steeply sloping hills. Small slope facets of Terrain Class 8 are probably common.	Low soil fertility and sheet and gully erosion on unprotected steep slopes. Shallow soils in places.
Land Suitability	Much land is suitable for the cultivation of irrigate crops mainly; patches of unsuitable deep peat may be present. A through appreciation of the flooding, drainage and irrigation problems is required before development.	Most of this block is thought to be suitable, or in places marginal for the cultivation of dry land, annual or perennial crops.	Most of this block is thought to be suitable for the cultivation of dry land, annual and perennial crops, although many small patches may be marginal or unsuitable due to steep slopes and shallow soils.

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	9. SELEMEN-ARON	10. MALOI-TABIH
Area (Acre)	8,600. There is little extra hill land available but much alluvial land adjacent to the Baram River. Acreage under primary forest: 2,400. Acreage under title: nil.	7,500. The area could be extended slightly on to higher hill land mainly to the south. Acreage under primary forest: 6,800. Acreage under title: nil.
Dominant Topography	Low to moderately high, gentle to steep hills and ridges of Terrain Class 4 and 6. Many small slope facets of Terrain Class 8 occur.	Low to moderately high, gentle to steep hills and ridges of Terrain Classes 4 and 6. Many small slope facets of Terrain Class 8 occur and patches of Terrain Class 7 may be common.
Main Soils	Merit Family soils are dominant with subordinate Ryalar soils mainly on the crests of high ridges. Malany and Bijat soils have been noted in small valleys.	Merit Family soils are probably dominant with Nyalau soils being confined largely to the higher ridges. Valleys contain both Semilajau and Malany soils and on the northern margin Anderson Family peat occupies some valleys.
Present Cultivation	Mainly hill rice with wadding rubber gardens close to villages.	Mainly hill rice and rubber. In the Tabih (Bawang) area E.F.S.'A' rubber has been planted successfully.
Main Hazards	Low soil fertility and sheet and gully erosion in unprotected steep slopes. Shallow soils in places.	Low soil fertility and sheet and gully erosion on steep slopes. Shallow soils in places.
Land Suitability	Most of the block is thought to be suitable for the cultivation of dry land, annual and perennial crops, although many small patches may be marginal of unsuitable due to steep slopes and shallow soils.	Much of the block is thought to be suitable or marginal for the cultivation of dry land, perennial and annual crops; small areas are likely to be unsuitable due to steep slopes and shallow soils. A semi-detailed survey may be necessary to delimit the worst areas.

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	11. TERAWAN-WEST	12. TERAWAN-EAST
Area (Acre)	3,300. There is a little scope for extension on the northern margins onto hill land, possibly containing poor terrace soils and alluvial land. Acreage under primary forest: 2,900. Timber is being extracted in the north. Acreage under title: nil.	2,500. It may be possible to extend the area eastwards onto higher hills and westwards onto alluvial land. Acreage under primary forest: 2,400. Acreage under title: nil.
Dominant Topography	Moderately high to high, moderately steep to steep ridges of Terrain Class 6 occur in the north. Dissected, rather lower hills of Terrain Classes 4 and 6 occupy the southern parts. Slope facets of Terrain Class 8 are probably most common in the ridges to the north.	Low to moderately high hills and ridges with gentle to steep slopes of Terrain Classes 4 and 6. Slope facets of Terrain Class 8 may be common.
Main Soils	Mixed Merit and Nyalau family soils occur and possibly gravelly Sabangang soils in the north. The Nyalau members are confined mainly to high ridges. Minor patches of deep peat occur in marginal valleys.	Mixed Merit-Nyalau family soils are dominant with long narrow belts of Malany and Semilajau soils in few valleys.
Present Cultivation	Mainly hill rice in the north.	A small patch of land is cultivated for hill rice in the north.
Main Hazards	Low soil fertility, sheet and gully erosion on higher steep hills and ridges and shallow soils.	Low soil fertility, sheet and gully erosion on high steep hills and shallow soils.
Land Suitability	Much of the land is marginal to suitable for the cultivation of dry land, perennial and annual crops. There are probably many small areas of unsuitable land on steep slopes. A semi-detailed soil survey may be necessary to delimit the worst areas.	Much of the land is marginal or suitable for the cultivation of dry land annual and perennial crops. A semidetailed soil survey may be necessary to delimit the worst areas.

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	13. GAE	14. BEREI SELAMAT-WEST	15. BEREI SELAMAT-EAST
Area (Acre)	3,600. It may be possible to extend the area north and south into higher hills. Acreage under primary forest: 3,400. Part of the area is being exploited for timber. Acreage under title: nil.	7,200. There is little scope for expansion of this area. Acreage under primary forest: 6,100. Acreage under title: nil.	1,500. There is little scope for extending this block. Acreage under primary forest: nil. Acreage under title: nil.
Dominant Topography	Low to moderately high hills and ridges with gentle to steep slopes of Terrain Classes 4 and 6. There are probably many slope facets of Terrain Class 8 and small areas of Terrain Class 7.	Low to moderately high hills and ridges with gentle to steep slopes in Terrain Classes 4 and 6. Many slope facets of Terrain Class 8 occur and there may be some hills of Terrain Class 7.	Low to moderately high, gentle to steep hills and ridges of Terrain Classes 4 and 6. Many slope facets of Terrain Class 8 occurs.
Main Soils	Mixed Merit and Nyalau family soils with Bijat and Malany soils in the valleys.	Merit family soils are dominant. Small valleys on margins contain Anderson Family peat.	Merit Family soils are thought to occur throughout the area with subordinate Kapit soils on steep slopes.
Present Cultivation	nil.	Part of the area is planted with hill rice to the west.	nil.
Main Hazards	Low soil fertility, sheet and gully erosion on steep slopes and shallow soils.	Low soil fertility, sheet erosion on unprotected steep slopes and shallow soils.	Low soil fertility, erosion on unprotected steep slopes and shallow soils.
Land Suitability	Much of the land is marginal or suitable for the cultivation of dry land perennial and annual crops. Many small areas consist of slopes too steep for cultivation. A semi-detailed soil survey may be required for the delimitation of the worst areas.	Most of this block is considered to be suitable for agriculture although many small areas of marginal and unsuitable land occurs, mainly on steep slopes.	Most of the land is marginal to suitable of the cultivation of dry land, perennial and annual crops. Further field investigations may prove that the steep land is extensive.

Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	16. ULU TERAWAN	17. ULAT-NORTH	18. ULAT-SOUTH
Area (Acre)	2,200. Extensions to this block might be made to the north on alluvial and/or peat land. Acreage under primary forest: nil. Acreage under title: nil.	1,200. It may be possible to extend this area north to higher hill land. Acreage under primary forest: nil. Acreage under title: nil.	2,000. It may be possible to extend this block north among higher hill land. Acreage under primary forest: 200. Acreage under title: nil.
Dominant Topography	Flat alluvial land.	Low to moderately high, gentle to steep hills and ridges of Terrain Classes 4 and 6. Many slope facets of Terrain Class 8 occur.	Low to moderately high hills and ridges with gentle to steep slopes in Terrain Classes 4 and 6. Many slope facets of Terrain Class 8 occur and there may be some hills of Terrain Class 7.
Main Soils	It is thought that Bijat and Malang family soils are dominant but it is possible that many parts contain deep surface peat or peat beneath shallow clay.	Merit Family soils are thought to be dominant probably with Malang and Bijat soils in the small valleys.	Merit Family soils are dominant. Small valleys on the margins contain Anderson Family peat.
Present Cultivation		nil.	nil.
Main Hazards	Periodic flooding and presence of deep peat.	Low soil fertility, sheet erosion on unprotected steep slopes and shallow soils.	Low soil fertility, sheet erosion on unprotected steep slopes and shallow soils.
Land Suitability	Land suitable for the cultivation of irrigated crops is probably dominant, although the possible presence of much peat unsuitable for cultivation must not be discounted. A semi-detailed survey would be required to delimit the unsuitable land, and a through appreciation of the flooding, drainage and irrigation problems is required before any development takes place.	Most of the land is marginal to suitable for the cultivation of dry land, perennial and annual crops. Further field investigations may prove that the steep land is extensive.	Most of this block is considered to be suitable for agriculture although many small areas of marginal and unsuitable land occur, mainly on steep slopes.

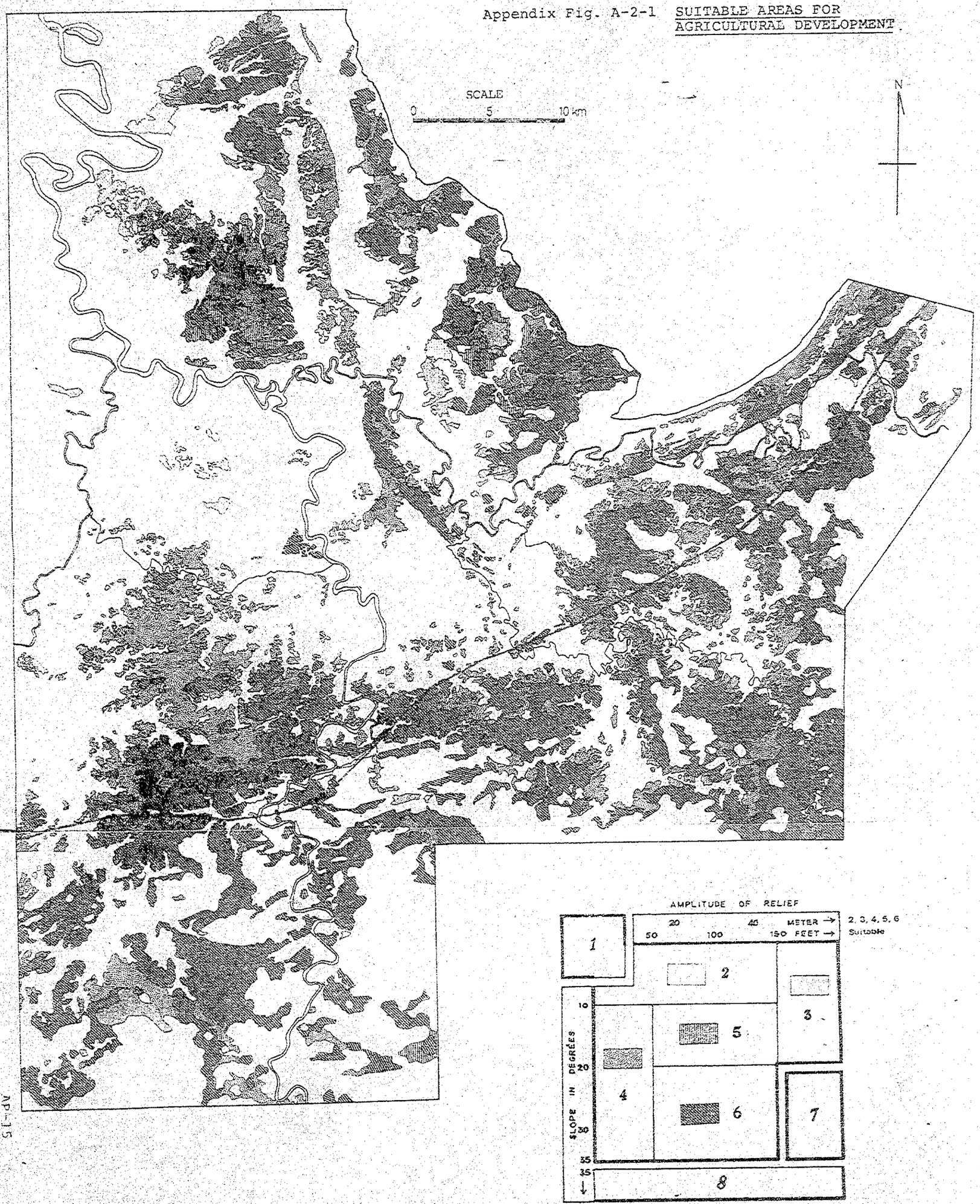
Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	19. BEMAMU	20. LAHAI
Area (Acre)	3,600. It may be possible to extend this block southwards among higher hill land. Acreage under primary forest: nil. Acreage under title: nil.	4,000. This block could probably be extended to the east and south among higher hill land if necessary. Acreage under primary forest: nil (*). Acreage under title: nil.
Dominant Topography	Low to moderately high, gentle to steep hills and ridges of Terrain Classes 4 and 6. Many small slope facets of Terrain Class 8 occur and patches of Terrain Class 7 may be present.	Low to moderately high, gentle to steep hills and ridges of Terrain Classes 4 and 6. Many small slope facets of Terrain Class 8 occur and patches of Terrain Class 7 may be present.
Main Soils	Merit Family soils are thought to be dominant with Anderson Family peat and Malang and Bijat soils in the valley on the margins.	Merit Family soils are dominant with subordinate Nyalau soils in a few places on the higher ridges.
Present Cultivation	Small areas in the north are in use for hill rice cultivation.	It is probable that small parts are used for hill rice cultivation (none in 1951 air photographs).
Main Hazards	Low soil fertility and sheet and gully erosion on steep slopes. Shallow soils in places.	Low soil fertility and sheet and gully erosion on steep slopes. Shallow soils in places.
Land Suitability	Much of the block is thought to be suitable or marginal for the cultivation of dry land, perennial and annual crops; small areas are likely to be unsuitable due to steep slopes and shallow soils. A semi-detailed survey may be necessary to delimit the worst areas.	Much of the block is thought to be suitable or marginal for the cultivation of dry land, perennial and annual crops; small areas are likely to be unsuitable due to steep slopes and shallow soils. A semi-detailed survey may be necessary to delimit the worst areas.

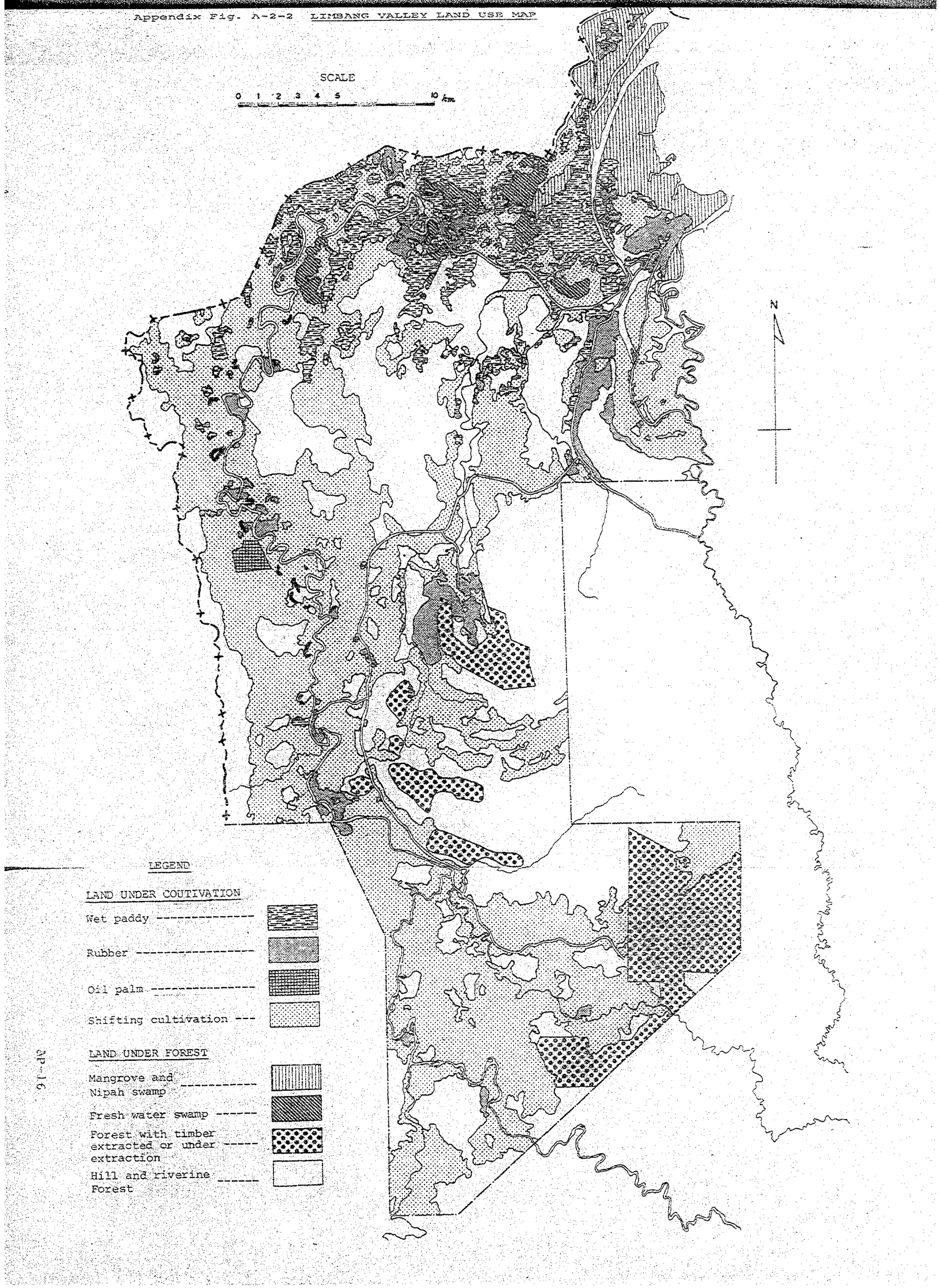
Appendix Table A-2-5 DESCRIPTION OF AGRICULTURAL POTENTIAL AREA

Block	21. NYALIN	22. ATIP	23. MELAKA
Area (Acre)	14,500. Extensions to this block could probably be made to the south and possibly to the west among higher hills. Acreage under primary forest: 7,300. Acreage under title: nil.	1,400. Extensions to this block can only be made into alluvial land on the margins. Acreage under primary forest: 100. Acreage under title: nil.	1,500. Slight extensions to this block can be made to the east. Acreage under primary forest: 200. Acreage under title: nil.
Dominant Topography	Low to moderately high, gently to steep hills and ridges of Terrain Classes 4 and 6. Many small slope facets of Terrain Class 8 occur and patches of Terrain Class 7 may present.	Low to moderately high, gentle to moderately steep hills of Terrain Class 4. Slope facets of Terrain Class 8 are few.	Low to moderately high hills and ridges with gentle to steep slopes in Terrain Classes 4 and 6. Many slope facets of Terrain Class 8 occur and there may be some hills of Terrain Class 7.
Main Soils	Merit Family soils are dominant, and Nyalau Family soils are thought to occur also in the west, mainly in higher hills. Small valleys contain Malang and Bijat soils mainly.	Merit soils are dominant with subordinate Bijat and Mukah soils in the common minor valleys.	Merit Family soils are dominant, in places Kapit Family soils occur.
Present Cultivation	Parts in the east are used for hill rice cultivation. Small fruit, coffee and rubber gardens, some R.P.S.'A', are located near rivers.	Almost wholly hilly rice.	Mainly hill rice cultivation, with fruit, coffee and seedling rubber gardens close to rivers.
Main Hazards	Low soil fertility and sheet and gully erosion on steep slopes. Shallow soils in places.	Soil fertility, sheet erosion on unprotected steep slopes and shallow soils.	Low soil fertility, sheet erosion on unprotected steep slopes and shallow soils.
Land Suitability	Much of the block is thought to be suitable or marginal for the cultivation of dry land, perennial and annual crops; small areas are likely to be unsuitable due to steep slopes and shallow soils. A semi-detailed survey would be necessary to delimit the worst areas.	Most of this block is considered to be suitable for cultivation of dry land, perennial and annual crops. Small patches of marginal land may occur where there are steep slopes.	Much of this block is considered to be marginal to suitable for cultivation. Many small areas may be unsuitable due to steep slopes. A semi-detailed soil survey would be required to delimit the worst areas.

Appendix Fig. A-2-1 SUITABLE AREAS FOR AGRICULTURAL DEVELOPMENT



Appendix Fig. A-2-2 LIMBANG VALLEY LAND USE MAP



Appendix Table A-2-6 HILL TIMBER PRODUCTION, 1977

000HT

Species	Fourth Div.			Fifth Div.		
	Export	Sawmill	Total	Export	Sawmill	Total
Meranti	366.9	1.9	368.8	61.0	1.8	62.8
Ranggu	4.9	neg.	4.9	neg.	-	neg.
Kapor	83.8	1.2	85.0	11.8	0.8	12.6
Keruing	44.9	1.5	46.4	7.9	0.4	8.3
S. Batu	35.5	1.2	36.7	1.0	0.6	1.6
Resak	0.5	0.1	0.6	neg.	-	neg.
Sepetir	8.4	0.1	8.5	neg.	-	neg.
Medang	1.4	0.1	1.5	neg.	-	neg.
Bindang	0.1	-	0.1	10.4	-	10.4
Kerukup	neg.	-	neg.	neg.	-	neg.
Others	76.3	1.1	77.4	2.0	neg.	2.0
Total	622.7	7.2	629.9	94.1	3.6	97.7

Source; Forest Department Annual Report, 1977, Miri Section

Appendix Table A-2-7 SWAMP TIMBER PRODUCTION

000HT

Species	Fourth Div.			Fifth Div.		
	Export	Sawmill	Total	Export	Sawmill	Total
Ramin	-	60.2	60.2	-	4.9	4.9
Jongkong	1.3	neg.	1.3	2.6	neg.	2.6
Sepetir	29.6	0.8	30.4	0.2	neg.	0.2
Medang	0.5	neg.	0.5	neg.	neg.	neg.
Semayur	0.4	neg.	0.4	-	-	-
Kerukup	4.0	1.5	5.5	neg.	-	neg.
Alan	312.8	38.2	351.0	-	-	-
Meranti	2.8	0.1	2.9	0.5	-	0.5
Kapor	7.1	0.7	7.8	0.2	-	0.2
Others	26.4	1.1	27.5	0.7	0.1	0.8
Total	384.9	102.6	487.5	4.2	5.0	9.2

Source; Forest Department Annual Report 1977, Miri Section