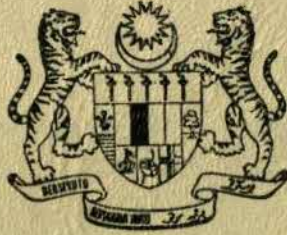


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LAND CAPABILITY CLASSIFICATION REPORT PERLIS

GOV. OF MALAYSIA

TECHNICAL SUB-COMMITTEE
ON
LAND CAPABILITY CLASSIFICATION

ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT
MALAYSIA

FEBRUARY, 1970

LAND CAPABILITY CLASSIFICATION REPORT
PERLIS STATE

Prepared from Land Alienation and Gazettement, Land Use and Natural Resource Survey data supplied by Federal or State Governments of Survey, Land, Mines, Agriculture, Forest, Geological Survey, Game, Orang Asli, Veterinary, Drainage and Irrigation, Public Works, and the National Electricity Board. Mechanical data processing undertaken by the Department of Statistics. Compiled under the direction of the Technical Sub-Committee on Land Capability Classification by the Natural Resource Evaluation Section, Regional Planning Division, of the Economic Planning Unit, Prime Minister's Department.

ECONOMIC PLANNING UNIT,
PRIME MINISTER'S DEPARTMENT,
MALAYSIA
1969

LAND CAPABILITY CLASSIFICATION REPORT
PERLIS STATE

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SUMMARY

This report presents a description of the natural resources of the state, an evaluation of the manner in which these resources are being allocated and used, and through the land capability classification a provisional guideline concerning their future allocation and use.

The broad pattern of future development is dictated by terrain, climate and hydrological conditions and by the present alienation and gazettelement pattern.

The study has shown that an additional 50,922 acres could be developed for agriculture. The greater part of this acreage, 37,674, can be found in the forest reserves, especially the Rimba Mas Mas and Mata Ayer forest reserves. However, caution should be used, since a large part of this acreage is class 3 soils, generally only suitable for rubber cultivation.

Mining has not been as important in Perlis as in other states of West Malaysia, but prospects for development exist. Liberal policies on prospecting are needed to promote development of the industry.

At present, 67,068 acres or about 33% of the total land area of the state are under forest. Of this acreage 51,336 acres have been gazetted as forest reserves. Taking the total area under forest about 25% is covered with forests of marginal productivity, and regenerated forests, the latter category representing areas that have been logged. The remaining acreage is covered by forests of limited potential, which under the present circumstances can be considered as non-productive. However, as these are located primarily in mountainous terrain, they are important as protection forests and also for game and recreational use.

LAND CAPABILITY CLASSIFICATION REPORT
PERLIS STATE

INTRODUCTION

1. As part of a programme of land capability classification for West Malaysia, undertaken by the Technical Sub-Committee for Land Capability Classification of the NDPC, a land capability classification study of the State of Perlis was carried out during 1968 and the early half of 1969. This report summarises the results of this study, and includes a statistical summary prepared from various maps. In addition, reduced and simplified copies of the land alienation, mineral potentiality, soil suitability, forest productivity and land capability maps are attached to this report. Copies of the original maps, in addition to the ones attached to this report, on a scale of one mile to one inch, are available in the office of the Regional Planning Division of the Economic Planning Unit. Additional information pertinent to this report can be obtained from reports published by the contributing Government Departments.

2. The main objective of this report is to provide an appraisal of the present land use pattern and the more important natural resources, and to obtain a planimetric measure of the extent of these resources. A very broad appreciation is also made of the possibilities for future natural resource use and land development, and to provide some of the data necessary for sound policy formulation. The report is not a detailed study, on the contrary, it is very broad in approach, consequently it does not present a plan of development.

3. The data and maps presented in this report reflect the land alienation and natural resource utilisation at the time of compilation. The compilation period extended throughout 1968, but data on land use and distribution of natural resources were based on interpretation of aerial photographs flown in 1966.

4. The present report covers the whole of the State of Perlis. The total area, as estimated by the summation method explained in Appendix I, is approximately 201,411 acres or 315 square miles.

PRESENT LAND UTILISATION

5. The present land use pattern in the state is presented in Table 1 and the land alienation and gazette map attached to this report. The map which is on a scale of 2 miles to one inch (1:126,720), has been compiled by reductions from larger scale maps and shows the boundaries of the more important alienation and gazette groups within the State of Perlis. The basic data was supplied by the State Survey Office. The map shows the location and extent of land alienated for agriculture, mining and urban development, and also of those areas which have been gazetted for forest, game, aborigine, malay, veterinary, or other official State or Federal use purposes. The remaining areas, indicated by blank spaces on the map, comprise the state land category.

6. This map, which reflects the legal situation and shows the boundaries of areas covered by deeds of title and gazettment notices, has been prepared for comparison with the mineral potentiality map, the soil suitability map, forest productivity map and land capability map. When making comparisons between land use and natural resources distribution, it is important to note that the land alienation map does not necessarily reflect the present use to which the land is being put. For example, some of the land alienated for agriculture may never have been developed for this purpose and still lies idle, or it may have been developed and may since have been abandoned, while other areas, particularly stateland, may be subject to illegal cultivation. Table 1 presents the estimated acreages of the land use categories shown on the alienation and gazettment map.

7. It can be seen from Table 1 that about 126,477 acres or 62.8%* of the total land area have been alienated for agriculture, 51,336 acres or 25.5% as forest reserves, 12,420 acres or 6.2% as unalienated Malay reserves and 6,624 acres or 3.3% remain as stateland. It is in these last three categories of land where land development opportunities may be found. It should be emphasised, however, that not all these unalienated lands, amounting to 70,380 acres or 35.0% of the total land area, are suitable for agricultural development and large areas are better left to productive or protective forest use, for the conservation of water catchments etc, as pointed out in a latter section of the report.

8. A more accurate picture as to how the land is being utilized can be determined from a "Present Land Use Survey". Such a survey is presently being carried out with the aid of recent aerial photography, for the States of West Malaysia. The interpretation of the photographs for the State of Perlis has presently been completed and the results have been presented in Table 1a, showing the acreages of the actual land use. It should be pointed out here that the data for Table 1a has been compiled separately by a land use survey team using a dot-grid method for area estimation resulting in small discrepancies in the area totals for the state in comparison with the area estimates prepared by the summation method explained in Appendix I.

9. A comparison between the figures for land alienated for agriculture on Table 1 and land under agricultural usage in Table 1a indicates that a smaller acreage is actually being used for agricultural purposes than has been alienated. Table 1 indicates that 126,477 acres have been alienated for agriculture while Table 1a shows that 103,603 acres are being cultivated. This tends to indicate that land alienated for agriculture has never been developed or may have been developed and since abandoned. One would also expect that some illegal cultivation is being practised, which further reduces the acreage of land alienated for agriculture which is actually being cultivated.

10. The land alienated for agriculture is predominantly used for the production of padi and rubber. The low lying areas in the extension of the Kedah Plain, which continues well into Perlis west of the railway line reaching as far North as Alor Tampan, are almost exclusively cropped with padi. With the

* For more realistic presentation purposes figures have been rounded off from those presented in the Tables.

implementation of the Muda Scheme an appreciable acreage will be double cropped, using two short term varieties. It can be seen from Table 1a that 69,782 acres or 34.7% of the total land area in the state is being used for padi production, making it the most important agricultural crop in the state.

11. Rubber is the second most important crop and is mainly produced east of the railway line and north of the Kedah Plain. The greater percentage of the rubber acreage is being produced by small holders. Further perusal of Table 1a will indicate to the reader the actual use of the land and crops grown other than rubber and padi.

12. Forest reserves occupy 51,336 acres or 25.5% of the total land area in the State of Perlis. It can be seen from the land alienation and gazette map that the areas gazetted as forest reserves are located along the Thai Border. The latest available information from the Forestry Department indicates that in 1965 the log production amounted to 1,796 tons. This total was less than in the previous years due to logging restrictions for security reasons.

13. Further perusal of Tables 1 and 1a will indicate to the reader not only the estimated acreage breakdown for the major land use categories on a State basis but also the acreage figures of the actual crops being grown.

NATURAL RESOURCES

Mineral Resources

14. Table 2 estimates the various areas of mineral potentiality categories. The same information is also shown on the mineral potentiality map, which is a reduced copy of the maps contributed by the Geological Survey.

15. The mineral potentiality classification is based on the potential of any one area for mining.

Class 1	Probable mining land as deduced from prospecting results and geological evidence.
Class 2	Areas under mining lease or certificate, or areas in which active mining is taking place.
Class 3	Possible mining land as deduced from geological evidence.
Class 4	Areas which on geological evidence might contain mineral deposits.
Class 5	Areas for which no geological or other information is available.
Class 6	Areas which on geological and other evidence are unlikely to contain economic mineral deposits.

Class 7 Non-mining land.

16. In the above classification the limits for probable mining land have been defined as land with a minimum of 0.2 kati* of cassiterite per cubic yard of the alluvium in which the ore is found as indicated by prospecting results. In the case of possible mining land the limits have been defined by extrapolations from these prospecting results, as supported by geological evidence. These areas merit further intensive prospecting. It can be seen from Table 2 that land currently under mining lease totals 3,105 acres or 1.5% acres of the total area of the state. All mining activities are concentrated in a belt running somewhat parallel west of the road from the 11th mile stone to Kaki Bukit. In this mining belt tin is being mined from deposits of cave alluvium in which cassiterite is found erratically distributed. Alluvial ilmenite, nonazite and galena at Kaki Bukit and alluvial gold at Wang Tangga are recovered as by-products of the tin-mining operations in these areas.
17. Other than the existing mining land, possible mining land representing areas which deserve prospecting and which may lead to the development of future mining areas, total approximately 2,898 acres and are located North of the belt which is presently being mined. Deposits of alluvial cassiterite can be found in these areas especially around the Sungei Bahagian Ayer, Wang Tangga, Sungei Wang Burma and the Sungei Wang Kelian. The cassiterite in these occurrences has been produced by the erosion of lodes present in the granite-sediment contact zone of the Bukit China area.
18. Numerous occurrences of hematite and limonite have been recorded, the occurrence at Kubang Tiga is the largest yet found, but is of low grade and limited tonnage. Pebbles of hematite and limonite occur at Gunong Hutan Haji, as well as in the cave alluvium at Kaki Bukit and Wang Dalam.
19. Many of the limestone caves of Bukit Chuping, Bukit Kaplu and Gunong Keriang in the centre of the state, contain deposits of bat guano, which is a valuable fertilizer. Since similar limestone hills are of common occurrence in Perlis it is likely that many more guano deposits exist, especially in the less accessible areas such as Bukit Manek, Bukit Chabang, and Bukit Rongkiah.
20. The state also has an abundance of limestone suitable for use in the manufacture of lime and cement, and for the construction of roads and buildings.
21. Further perusal of Table 2 will indicate to the reader the extent, in acreage terms, of the various potentiality categories. It can be readily seen that 95,220 acres or 47% of the entire area of the state has been classified as areas which are unlikely to contain economic deposits.

* 1 kati = 1.33 lbs.

Soil Resources

22. The estimated areas of various soil suitability classes are shown in Table 3 and on the soil suitability map. The soil suitability classification has been derived as a generalised representation of soil suitability from more detailed soil maps. These soil maps which are available from the Department of Agriculture and which show soil boundaries according to soil series may be used for a more detailed analysis of soil suitability applicable to a wider range of crops. The present classification has been drawn up mainly to assist in the definition of soil suitable for the main economic tree crops in West Malaysia, i.e. oil palm and rubber. The classification is as follows:-

- (1) Soils with no limitations to agricultural development.
- (2) Soils with few minor limitations to agricultural development.
- (3) Soils with at least one serious limitation to agricultural development.
- (4) Soils with more than one serious limitation to agricultural development.
- (5) Soils with at least one very serious limitation to agricultural development.

23. From past experience it is known that soils of suitability class 1 and class 2, and in some cases those of class 3, are suitable for a wide variety of crops, and it is in these areas that diversification cropping would most likely be successful. Soils of class 3, generally require further investigations before being committed to diversification cropping but are in all cases suitable for rubber cultivation.

24. Areas covered by classes 4 and 5 are not generally considered suitable for agricultural development and are best retained or developed under permanent forest cover. Within areas of class 4 soils this applies in particular to the swamp areas with deep peat or marine alluvium presently under mangroves which are likely to develop extreme acidity following drainage. On the other hand certain areas of class 4 soils, where inadequate soil depth limits tree crop cultivation field crops may be successfully cultivated provided the terrain is sufficiently gentle for such cultivation. Steep topography limits extensive use of class 5 soils areas for agriculture, but in lowland areas land laid waste by tin-mining may be suitable for intensive agriculture.

25. As can be seen from Table 3, 26,703 acres or 13.3% of the total land area in the state has been mapped as class 1. The area mapped as class 1 is entirely devoted to the production of padi, the soils are marine clays, very heavy textured with a high nutrient reserve. As such these soils are ideally suited for the production of padi, and tree crops if drainage is provided. It can be seen from the soil suitability map that the area mapped as class 1 is located south of Kangar and extending to the Kedah border with the exception of the most southerly tip.

26. This small area in the most southerly part of the state has been mapped as class 2. The soils consist of the Kuala Kedah and Tebengau Series, a marine clay with poor drainage and no structural development (juvenile profile). The other areas mapped as class 2, as can be seen from the soil suitability map, are located in the Rimba Mas forest reserve and the northern part of the state. The area of class 2 soils in the central part of the Rimba Mas forest reserve consists mainly of rolling terrain above the 150' contour level. The soils, belonging to the Harimau-Tampoi Association, are located on older alluvium and consist of sandy to sandy clay loams which are weakly structured. The soils of the smaller area in the southern part of the forest reserve, which were mapped as class 2, are sub-recent terrace alluvium with a sandy texture. The larger area mapped as class 2 in the northern part of the state consist of the Serok series the same soil series which covers the area in the southern part of the Rimba Mas forest reserve, and the Telemong-Local Alluvium Association. The soils of the latter association are riverine alluvium with variable texture which varies from clay to sand mainly in narrow extensions into the present flood plain. Also mapped as class 2 soils are the Tualang series - a riverine soil on terraces, fine textured with a deep sub soil.

27. The total area mapped as class 2 accounts for 12,213 acres or 6.1% of the total land area of the state.

28. With the exception of the rugged topography along the Thai border in the Western and North-Western part of the state, the isolated outcrops in the centre of the state and the smaller areas mapped as classes 1, 2 and 4, the greater part of the state has been mapped as class 3. It can be seen from Table 3 that 114,471 acres or 56.9% of the total land area in the state has been mapped as class 3 soils covering the greater part of the recent flood plain. The soils east and west of the railway line north of Arau are formed from riverine alluvium, sub-recent alluvium or a mixture of riverine and alluvium. These soils, belonging to the Kangar-Sembrin Association, Sembrin Series and Chuping-Nangka Association, have a serious limitation for agriculture, in that they overly laterite modules, possess a very hard compact subsoil or are sandy textured and loosely structured respectively. The area of class 3 soils towards the north-eastern part of the state belong to the Harimau-Tampoi Association and were downgraded to class 3 mainly because of topography.

29. The smaller pockets of class 3 soils, north of the road from Kaki Bukit to Padang Besar are laterite soils derived from shale remnants rising above the general surface of the terraces.

30. According to present information areas covered by classes 4 and 5 are not generally considered suitable for agricultural development. As can be seen from Table 3, 48,024 acres or 23.8% of the total land area falls into this category. The largest area of class 4 soils can be found south of the road from Kangar to Arau. The soils, belonging to the Telok Series, are acid sulphate and derived from marine clays. They occupy the former lagoons of the coastal plains, resulting in a concentration of sulphate. The soils around Kuala Perlis were mapped as class 3, as indicated on the soil suitability map. However, later surveys have indicated that they should have been mapped as class 4 soils because of their acid sulphate conditions for the Kuala Perlis Series and saline conditions for the Kranji Series.

31. The steep land and mountain ranges along the Western and Northern boundary with Thailand as well as the limestone cliffs in the centre of the state have all been mapped as class 5. The soils on the steep land, derived from sedimentary rocks, are very shallow, while no soil development has taken place on the limestone hills. In addition to the above areas which have been mapped as class 5 soils, all urban areas in the state have also been mapped as class 5.

32. After the completion of the data compilation and map production stage, more detailed soil surveys have been carried out in the state. This has resulted in an upgrading of approximately 7,000 acres of class 3 soils to class 2 in the Rinba Mas Mas forest reserve and its western boundary. Also, the upgrading of approximately 4,000 acres of class 3 soils to class 1 adjacent to and north east of the large area mapped as class 4 south of the Kangar-Aur road.

33. In addition to table 3, which indicates the extent of the various soil suitability categories. Table 3a shows the areas of the land use classes as determined by the present land use survey, cross-tabulated against the soil suitability categories. From this table it can be seen that 19,665 acres of class 4 and 5 soils are being cropped, representing 18.9% of the total area that is being cultivated. Although this reflects a fairly high degree of use of class 4 and 5 soils for agriculture, such usage must be carefully examined before further alienation of these soils classes for agriculture can be recommended.

Forest Resource

34. The areas of various forest productivity classes are shown in Table 4 and on the forest productivity map. The classification is based on the potential capability of the land to support forests of different productivity as well as the varying potential to supply timber from the existing stands, according to present knowledge and standards of utilisation. A prime assumption is that forests with the highest volume of trees of all species, though not all of these species are presently marketable, would in the future be the forests which would be able to sustain the highest growing stock, and would consequently have the highest potential productivity. In order that this classification should not conceal the actual productivity of the forests according to the existing crop and standards of utilisation, a lower order classification is introduced, taking into account the actual stocking of present commercially desirable species. The classification is as follows:-

- (1) Treated or regenerated forest or a forest plantation.
- (1M) Productive Mangrove Forests.
- (2A) Forest of high potential productivity with a basal area of all species of at least 80 sq. ft. or an equivalent volume of 64 tons round timber, including at least 50 sq. ft. or an equivalent volume of 40 tons round timber of commercial species per acre.

- (2B) Forest of high potential productivity with a basal area of all species of at least 80 sq. ft. or an equivalent volume of 64 tons round timber, but including less than 50 sq. ft. or an equivalent volume of 40 tons round timber of commercial species per acre.
- (3B) Forest of average potential productivity with a basal area of all species of 60-80 sq. ft. or an equivalent volume of 48-68 tons round timber, but including less than 35 sq. ft. or an equivalent volume of 28 tons round timber of commercial species per acre.
- (4A) Forest of marginal productivity with a basal area of all species of 40-60 sq.ft. or an equivalent volume of 32-48 tons round timber, including at least 20 sq. ft. or an equivalent volume of 16 tons round timber of commercial species per acre.
- (4B) Forest of marginal productivity with a basal area of all species of 40-60 sq. ft. or an equivalent volume of 32-48 tons round timber, but including less than 20 sq. ft. or an equivalent volume of 16 tons round timber of commercial species per acre.
- (5) Forest of limited potential productivity with a basal area of all species of less than 40 sq. ft. or an equivalent volume of 32 tons per acre.
- (5M) Unproductive Mangrove Forests.

35. Within this classification, commercial species are those included in Classes A, to C of the Forest Department Linear Sampling (L.S.) List of Species, while volume figures are from estimates of round timber, expressed as cubic tons, equivalent to 50 cubic feet, without allowance for defects.

36. Table 1, estimating areas alienated for different purposes, indicated that 51,336 acres have been gazetted as forest reserves, accounting for 25.5% of the total land area in the state. The forested areas in the state, with the exception of a narrow strip along the western boundary, south of the Bukit Bintang Forest Reserve, are all within the three forest reserves.

37. The Rimba Mas Forest Reserve, the largest of the reserves and situated in the eastern part of the state contains scattered areas of marginally stocked forests in the central and southern parts of the reserve. The remaining areas of this reserve can be considered poorly stocked. Much of the area of the reserve bordering with Thailand has been illegally logged by Thai loggers.

38. The Mata Ayer Forest Reserve, situated in the northern part of the state is poorly stocked in the central region of the reserve. Marginal productivity forests can be found in some smaller areas in the eastern and western part of the reserve. A 250 acre

teak plantation for experimental purposes has been established in the south-eastern corner of the reserve. Logging licenses have been given out over small areas of this reserve, this, in addition to the suspected illegal logging by Thai loggers in the border areas.

39. The third reserve, the Bukit Bintang Forest Reserve is a comparatively narrow strip extending across the north eastern part of the state. As the land is heavily dissected by limestone hills, the productivity of the forests is generally poor. Because of the physiography and the unproductive forest stand, logging has been carried out on a limited scale.

40. The latest available preliminary figures for the areas that were logged in any one year are for the year 1965. During that period log production amounted to 1,796 tons*, a decrease from the preceeding year which was mainly due to the closure of working areas for security reasons.

41. From Table 4, it can be seen that classes 1 to 9 of the forest productivity classification, comprising the total area of forested land, cover 67,068 acres or about 33% of the total land area of the state. As indicated above 51,336 acres of the forested land is located in forest reserves, the remainder in a relatively narrow strip south of the Bukit Bintang Forest Reserve and on the various limestone outcrops in the centre of the state.

42. Class 1 forests, representing regenerated forests, total 5,796 acres, however due to the difficulty of mapping actual regenerated areas, the total area in fact represents all logged forests. It is very doubtful if the total acreage has actually received silvicultural treatment.

43. Forests of marginal productivity (classes IVA and IVB) total 8,901 acres or about 4% of the total state area. Apart from these marginal productive forests and treated or generated forests, 52,371 acres is covered with forests of limited potential, which under the present classification can be considered as non-productive. However, as these are located primarily in mountainous terrain, they are important as protection forests and also have capabilities for game and recreational use.

Water Resources

44. Availability of water is an important factor in land use and maps showing the boundaries of catchments presently being utilized for purposes of potable, industrial, hydro-electric or irrigation purposes have been prepared by the responsible authorities, Public Works Department, National Electricity Board and Department of Irrigation and Drainage. Table 5 indicates the areas presently utilized as water catchments by the above mentioned departments. As can be noticed from Table 5, 110,952 acres or 55.1% of the total land area in the state are presently not being utilized as water catchment areas. Table 5 also indicates that 84,456 acres are being used as a water catchment area by the Department of Irrigation and Drainage. The catchment areas are

* Report on Forest Administration in West Malaysia for the year 1965.

all located in the northern half of the state, and are being used to supply the water for the padi land in the southern part of the state.

45. The Public Works Department has three catchment areas, totalling 1,449 acres. These catchment areas are all located in the mountainous terrain along the western boundary of the state.

46. Table 6 indicates the estimated areas presently utilised for irrigation and drainage schemes. It can be seen from this Table that 74,727 acres or 37.1% of the total land area in the state is presently being irrigated. No further areas have been earmarked for irrigation or drainage schemes.

47. Also relevant to an understanding of the use of the water resources in the state is a picture of the annual rainfall distribution pattern and its relationship to the topography. Table 7 prepared from isohyets, estimates areas of land subject to different annual rainfall intensities. It can be seen from the table that no area receives more than 90" of rainfall, in fact 120,681 acres or 60% of the total land area in the state receives an annual rainfall of less than 70". Further perusal of the table will indicate to the reader than 74,934 acres receive an annual rainfall from 70"-80". For the areas where the annual rainfall is less than 70" per year, the distribution of the rainfall becomes of great importance.

48. Table 8 estimates the areas between the different contours, 179,676 acres or 89% of the total area of the state lies below the 500 foot contour. The highest elevated land occurs in the mountainous terrain along the border with Thailand, however, only 37% of the total land area is over 1000' and below 1999'.

Land Capability

49. Table 9 presents the estimated areas of Land Capability categories in acres. The five categories in the table have been compiled from the mineral potentiality, soil suitability and forest productivity data.

Class 1	Land possessing a high potential for possible mineral development. (The estimated acreage for this class has been taken as the aggregate acreages for potential and current mining and comprises classes 1 and 2 of the mineral potentiality classification).
Class 2	Land possessing a high potential for possible agricultural development with a wide range of crops. (The acreage figure for this class has been taken as the aggregate acreages of the soil suitability categories having no or a few minor limitations to agricultural development, classes 1 and 2 of the soil suitability classification, less those areas over-lapped by class 1 above).

- Class 3 Land possessing a moderate potential for possible agricultural development, because of a restricted range of crops. (The acreage figure for this class is the same as class 3 of the soil suitability classification, less those areas overlapped by class 1 above).
- Class 4 Land possessing a high potential for possible productive forest development. (The acreage figure for this class has been taken as the aggregate of classes 1 to 4 of the forest productivity classification, less those areas overlapped by classes 1, 2 and 3 above).
- Class 5 Land possessing little or no mineral, agricultural or productive forest potential, but suitable for possible alternative development such as protective forest reserves, water catchment areas, game reserves, national parks, etc. (The acreage for this class has been taken as the acreage for the unproductive forest class, class 5 of the forest productivity classification, less those areas overlapped by classes 1, 2 or 3 above).

50. In the above classification, it should be clearly understood that the best development objectives need not necessarily coincide with the land capability potential. The classification merely indicates the most appropriate areas where particular development activities might be centred. Thus mineral development would best be located within class 1 areas, but where there is conflict between different resource uses, further studies may be desirable to compare the benefits of these alternative uses. Nevertheless, the present land capability classification reflects nationally accepted priorities for the development of any resource potential, according to economic factors applicable to the present and foreseeable future. That is, there will be economic priority for the development of mining in favour of agricultural crops which in turn has priority over productive forest development. However, these priorities may be locally or temporarily modified, in particular where there is a conflict between marginal agricultural development and forestry, or where regenerated forest crops reaching maturity may conflict with a need for agricultural development over the same area. In the latter case, it may be economically beneficial to postpone agricultural development until the forest crop is harvested.

51. It is emphasised that the Land Capability Classification is not a recommendation as to how each category of land should be used. The classification merely indicates how each area of land is suited for any particular use so that in the first place, development should not be mistakenly located in an area for which development is not suited, and in the second place development of any particular use should take into consideration the suitability of a particular site for others, perhaps more advantageous use. For example, agricultural development should best be confined to Class 2 and 3 land. Agricultural development on Class 1 land may lead to conflicts with mining development potentials, while development on Classes 4 or 5 land require higher inputs for production such as drainage, soil conservation measures or high fertilizer inputs. In the same way, forest located on Class 2 or 3 land may in the future conflict with demands for agricultural development leading to excision of areas on which regeneration work has been carried out.

52. The conflicts in resource development opportunities can be seen by superimposing the land capability classification map over the respective resource potential maps. By placing the transparent land capability map over the forest productivity map, it can be seen where mineral or agricultural development opportunities conflict with productive forest development. Conflicts between mineral and agricultural development can be seen directly from the land capability map itself.

53. The estimated areas of land in the state of Perlis falling within the five land capability classes is apparent from Table 9. It can be seen that of the total land area in the state 1.5% contains a high mineral potential. Land suitable for agriculture, comprising class 2 and 3, covers 76.1% of the total land area, while land suitable for productive forest development covers 3.1%. The remaining 19.3% mostly unproductive swamp, mountain forest and urban land comprises class 5.

NATURAL RESOURCES DEVELOPMENT POTENTIAL

54. A comparison of the land capability classification table with Table 1, showing the land areas that have been alienated, suggests the extent of the opportunities for possible further land development in the state.

55. At present 126,477 acres have been alienated for agriculture, of this area 102,465 acres or 81% possess soils which are suitable for agriculture, class 1, 2 and 3 of the soil suitability classification. The remainder of the agricultural alienated lands, amounting to 24,012 acres have soils which are not recommended for agriculture. By superimposing the land capability map on the land alienation map one can determine the locality of these areas.

56. Table 10 indicated the estimated areas of alienated and state lands having soils suitable for agricultural development. It can be seen that 153,387 acres or 76.1% of the total land area is suitable for agricultural development, however, 102,465 acres have already been alienated for agriculture. Therefore, 50,922 acres could be developed for this purpose. The greater part of this acreage, 37,674, can be found in the forest reserves especially the Rinba Mas Mas and Mata Ayer forest reserves. The second largest category where land development could take place is in the unalienated Malay Reserves, a total of 8,280 acres is available. Almost all these areas are located around the Bukit Bintang Forest Reserve. The third largest category for agricultural development is on stateland where 2,277 acres is still available. These areas comprise rather small pockets spread throughout the state.

57. However, in comparing the land alienation map with the present land use map for the state of Perlis, which is in the process of being published in conjunction with a present land use report for the state by the Department of Agriculture, one will find that most of the unalienated Malay Reserves and some of the stateland having an agricultural potential are being cropped at the present time. The above observation suggests that these areas have been alienated since the land alienation and gazettelement map was prepared by the State Government for the Land Capability Classification Programme, is under TOL, or is being cultivated illegally. Table 11, which estimates the areas of alienated and gazetted land covered by present land use categories, not only indicates the actual use purpose of the remaining stateland

but also of the other alienated categories. It can be seen from this table that approximately 5,500 acres of land in the unalienated Malay Reserves are being cropped at present. On the other hand the table also indicates that 22,149 acres of land alienated for agriculture is not being used for this purpose and has since converted to lalang and scrub.

58. At this stage one should also examine the conflict, if any, between mineral and agricultural development. In comparing tables 10 and 9, one will notice a very small difference in acreage between the total of the soil suitability classes 1, 2 and 3 and classes 2 and 3 from table 9. This difference, being 207 acres is the area where there exists a conflict between mineral and agricultural development. Table 12 indicates the estimated areas of state land and alienated land covered by mineral potentiality categories.

59. From the above it may be concluded that there are a number of agricultural development opportunities in the state that warrant further studies. The largest agricultural development opportunity is located in areas, which are presently gazetted as forest reserves. Table 10 indicates that 37,674 acres of land are suitable for agricultural development. However, caution should be used in selecting these areas as the greater part consists out of class 3 soils. Furthermore, a large part of these areas is located in security areas along the Thai Border. It will therefore be necessary to liaise with the proper authorities before any land development can take place in these areas. However, in view of the great demand for land in the state and the relatively short supply, it becomes a necessity to explore the above indicated development possibilities. At the same time the land alienated for agriculture which is not being used for that purpose at the present time, totalling 22,149 acres should be examined in greater detail as to determine the cause why the land is not being used.

60. With the implementation of the Muda Scheme, the entire padi area south of Kangar from the coast to just beyond the main highway linking Kangar and Alor Star will be made suitable for double cropping through the provision of drainage and irrigation facilities. In addition, new high-yielding rice varieties have become available increasing yields per acre, also, the state and Federal Governments have set up credit schemes for the purchase of fertilizer and other essential inputs. However, the development and provision of these services is limited by the availability of capital. As a result the pace of this type of development could be greatly increased by the input of additional capital. The effects of such inputs, however, is severely limited if the existing infrastructure is not improved upon. Various attempts have been made in the form of studies and surveys to determine the infrastructural requirements such as land tenure conditions, marketing and padi drying schemes, credit provisions, extension, etc. It is only if these problems are tackled simultaneously with the physical inputs required for the increase of agricultural production that any achievements can be made.

61. Table 13 indicates the estimated area of state land and alienated lands covered by productive forest, while Table 14 indicates the estimated areas of productive forest between various contours. The total estimated area covered by forest productivity classes 1 to 7 is 14,697 acres. As expected, the greatest percentage of this acreage is located in the forest reserves, which account for 13,248 acres or 90.1%. A comparison of the land alienation and gazettment map with Table 13, indicates to the reader that out of

a total area of 51,336 acres gazetted as forest reserves 14,697 acres or 28.8% are productive forests, which are scattered over relatively small areas in the three forest reserves. In order to determine the areas that are suitable for agricultural development and are also covered by productive forest, one should compare tables 4 and 9. The same information as well as the location of these areas where conflicts exist can be obtained by superimposing the land capability map on the soil suitability map. One will find that 8,482 acres of the land area of the state covered by productive forests have soils which are suitable for agricultural development. Almost all of this acreage is located in the forest reserves.

62. A further comparison of the soil suitability map with the forest productivity map will indicate that most of the productive forest land in the Western and North Western part of the state is to be found on class 5 soils. In many cases these soils have been downgraded due to topography, and it may therefore be concluded that these productive forests are mainly located on steep terrain which renders it unsuitable for agricultural development. The productive forest in the east and north-east within the forest reserves is to be found on class 3 and to a smaller extent on class 2 soils. Since the total acreage of the productive forests is relatively small, agricultural development should in the first instance be concentrated in areas of class 3 and 2 soils with a non-productive forest cover. Moreover, in order to ensure that agricultural development will be carried out in an orderly fashion, active liaison should be established between the various government departments and land development authorities. It is of utmost importance that the Forest Department is well informed of future agricultural development schemes to ensure that all commercial species have been cut, and no silvicultural methods are used to generate the timber.

Regional Planning,
Economic Planning Unit,
Prime Minister's Department,
Kuala Lumpur.

22nd November, 1969.

TABLE 1
STATE OF PERLIS
ESTIMATED AREAS OF ALIENATED AND GAZETTED LAND IN ACRES

I.C.T. CARD COL. 17 CODE NOS:	0	1	2	3	4	5	6	7	8	TOTAL
STATE	STATELAND	ALIENATED FOR AGRICULTURE	ALIENATED FOR MINING	MALAY RESERVES	GRAZING RESERVES	ABORIGINE RESERVES	FOREST RESERVES	GAME RESERVES	ALIENATED/RESERVED FOR OTHER PURPOSES	
PERLIS	6,624	126,477	1,242	12,420	414	-	51,336	-	2,898	201,411
STATE TOTAL:	6,624 (3.29%)	126,477 (62.79%)	1,242 (0.62%)	12,420 (6.17%)	414 (0.20%)	-	51,336 (25.49%)	-	2,898 (1.44%)	201,411 (100%)

TABLE 1a*
STATE OF PERLIS
ESTIMATED AREAS OF LAND USE CATEGORIES

LAND USE CATEGORY	I.C.T. CODE NOS. COL. 26 & 27	STATE TOTAL	%
Urban	01	973	0.5
Estate Building	02	25	-
Tin Mining	03	-	-
Other Mining/Quarrying	04	36	-
Transmission Line	10	40	-
Market Gardening	11	13,686	6.8
Mixed Horticulture	12	-	-
Agricultural Stations	20	18,444	9.2
Rubber	21	-	-
Oil Palm	22	696	0.3
Coconuts	23	-	-
Pineapple	24	-	-
Coffee	25	-	-
Tea	26	-	-
Cocoa	27	-	-
Pepper	28	329	0.2
Sago	29	-	-
Areca-nut Palm	30	-	-
Fibre Crops	31	147	0.1
Orchards	32	-	-
Fish Ponds	40	514	0.2
Diversified Crops	41	69,746	34.7
Padi	42	-	-
Shifting Cultivation	50	-	-
Improved Permanent Pasture	60	9,143	4.6
Scrub Grassland	70	45,343	22.6
Forest	71	23,746	11.8
Scrub Forest	72	1,770	0.9
Recently Cleared Land	80	3,983	2.0
Swamp	90	11,838	5.9
Unused Land	91	356	0.2
Unclassified			
TOTAL:		200,015	100.0%

* This table has been compiled from the interpretation of 1966 aerial photographs on a scale of 1:25,000 and is not strictly comparable with the other tables included in this report, which have been compiled from land quality data superimposed on 1:63,360 topographic maps.

TABLE 2
STATE OF PERLIS
ESTIMATED AREAS OF MINERAL POTENTIALITY CATEGORIES IN ACRES

I.C.T. CARD COL. 14 CODE NOS:	1	2	3	4	5	6	7	TOTAL
STATE	PROBABLE MINING	CURRENT MINING	POSSIBLE MINING	POSSIBLE MINERAL DEPOSITS	NO INFORMATION AVAILABLE	NON-MINING*	NON-MINING	
PERLIS	-	3,105	2,898	42,049	57,339	95,220	-	201,411
STATE TOTAL:	-	3,105 (1.54%)	2,898 (1.44%)	42,049 (21.27%)	57,339 (28.47%)	95,220 (47.20%)	-	201,411 (100%)

* Area which on geological and other evidence is unlikely to contain economic mineral deposits.

TABLE 3
STATE OF PERLIS
ESTIMATED AREAS OF SOIL SUITABILITY CATEGORIES IN ACRES

I.C.T. CARD COL. 15 CODE NOS:	1	2	3	4	5	TOTAL
STATE	NO LIMITATIONS	Few MINOR LIMITATIONS	ONE SERIOUS LIMITATION	MORE THAN ONE SERIOUS LIMITATIONS	VERY SERIOUS LIMITATIONS	
PERLIS	26,703	12,213	114,471	17,101	30,843	201,411
STATE TOTAL:	26,703 (13.27%)	12,213 (6.06%)	114,471 (56.83%)	17,101 (8.53%)	30,843 (15.31%)	201,411 (100%)

TABLE 3a
STATE OF PERLIS
ESTIMATED AREAS OF LAND USE CATEGORIES COVERED BY SOIL SUITABILITY CLASSES

LAND USE CATEGORIES	1	2	3	4	5	TOTAL
	NO LIMITATIONS	Few MINOR LIMITATIONS	ONE SERIOUS LIMITATION	MORE THAN ONE SERIOUS LIMITATION	VERY SERIOUS LIMITATIONS	
Urban & Associated Areas	--	--	028	--	621	1,449
Mixed Horticulture	3,312	207	9,936	1,035	1,035	15,525
Rubber	207	1,035	15,525	--	--	17,802
Coconut	414	--	414	--	--	820
Sago	--	--	414	--	--	414
Orchards	--	--	414	--	--	414
Annual Crops	--	--	414	--	1,242	69,345
Padi	20,907	621	31,257	15,310	207	8,694
Lalang/Scrub Grassland	--	414	0,073	--	14,697	44,712
Forest	621	7,659	21,520	207	1,449	23,598
Scrub	414	1,656	20,079	--	621	2,277
Cleared Land	--	621	1,035	--	621	4,554
Swamp	828	--	2,404	621	9,315	11,385
Unclassified Land	--	--	2,070	--	--	--
STATE TOTAL:	26,703 (13.24%)	12,213 (6.06%)	114,471 (56.88%)	17,101 (8.52%)	30,843 (15.30%)	201,411 (100%)

TABLE 4
STATE OF PERLIS
ESTIMATED AREAS OF FOREST PRODUCTIVITY CATEGORIES IN ACRES

I.C.T. CARD COL. 16 CODE NOS:	0	1	2	3	4	5	6	7	8	9	TOTAL
STATE	NON-FOREST	CLASS 1	CLASS 2A	CLASS 2B	CLASS 3A	CLASS 3B	CLASS 4A	CLASS 4B	CLASS 1M	CLASS 5+5M	
PERLIS	134,343	5,796	--	--	--	--	4,347	4,554	--	52,371	201,411
STATE TOTAL:	134,343 (66.70%)	5,796 (2.88%)	--	--	--	--	4,347 (2.16%)	4,554 (2.26%)	--	52,371 (26.00%)	201,411 (100%)

TABLE 5
STATE OF PERLIS
ESTIMATED AREAS PRESENTLY BEING UTILISED AS WATER CATCHMENTS IN ACRES

I.C.T. CARD COL. 24 CODE NOS:	0	1	2	3	4	5	6	7	TOTAL
STATE	NIL	DID, NEB, PWD	DID, NEB	DID, PWD	NEB, PWD	DID	NEB	PWD	
PERLIS	110,952	--	--	4,554	--	84,456	--	1,449	201,411
STATE TOTAL:	110,952 (55.09%)	--	--	4,554 (2.26%)	--	84,456 (41.93%)	--	1,449 (0.72%)	201,411 (100%)

TABLE 6
STATE OF PERLIS
ESTIMATED AREAS PRESENTLY UTILISED AND PROPOSED FOR IRRIGATION AND DRAINAGE SCHEMES IN ACRES

I.C.T. CARD COL. 13 CODE NOS:	0	3	4	5	6	TOTAL
STATE	NIL	IRRIGATION SCHEMES	PROPOSED IRRIGATION SCHEMES	DRAINAGE SCHEMES	PROPOSED DRAINAGE SCHEMES	
PERLIS	126,684	74,727	-	-	-	201,411
STATE TOTAL:	126,684 (62.90%)	74,727 (37.10%)	-	-	-	201,411 (100%)

TABLE 7
STATE OF PERLIS
ESTIMATED AREAS OF LAND SUBJECT TO DIFFERENT ANNUAL RAINFALL INTENSITIES IN ACRES

I.C.T. CARD COL. 26 CODE NOS:	0	1	2	3	4	5	6	7	8	9	TOTAL
STATE	LESS THAN 70 INCHES	70-80 INCHES	80-90 INCHES	90-100 INCHES	100-110 INCHES	110-120 INCHES	120-130 INCHES	130-140 INCHES	140-150 INCHES	MORE THAN 150 INCHES	
PERLIS	120,681	74,934	5,796	-	-	-	-	-	-	-	201,411
STATE TOTAL:	120,681 (59.92%)	74,934 (37.20%)	5,796 (2.88%)	-	-	-	-	-	-	-	201,411 (100%)

TABLE 8
STATE OF PERLIS
ESTIMATED AREAS OF LAND BETWEEN DIFFERENT CONTOUR LAYERS IN ACRES

I.C.T. CARD COL. 22 CODE NOS:	0	1	2	3	4	5	6	7	8	TOTAL
STATE	0-499'	500'-999'	1000'-1999'	2000'-2999'	3000'-3999'	4000'-4999'	5000'-5999'	6000'-6999'	7000'-7999'	
PERLIS	179,676	14,203	7,452	-	-	-	-	-	-	201,411
STATE TOTAL:	179,676 (89.21%)	14,203 (7.09%)	7,452 (3.70%)	-	-	-	-	-	-	201,411 (100%)

TABLE 9
STATE OF PERLIS
ESTIMATED AREAS OF LAND CAPABILITY CATEGORIES IN ACRES

I.C.T. CARD COL. 17 CODE NOS:	1	2	3	4	5	TOTAL
STATE	POTENTIAL MINING	POTENTIAL AGRICULTURE *1	POTENTIAL AGRICULTURE *2	POTENTIAL FORESTRY	POTENTIAL PROTECTIVE FOREST	
PERLIS	3,105	30,916	114,264	6,210	30,916	201,411
STATE TOTAL:	3,105 (1.54%)	30,916 (19.32%)	114,264 (56.73%)	6,210 (3.09%)	30,916 (19.32%)	201,411 (100%)

- *1 Land possessing a high potential for possible agricultural development with a wide range of crops.
- *2 Land possessing a moderate potential for possible agricultural development with a restricted range of crops.

TABLE 10
STATE OF PERLIS
ESTIMATED AREAS OF ALIENATED AND STATELAND COVERED BY SOIL SUITABILITY CATEGORIES IN ACRES

STATE	SOIL SUITABILITY CLASSES	0	1	2	3	4	5	6	7	8	TOTAL
		STATELAND	ALIENATED FOR AGRICULTURE	ALIENATED FOR MINING	MALAY RESERVES	GRAZING RESERVES	ABORIGINE RESERVES	FOREST RESERVES	GAME RESERVES	ALIENATED/RESERVED FOR OTHER PURPOSES	
PERLIS	0	-	-	-	-	-	-	-	-	-	-
	1	-	24,633	-	2,070	-	-	8,073	-	207	26,703
	2	414	3,312	-	-	207	-	29,601	-	1,863	12,213
	3	1,063	74,520	207	6,210	207	-	-	-	-	114,471
SUB-TOTAL:		2,277	102,465	207	8,280	414	-	17,674	-	2,070	153,307
	4	-	16,146	-	1,035	-	-	-	-	-	17,181
	5	4,347	7,866	1,035	3,105	-	-	13,662	-	828	30,843
STATE TOTAL:		6,624 (3.29%)	126,477 (62.79%)	1,242 (0.62%)	12,420 (6.17%)	414 (0.20%)	-	51,336 (25.49%)	-	2,898 (1.44%)	201,411 (100%)

TABLE 11
STATE OF PERLIS
ESTIMATED AREAS OF ALIENATED AND STATELAND COVERED BY PRESENT LAND USE CATEGORIES IN ACRES

LAND USE CATEGORIES	0	1	2	3	4	5	6	7	8	TOTAL
	STATELAND	ALIENATED FOR AGRICULTURE	ALIENATED FOR MINING	MALAY RESERVES	GRAZING RESERVES	ABORIGINE RESERVES	FOREST RESERVES	GAME RESERVES	ALIENATED/RESERVED FOR OTHER PURPOSES	
Urban & Associated Areas	207	414	-	-	-	-	-	-	828	1,449
Mixed Horticulture	414	14,283	-	-	-	-	-	-	414	15,525
Rubber	621	15,732	-	414	-	-	207	-	207	17,802
Coconut	207	621	-	-	-	-	-	-	-	828
Sago	-	414	-	-	-	-	-	-	-	414
Orchards	-	414	-	-	-	-	-	-	-	414
Annual Crops	-	414	-	-	-	-	-	-	1,035	69,345
Padi	-	64,170	-	4,140	-	-	621	-	-	8,694
Lalang/Scrub Grassland	-	7,699	-	414	-	-	38,916	-	-	44,712
Forest	621	1,063	-	3,312	-	-	7,038	-	207	23,598
Scrub	414	14,490	207	1,242	-	-	207	-	-	2,277
Cleared Land	414	1,242	-	-	414	-	-	-	-	4,554
Swamps	-	2,277	-	-	-	-	828	-	-	11,305
Unproductive Land	3,726	2,484	1,035	1,449	-	-	3,519	-	207	-
STATE TOTAL:	6,624 (3.20%)	126,477 (62.83%)	1,242 (0.62%)	12,420 (6.16%)	414 (0.21%)	-	51,336 (25.46%)	-	2,898 (1.44%)	201,411 (100%)

TABLE 12
STATE OF PERLIS
ESTIMATED AREAS OF ALIENATED AND STATELAND COVERED BY MINERAL POTENTIALITY CATEGORIES IN ACRES

STATE	MINERAL POTENTIALITY	0	1	2	3	4	5	6	7	8	TOTAL
		STATELAND	ALIENATED FOR AGRICULTURE	ALIENATED FOR MINING	MALAY RESERVES	GRAZING RESERVES	ABORIGINE RESERVES	FOREST RESERVES	GAME RESERVES	ALIENATED/RESERVED FOR OTHER PURPOSES	
PERLIS	1	-	-	-	-	-	-	-	-	-	3,105
	2	1,656	621	828	-	-	-	2,070	-	-	2,090
	3	621	207	-	-	-	-	21,942	-	207	42,049
	4	3,312	12,627	414	3,933	414	-	25,461	-	828	57,339
	5	828	25,254	-	4,960	-	-	1,863	-	-	95,339
	6	207	87,768	-	3,519	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-	-	-
STATE TOTAL:		6,624 (3.29%)	126,477 (62.79%)	1,242 (0.62%)	12,420 (6.17%)	414 (0.20%)	-	51,336 (25.49%)	-	2,898 (1.44%)	201,411 (100%)

TABLE 13
STATE OF PERLIS
ESTIMATED AREAS OF ALIENATED AND STATELAND CATEGORIES COVERED BY FOREST PRODUCTIVITY CATEGORIES IN ACRES

STATE	FOREST PRODUCTIVITY CLASSES	0 STATELAND	1 ALIENATED FOR AGRICULTURE	2 ALIENATED FOR MINING	3 MALAY RESERVES	4 GRAZING RESERVES	5 ABORIGINE RESERVES	6 FOREST RESERVES	7 GAME RESERVES	8 ALIENATED/RESERVED FOR OTHER PURPOSES	TOTAL
PERLIS	0	2,277	119,853	-	8,073	414	-	1,242	-	2,484	134,343
	1	207	414	-	-	-	-	5,175	-	-	5,796
	2	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	4,347
	5	-	-	-	-	-	-	4,347	-	-	4,554
	6	-	-	-	-	-	-	3,726	-	-	-
	7	414	414	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	36,846	-	414	52,371
	9	3,726	5,796	1,242	4,347	-	-	-	-	-	-
STATE TOTAL:		6,624 (3.29%)	126,477 (62.79%)	1,242 (0.62%)	12,420 (6.17%)	414 (0.20%)	-	51,336 (25.49%)	-	2,898 (1.44%)	201,411 (100%)

TABLE 14
STATE OF PERLIS
ESTIMATED AREAS OF PRODUCTIVE INLAND FOREST BETWEEN DIFFERENT CONTOUR LAYERS IN ACRES

STATE	FOREST PRODUCTIVITY CLASSES	0 0-499'	1 500-599'	2 1000'-1999'	3 2000'-2999'	4 3000'-3999'	5 4000'-4999'	6 5000'-5999'	7 6000'-6999'	8 7000'-7999'	TOTAL
PERLIS	1, 2A, 2B, 3A, 3B, 4A, 4B	9,315	3,312	2,070	-	-	-	-	-	-	14,697
	1M	-	-	-	-	-	-	-	-	-	53,371
	5+5M	37,674	9,729	4,968	-	-	-	-	-	-	134,343
	Non-Forest	132,687	1,242	414	-	-	-	-	-	-	201,411 (100%)
STATE TOTAL:		179,676 (89.21%)	14,283 (7.09%)	7,452 (3.70%)	-	-	-	-	-	-	201,411 (100%)

TABLE 15
STATE OF PERLIS
ESTIMATED AREAS OF ALIENATED AND STATELAND CATEGORIES COVERED BY PRESENT WATER CATCHMENTS IN ACRES

STATE	WATER CATCHMENTS	0 STATELAND	1 ALIENATED FOR AGRICULTURE	2 ALIENATED FOR MINING	3 MALAY RESERVES	4 GRAZING RESERVES	5 ABORIGINE RESERVES	6 FOREST RESERVES	7 GAME RESERVES	8 ALIENATED/RESERVED FOR OTHER PURPOSES	TOTAL
PERLIS	0	828	94,599	-	8,694	-	-	4,554	-	2,277	110,952
	1	-	-	-	-	-	-	-	-	-	-
	2	1,035	-	-	-	-	-	3,519	-	-	4,554
	3	1,035	-	-	-	-	-	-	-	621	84,456
	4	-	-	-	-	-	-	42,435	-	-	-
	5	4,761	31,464	1,242	3,519	414	-	-	-	-	1,449
	6	-	-	-	-	-	-	828	-	-	-
	7	-	414	-	207	-	-	-	-	-	-
STATE TOTAL:		6,624 (3.29%)	126,477 (62.79%)	1,242 (0.62%)	12,420 (6.17%)	414 (0.20%)	-	51,336 (25.49%)	-	2,898 (1.44%)	201,411 (100%)

