Land Capability Classification in West Malaysia

AN EXPLANATORY HANDBOOK

Economic Planning Unit
Prime Minister's Department
Malaysia

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Prepared by the Natural Resource Capability Section of the Economic Planning Unit, under the direction of the Technical Sub-Committee on Land Capability Classification of the National Development Planning Committee

FOREWORD

The wise use of natural resources is the very foundation of a nation's economic progress and prosperity, and the Malaysian Government is well aware of the contribution which science and technology can make towards the utilisation of these resources within a sound conservation context. In order that the maximum benefit can accrue it is important that the scientific and technological research and surveys should be co-ordinated and the recommendations drawn from the investigations of workers in many fields presented in a clear and unambiguous manner. Only then may the results be applied with confidence to problems of development by all sections of the community.

In the field of land use and natural resource development the need for an expert concensus on land use potentials is particularly desirable, for land can be rich in many resources, and used for many purposes, but not all of these uses may be equally desirable, and some may be extremely harmful, leading in extreme cases to complete spoilation of the land with serious consequences for future generations.

Land Capability Classification is one way of indicating the most desirable manner of utilising the land for the best economic purposes, while ensuring that certain areas of low development potential, or of particular aesthetic or scientific merit, will be conserved in their natural state for the long term benefit of the nation. The co-operation of scientists of many disciplines is involved in the Land Capability Classification Programme for West Malaysia which is described in this explanatory handbook.

Malaysia is fortunate in having considerable reserves of natural resources, principally minerals, soils, forests, and water and in planning to develop these resources she can learn from the experiences of others which was often gained through a disregard of scientific principles or through the unrestricted play of human greed. It is the intention of the Malaysian Government to prevent such misuse by wise land administration, and the Land Capability Classification Programme described in the following pages is a major step towards this objective.
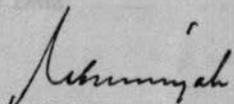
(TUN ABDUL RAZAK BIN HAJI HUSSEIN)
DEPUTY PRIME MINISTER

Kuala Lumpur,
3rd January, 1967.

CONTENTS

LAND CAPABILITY CLASSIFICATION IN WEST MALAYSIA

AN EXPLANATORY HANDBOOK, 1967

As a result of experience gained during the early stages of the Land Capability Classification Programme, revisions have been made to the mineral, forest, and land capability classifications, which now read as follows:

Revised Mineral Resource Classification (Geological Survey and Department of Mines Joint Contribution)

(1) Probable mining land as deduced from prospecting results and geological evidence.

(2) Areas under mining lease or certificate, or areas in which active mining is taking place.

(3) Possible mining land as deduced from geological evidence.

(4) Areas which on geological evidence might contain mineral deposits.

(5) Areas for which no geological or other information is available.

(6) Non-mining land.

Revised Forest Resource Classification (Forest Department Contribution)

(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.

(3A) Forest of average potential productivity with a basal area of all species of 60-80 sq. ft. or an equivalent volume of 48-64 tons round timber, including at least 35 sq. ft. or an equivalent volume of 28 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 48-64 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.

NOTE—

1. "Commercial" species are those included in Classes A to C of the Forest Department Linear Sampling (L.S.) List of Species.

2. Sub-classes "A" tend to have a higher economic value at present than Sub-classes "B".

3. Tonnage figures are gross estimates without allowance for defects.

Revised Land Capability Classification

Class I ... Land possessing a high potential for possible mineral development.

Class II ... Land possessing a high potential for possible agricultural development with a wide range of crops.

Class III ... Land possessing a moderate potential for possible agricultural development, because of a limitation in the range of crops.

Class IV ... Land possessing a high potential for possible productive forest development.

Class V ... Land possessing little or no mineral, agricultural or productive forest development potential, but suitable for possible alternative development purposes, such as protective forest reserves, water catchment areas, game reserves, recreation areas, etc.

These new classifications will apply for Land Capability Classification studies carried out during the First Malaysia Plan period in all States, except Pahang, Johore and Malacca, for which the earlier classifications apply.

Present Land Use (Department of Agriculture and Directorate of National Mapping Joint Contribution)

In addition to the foregoing, a present land use survey has recently been initiated. This survey involves the preparation of maps showing land use detail interpreted from 1:25,000 aerial photography exposed in 1966, according to the following classification:

(1) Urban and Associated Areas (1U).

(2) Estate Buildings and Associated Areas (1E).

(3) Tin Mining Areas (1T).

(4) Other Mining Areas (1X).

(5) Power Line Right of Ways (1P).

(6) Market Gardening (2M).

(7) Mixed Horticulture (2H).

(8) Agricultural Stations (2E).

(9) Rubber (3G).

(10) Oil Palm (3O).

(11) Coconut (3C).

(12) Pineapple (3N).

(13) Coffee (3K).

(14) Tea (3T).

(15) Cocoa (3A).

(16) Pepper (3P).

(17) Sago (3S).

(18) Banana (3B).

(19) Fibre Crops (3F).

(20) Orchards—(Rambutans, Durians, Citrus, Cloves, Nut-
      megs, etc.) (3X).

(21) Fish and Hyacinth Ponds (3H).

(22) Annual or Diversified Crops (4C).

(23) Padi (4P).

(24) Shifting Cultivation (4X).

(25) Improved Permanent Pasture (5).

(26) Lalang, Unimproved Coarse Pasture and Scrub-Grass-
      land (6).

(27) Forest (7F).

(28) Scrub (7S).

(29) Cleared Land (7C).

(30) Swamp, Marshland and Wetland Forests (8).

(31) Unproductive Land (9).

(32) Unclassified (10).

These areas are differentiated on the maps by the symbols shown
in brackets above. The land use maps are compiled and published
on a scale of 1:25,000, and not 1:63,360 as is the case with the
other land capability classification programme data described in
the handbook.

Revised Report Presentation

With the exception of Pahang, for which separate reports for
each district were prepared, land capability classification reports
for the States in West Malaysia are in the form of comprehensive
reports for each State, and these reports include statistical
information derived from the contributed data.

Revised Map Presentation

With the exception of the reports for Pahang which have been
completed, other State reports may include mineral, soil and
forest resource maps on a scale of four miles to an inch in
addition to, or instead of a land capability classification map,
wherever it is considered that the additional information provided
will be of use to facilitate development planning.

This method of presentation will enable areas of resource
use conflict to be more readily identified, and thus aid in the
identification of regions where further investigation, feasibility
studies, etc., will have to be carried out. In addition, areas only
suitable for one particular resource development purpose can
be more fully delineated.

ECONOMIC PLANNING UNIT,
PRIME MINISTER'S DEPARTMENT,
MALAYSIA
17th October, 1967

LAND CAPABILITY CLASSIFICATION

What Land Capability Classification is about

The process of classifying land according to the use potential of the natural resources is known as Land Capability Classification. The need for such a classification, which is a type of economic land classification, has become increasingly apparent in Malaysia in recent years. It is designed to indicate the purpose for which given areas of land should be used in order to make the best use of the inherent resources.

The land capability classification is used as the legend for classification maps which are easily understandable to a wide variety of persons who are interested in making the best use of the land. Such a classification is therefore relatively simple, as it is designed to meet the needs of persons who are not necessarily well informed about technical details.

Why Land Capability Classification is needed

It is known that much valuable information about our natural resources, particularly minerals, soils, forests, and water is not made use of by non-technical personnel, either because it is unpublished and has been half forgotten in departmental archives, or else because the reports and papers which contain this information are written in specialised jargon which is unintelligible to most people. Much of this information is worth publishing in a more understandable form because of its great value in matters of land use planning and natural resource development.

Such studies, which in Malaysia should embrace a study of mineral, soil, forest, and water potential, and evaluate the development potential of the land in terms of these natural resources, are of particular value in drawing up development plans at both a local and national level, and they help to ensure that development expenditure, particularly in the rural areas, is devoted to the right purposes, and exploited in an economically beneficial manner.

The success of the Rural Development Programme during the second Malayan Five-Year Plan period and the key role played in this programme by the Red Book, is now universally acknowledged. In retrospect, it is apparent that much of this success has been occasioned by the way in which the spirit of Gotong Royong has been inculcated amongst Government staff and the people, and the degree of co-operation and co-ordination which has resulted has been highly impressive.

The very satisfactory overall rate of progress attained was partly due to the manner in which the drawing up and execution of local development plans was made the responsibility of the District Development Committees. These Committees were able to draw up their proposals with the minimum of delay, and then allowed to implement these proposals without a surfeit of possibly conflicting advice.

Unfortunately, the success of a development scheme can be severely jeopardized if the technical and scientific evidence is not properly appraised by the developers, and experience during the past years of active development has given rise to the suggestion

that a closer degree of co-operation should be attained in the technical field of natural resource evaluation so that the development committees can take advantage of unambiguous technical advice. This springs from a realization that if the technical interests involved could reach a measure of agreement with regard to the optimum use of the land containing these resources, and then prepare maps embodying a classification which reflects this optimum use, the recommendations and suggestions which would follow from such an exercise would be of immense value in matters of national planning.

The Land Capability Classification Reports, accompanied by maps, which are prepared are therefore made the joint responsibility of the technical and scientific specialists who are normally engaged in carrying out basic natural resource surveys.

How Land Capability Classification is carried out

Plans for carrying out these studies on a district basic for West Malaysia have been prepared by the Technical Sub-Committee on Land Capability Classification of the National Development Planning Committee, and a section which is known as the Natural Resource Capability Section has been set up within the Economic Planning Unit for the specific purpose of co-ordinating such studies. The programme for West Malaysia commenced in 1965, and should be completed within a period of about three years.

A high degree of co-ordination is expected from the technical departments of government which are concerned with the survey and development of Malaysian natural resources, and all these departments together with other interested organizations are represented on the Technical Sub-Committee. They include the departments of Survey, Lands, Mines, Agriculture, Forest, Geological Survey, Game, Aborigines, Veterinary, Town and Country Planning, Drainage and Irrigation, Public Works, and the National Electricity Board, Federal Land Development Authority, Rubber Research Institute, and the University of Malaya. The procedure adopted in carrying out these studies calls for the contributing departments to prepare resource maps which define the relative value of the individual resource potentials (mineral, soil, forest, water) by means of a simple classification, and copies of these maps, which are drawn up largely by reference to existing records, are stored within the Natural Resource Capability Section, where they constitute a valuable source of professional and technical information, not otherwise available for reference in one place.

A co-ordinator, who is on the Economic Planning Unit staff, is responsible for preparing Land Capability maps from these resource maps and the classification used on the capability maps differentiates between those areas known to have a high mineral development potential; a high or medium agricultural development potential; a high productive forest potential; and a relatively negligible potential for any of these purposes.

Up-to-date land alienation and gazettement maps are also prepared, and both these maps are based on the most accurate available topographic sheets supplied by the Survey Department.

Current departmental proposals, for additional water catchment, forest, game, aborigine, and grazing reserves, are also collected in

order that these proposals may be contrasted and compared with the land capability classes in the same way as is possible for the current land alienation and gazettement data.

A short explanatory report summarises the resource potentials of the area, highlights the major possibilities for future development, and suggests very broadly the manner in which development might take place within a sound conservation context designed to ensure the orderly exploitation of the natural resource potentials.

Each district is treated in a similar fashion, and district maps and reports are completed at intervals of a few weeks. By combining the maps for each district in any State, a valuable appraisal is made of the resource potentials for the State as a whole, and a similar appraisal can ultimately be made for all the States in West Malaysia.

The value of the information shown on these maps, at National, State, and District levels is incalculable, and it is hoped that these studies will be found helpful to District and State Development Committee amongst others, in providing professional advice in a readily understandable form.

It is especially important to note that these reports do not constitute plans. They should be considered as guides to sound planning, and the maximum benefit is likely to accrue if the more detailed physical planning is made the responsibility of professional officers on the State establishment.

It will be appreciated that this classification programme depends for its success on a measure of State and Federal Government co-operation, although no large burden of extra responsibilities is imposed on the State Governments, as most of the compilation work necessary for the preparation of the resource and capability maps is undertaken by Federal staff within the Federal Head-quarters of the technical departments. The various Federal officers engaged in this programme, and particularly the co-ordinator in charge of the Natural Resource Capability Section within the Economic Planning Unit consult State Government officers with regard to existing development plans and seek local advice and opinion with regard to future development proposals. The officers most able to assist in this manner are the State Secretaries; State Commissioners for Lands and Mines; State Development Officers; District Officers; and the heads of State Agricultural, Survey, and Forest Departments.

The need for accurate and up-to-date alienation detail is essential for the proper execution of the land capability classification programme, and the most satisfactory sources of such detail are the State Survey Offices and the Land Offices. These State departments therefore co-operate by supplying an outline of the alienated land boundary, reduced to 1 inch to a mile, for each individual district. A base map on which this information is superimposed is supplied by the co-ordinator, and the work of the State departments involves transferring the boundaries by tracing from 1 inch to a mile originals, if these exist in the State Survey Offices or the District Operation Rooms, or reducing the information from larger scale cadastral or land alienation sheets where up-to-date 1 inch maps showing this detail are not already available.

Plans to carry out a systematic present land use survey for West Malaysia, based on a complete 1: 25,000 aerial photographic cover obtained during 1966, are also being formulated, and the results of this factual survey will later be compared with the other data which is already being collected.

The Federal departments contribute by supplying maps showing the suitability for development of the resource for which they are responsible, or of the present or proposed use pattern in which they may have interests.

Programme

The programme for West Malaysia has been drawn up to allow all of the States to be treated consecutively, and land capability classification maps and reports for individual districts are prepared at intervals of a few weeks.

The order in which the State and District maps and reports are being prepared is listed below. Sub-districts are shown in brackets, and are included in the maps and reports for the main districts:

1. PAHANG—
    1. Kuantan
    2. Bentong
    3. Temerloh
    4. Pekan (Rompin)
    5. Raub
    6. Cameron Highlands
    7. Lipis
    8. Jerantut

2. JOHORE—
    9. Mersing
    10. Kota Tinggi
    11. Johore Bharu (Kulai)
    12. Pontian (Rengit)
    13. Batu Pahat (Yong Peng)
    14. Muar (Tangkak, Lenga)
    15. Kluang
    16. Segamat

3. MALACCA—
    17. Jasin
    18. Malacca
    19. Alor Gajah

4. NEGRI SEMBILAN—
    20. Tampin (Gemas)
    21. Kuala Pilah (Bahau)
    22. Rembau
    23. Port Dickson
    24. Seremban (Mantin)
    25. Jelebu

5. SELANGOR—
    26. Kuala Langat (Sepang)
    27. Ulu Langat
    28. Kuala Lumpur (Kepong, Sungei Besi)
    29. Klang
    30. Kuala Selangor (Tanjong Karang)
    31. Sabak Bernam
    32. Ulu Selangor (Rawang)

6. PERAK—
    33. Batang Padang
    34. Lower Perak (Tanjong Malim)
    35. Dindings
    36. Kinta (Gopeng, Kampar)
    37. Kuala Kangsar (Parit, Sungei Siput)
    38. Larut and Matang (Selama)
    39. Krian
    40. Upper Perak (Kroh, Lenggong)

7. PENANG AND PROVINCE WELLESLEY—
    41. Nibong Tebal
    42. Butterworth
    43. Bukit Mertajam
    44. Penang Island
    45. Penang Northeast

8. KEDAH—
    46. Bandar Bahru
    47. Kulim
    48. Kuala Muda
    49. Baling

50. Sik
51. Yen
52. Kota Star
53. Padang Terap
54. Kubang Pasu
55. Langkawi

9. PERLIS—
56. Perlis

10. KELANTAN—
57. Ulu Kelantan
58. Tanah Merah
59. Pasir Mas

60. Tumpat
61. Kota Bahru
62. Bachok
63. Machang
64. Pasir Puteh

11. TRENGGANU—
65. Besut
66. Ulu Trengganu
67. Kuala Trengganu
68. Marang
69. Dungun
70. Kemaman.

After the programme of Land Capability Classification has been completed for all the districts in a State, the district maps and reports are consolidated for the State, and State Land Capability Classification maps and reports are prepared. When all the districts have been completed a national appreciation for West Malaysia will be made from the State maps and reports.

The possibility of carrying out similar classification studies for the East Malaysian States before the end of the First Malaysia Plan period is also being considered.

Specifications

Specifications for the purpose of the Land Capability Classification Programme for each district are as follows:

Base Maps (Survey Department Contribution)

Prepare and supply copies of the most up-to-date one inch to a mile topographical maps covering each district.

Land Alienation and Gazettement (State Survey Office and Land Office Joint Contribution)

Prepare a map showing alienated and gazetted land detail for single or contiguous areas exceeding ten acres in size, with sub-divisions into ten groups as follows:

(1) Land alienated for all country (agricultural land) purposes, including approved applications, but excluding land held on T.O.Ls and also land allocated for agricultural schemes in course of development.

   These areas are edged by black lines and hatched with horizontal black lines.

(2) Land alienated on mining leases and mining certificates.

   These areas are edged by black lines and hatched with broken horizontal black lines.

(3) Land gazetted as Malay Reserves.

   These areas are edged by yellow lines.

(4) Land gazetted as Grazing Reserves.

   These areas are edged by brown lines.

(5) Land gazetted as Aborigine Reserves.

   These areas are edged by red lines.

(6) Land gazetted as Forest Reserves.

These areas are edged by green lines.

(7) Land gazetted as Game Reserves.

These areas are edged by blue lines.

(8) Land alienated as town or village land, which occurs within local authority areas (Municipality, Town Council, and Local Council areas).

These areas are edged by black lines and hatched with a pattern of horizontal and vertical black lines.

(9) Land reserved for government purposes other than those shown separately above.

These areas are shaded grey.

(10) Land covered by current prospecting permits.

These areas are edged by broken red lines.

Aborigine Reserves (Aborigines Department Contribution)

Prepare a map showing the following:

(1) Land gazetted as aborigine reserves larger than ten acres.

These areas are edged by red lines.

(2) Land classified as approved aborigine reserves larger than ten acres (i.e. areas approved by the State Executive Council but not yet gazetted).

These areas are edged by broken red lines.

(3) Land classified as proposed aborigine reserves larger than ten acres [i.e. areas which in accordance with current proposals the department is anxious to see included in category (1) but which have not yet reached the stage of category (2)].

These areas are edged by dotted red lines.

Game Reserves (Game Department Contribution)

Prepare a map showing the following:

(1) Land gazetted as game reserves larger than ten acres.

These areas are edged by blue lines.

(2) Land classified as approved game reserves larger than ten acres (i.e. areas approved by the State Executive Council but not yet gazetted).

These areas are edged by broken blue lines.

(3) Land classified as proposed game reserves larger than ten acres [i.e. areas which in accordance with current proposals the department is anxious to see included in category (1) but which have not yet reached the stage of category (2)].

These areas are edged by dotted blue lines.

Veterinary Reserves (Veterinary Department Contribution)

Prepare a map showing the following:

(1) Land gazetted as grazing reserves larger than ten acres.

These areas are edged by green lines.

(2) Land classified as approved grazing reserves larger than ten acres (i.e. areas approved by the State Executive Council but not yet gazetted).

These areas are edged by broken green lines.

(3) Land classified as proposed grazing reserves larger than ten acres [i.e. areas which in accordance with current proposals the department is anxious to see included in category (1) but which have not yet reached the stage of category (2)].

These areas are edged by dotted green lines.

Mineral Resource (Geological Survey and Department of Mines Joint Contribution)

Prepare a map showing the mineral development potential for the entire district sub-divided into four groups as follows:

(1) *Current Mining Land*—Land covered by current mining leases.

(2) *Potential Mining Land*—Land shown by prospecting results or inferred from geological records to contain more than 0.2 kati of cassiterite per cubic yard, or workable surface deposits of other minerals, e.g. iron-ore.

(3) *Possible Mining Land*—Land for which present evidence indicates a possible mineral potential but which needs to be more thoroughly examined before commercial development can take place; or unprospected areas which on geological evidence might contain a mineral potential; or unknown areas.

(4) *Non-Mining Land*—Land which has been prospected and shown to have no mineral potential, or which on geological evidence is unlikely to have any mineral potential.

These areas are edged by purple boundary lines and either shaded purple (Class 1) or hatched with right sloping, purple continuous (Class 2) or broken (Class 3) lines, or left blank (Class 4).

Soil Resource (Department of Agriculture Contribution)

Prepare a map showing the soil suitability for the entire district sub-divided into five groups 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.

These areas are edged by brown boundary lines and hatched with left sloping, brown, continuous (Classes 1 and 2) or broken (Class 3) lines, or left blank (Classes 4 and 5).

Forest Resource (Forest Department Contribution)

Prepare a map showing the forest productivity potential for the entire district, sub-divided into four groups as follows:

(1) Highly productive forest with a basal area of commercial species of at least 50 square feet, or an approximate equivalence of at least 25 tons of round timber per acre.

(2) Productive forest with a basal area of commercial species between 35 and 50 square feet, or an approximate equivalence of 15 to 25 tons of round timber per acre.

(3) Marginal forest with a basal area of commercial species between 20 and 35 square feet, or an approximate equivalence of 10 to 15 tons of round timber per acre.

(4) Unproductive forest with a basal area of commercial species below 20 square feet or an approximate equivalence of less than 10 tons of round timber per acre.

These areas are edged by green boundary lines and hatched with vertical, green, continuous (Classes 1 and 2) or broken (Class 3) lines, or left blank (Class 4). Boundaries of gazetted forest reserves and areas which in accordance with current proposals the department is anxious to see included in the gazetted forest reserve category are also shown, edged respectively by continuous or broken green lines.

Water Resource (Drainage and Irrigation Department, Public Works Department and National Electricity Board Joint Contribution)

Prepare maps showing the following:

(1) Existing catchments, necessary for ensuring an effective water supply for existing schemes, including hydro-electric generation and potable and irrigation water supplies.

These areas are edged by blue lines, and hatched with horizontal blue lines.

(2) Proposed catchments, necessary for ensuring an effective water supply for proposed schemes, including hydro-electric generation and potable and irrigation water supplies.

These areas are edged by blue lines, and hatched with broken horizontal blue lines.

(3) Existing irrigation scheme areas, being areas presently supplied with irrigation water for agricultural purposes.

These areas are edged by red lines and hatched with horizontal red lines.

(4) Proposed irrigation scheme areas, being areas which it is proposed will be supplied with irrigation water for agricultural purposes.

These areas are edged by red lines and hatched with broken horizontal red lines.

(5) Isohytes, showing rainfall depths at 10 inch intervals.

Data Compilation (Natural Resource Capability Section Contribution)

This Section of the Economic Planning Unit is responsible for co-ordinating the work of the contributing departments in respect of the land capability classification programme, and for compiling two series of maps, known as Land Alienation and Gazettement Maps, and Land Capability Classification Maps, to cover each District and State. The Section is also responsible for compiling reports to accompany the maps for each District and State, and for preparing statistical summaries of the planimetric data contained on the contributed maps. The statistical summary is

prepared with the assistance of the mechanical processing section of the Department of Statistics.

(1) Land Alienation and Gazettement Map

This map shows areas of alienated and gazetted land and other present and proposed land use categories; sub-divided into the following groups:

(1) Land alienated for agricultural purposes, including approved applications, and land allocated for agricultural schemes in course of development, but excluding land held on T.O.Ls.

These areas are edged by black lines and hatched with horizontal black lines.

(2) Land alienated for mining, including land covered by mining titles and mining certificates.

These areas are edged by black lines and hatched with broken horizontal black lines.

(3) Land gazetted as Malay Reserve.

These areas are edged by black lines and hatched with broken vertical black lines, and differentiated from the other reserves by the abbreviation MAL.

(4) Land gazetted as Grazing Reserves.

These areas are edged by black lines and hatched with broken vertical black lines, and differentiated from the other reserves by the abbreviation GZG.

(5) Land gazetted as Aborigine Reserves.

These areas are edged by black lines and hatched with broken vertical black lines, and differentiated from other reserves by the abbreviation ABO.

(6) Land gazetted as Forest Reserves.

These areas are edged by black lines and hatched with broken vertical black lines, and differentiated from the other reserves by the abbreviation FOR.

(7) Land gazetted as Game Reserves.

These areas are edged by black lines and hatched with broken vertical black lines, and differentiated from the other reserves by the abbreviation GME.

(8) Land alienated on Town Land Title or Village Land Title, or utilised for other non-agricultural or non-mining purposes, including approved applications but excluding land held on T.O.Ls.

These areas are edged by black lines and hatched with a pattern of horizontal and vertical black lines.

(9) State Land, being those areas not alienated or gazetted or reserved for special purposes and shown in other categories of this classification.

These areas are left blank.

(2) Land Capability Classification Map

This map shows the relative capability of the land for mining, agriculture, productive forestry, protective forestry or other conservation use purposes, in a simple classification. The boundaries are derived from equivalent boundaries on the contributed resource maps for minerals, soils, and forests.

Class I—Land possessing a high potential for mineral development and therefore best suited to mining.

Class II—Land possessing a high potential for agricultural development with a wide range of crops and therefore best suited to diversification agriculture.

Class III—Land possessing a moderate potential for agricultural development with a restricted range of crops and therefore best suited to agricultural development with crops having a wide range of soil tolerance.

Class IV—Land possessing a potential for productive forest development and therefore best suited to commercial timber exploitation.

Class V—Land possessing little or no mineral, agricultural, or forest development potential but suitable for development as protective reserves for conservation, water catchment, game, recreation, or similar purpose, or possibly suitable in the future for productive forest plantations with introduced species.

The land alienation and gazettement map and the land capability map are both prepared on a scale of one inch to a mile and copies are distributed to the State and District Development Committees. Reduced copies, on a scale of one inch to four miles, are also prepared for inclusion in the Land Capability Classification Report.

The land capability classification map is reproduced as a transparent overlay to the land alienation and gazettement map, to facilitate comparison between the capability and the present use of the land.

(3) LAND CAPABILITY CLASSIFICATION REPORT

The Report summarises the data shown on the maps and discusses the development opportunities which exist in the district. Liaison officers in the resource survey departments contribute material to this report, which is edited by the co-ordinator.

(4) STATISTICAL SUMMARY OF PLANIMETRIC DATA

The alienation, gazettement, proposed land use, and resource maps which comprise the basic data of the Land Capability Classification programme are a most valuable source of information concerning the present and proposed use of the land and the potentiality in respect of minerals, soils, forests, and water. This information is presented on the maps in the form of curved lines for the resource data, reflecting the natural boundaries of the mineral, soil and forest types, and usually in the form of an intricate pattern of straight line boundaries for the alienation, gazettement and proposed land use data, reflecting the cadastral survey boundaries of the alienated and gazetted land areas.

A knowledge of the areas covered by the different land alienation and resource classes is very useful for surveying, development planning and administrative purposes, and where the pattern is relatively simple, and free of overlapping boundaries, as is usually the case on a single map, the area can be determined by the

usual method of planimetric measurement. However, it is often
desirable to have planimetric data for land categories made up
of a combination of land use and resource qualities, which must be
obtained by measurement from several maps. In such cases the
boundaries of the different categories overlap and if all these lines
were to be superimposed on one map the pattern would consist
of an indecipherable maze of small irregular shaped units which
would defy measurement by planimeter. Fortunately, mechanical
data processing methods, using punch cards, can be used for this
task, and a numerical code which takes account of all the land
use and resource categories shown on the contributed maps is
applied to each district in turn.

Advantage is taken of the fact that the one inch topographical
map series for West Malaysia has a uniform grid superimposed
on the maps dividing the country into 1,000 yard grid squares.
The intersection points of the squares are used as the data recording
positions and the quality of the land at each point is read off
from the different land alienation and resource maps and recorded
on punch cards for mechanical processing. By this method of
systematic line sampling the area of any combination of categories
shown on the maps can be assembled for individual mukims, for
districts, for states, and for the nation as a whole.