

第7章 本格調査への提言

7-1 調査の基本方針

マレーシアは、過去、順調な経済成長を続け、2020年には先進国の仲間入りを目指すという開発途上国の中の優等生であり、道路に関してもすでに比較的高い技術を有している。本調査は、JICAが1990年～1992年に実施した「マレーシア国全国道路網整備計画調査」において今後優先的に整備が進められるべきと提言された新設道路に係るフィージビリティ調査であるが、事前調査における情報収集、HPUを始めとする関係機関との協議の結果等を踏まえ、マレーシアにおける道路整備の現状、実施体制、技術水準、対象地域の現況等を勘案すると、次の基本方針に基づき調査を実施することが望ましいと考えられる。

なお、協議結果については「付属資料2.」にS/W協議結果の全文を、「付属資料3.」にM/M全文を掲載しているので参照のこと。

(1) 路線選定等道路計画

本件対象道路は「全国道路網整備計画」において新設の必要性がうたわれたものである。クアラルンプール周辺では、JICAが1984年及び1987年に実施した「クランバレー交通計画調査」及び「クランバレー地域都市交通施設計画調査」の提言及び「全国道路網整備計画」の提言を基に、道路が計画され、一部は建設が完了、また、一部は建設中又は計画中となっている。計画道路の中には、BOT等の方式により民間に実施が任されることが予定されているものもあり、路線が最終的には定まっていない道路もある。本件道路は、「全国道路網整備計画」において大まかな位置が示され、今回の協議の結果、一定幅の路線選定地域が合意されているが、ここからどのような最適計画を策定するかについては、当然地域の道路ネットワークとの関係を重視する必要がある。現在の道路ネットワーク及び今後の整備計画を踏まえ、いかなる道路計画が当該地域の交通需要を満たし、問題を解決することになるのか、将来の交通ネットワークを十分考慮して検討することが必要である。

(2) 環境影響評価 (Preliminary EIA)

今回の協議において、マレーシア側からは、道路計画において環境影響調査が義務づけられていること、同環境影響調査は国内規則の定めるところに従って、一定の内容及びタイミングで行われなければならないことが強調された。本件道路はクアラルンプールの北側を出発点に、東側の山岳ないし低山地を弧状に廻り、南側に下りる環状道路であるが、東側では、近年これらの山地麓へコンドミニアム等の建設が進んでいる。山地への道路建設ということで、ルート選定、形状、施工方法の検討において、一般的な動植物への配慮に加え、これら住民に対する社会環境面での配慮が必要となろう。クアラルンプールの南側ではすでに市街地化されている部分も多く、ここでも社会環境への配慮が必要となる。いずれにせよ、マレーシアの首都の外郭環境道路という性格上、自然環境、社会環境面での検討は避けられない課題であり、マレーシア側の環境に関する国内手続きを睨みながら、十分な環境配慮を行うことが必要である。

(3) 有料道路制導入の検討

本件調査のカウンターパート機関であるHPUは連邦道路、有料道路の計画を担当しているため、今回協議において、有料道路制の導入を検討する必要があることを強調した。すなわち、本件調査においては、有料制を導入した場合の将来交通需要予測、適切な料金水準の設定、有料道路と

した場合の建設、運営、維持管理にかかる費用の積算が必要となる。これらに基づき、財務分析を行うことにより有料道路導入の妥当性を検討する。また、近年マレーシアにおいてはBOT等の方式により民間資金を活用して有料道路の建設が実施されることが多いため、本件調査では、建設コスト、料金水準、返済条件、建設スケジュール等を設定し検討するとともに償還計画を作成し、設定条件の変動を考慮した感度分析を行うのが望ましい。現在の有料道路制度では、採算性の確保が困難な場合には、例えば、暫定施工の採用、料金徴収期間の延長、沿道土地開発権の承認など採算性の確保が可能となるような方策の提案を併せて行う必要がある。本格調査団は、調査全体を通じてカウンターパートとの十分な協議を行い、有料道路制の導入を検討していく必要がある。

(4) カウンターパートへの技術移転

道路行政、関連法規の章で述べたように、マレーシアにおける道路技術水準は一般にかなり高いものであるが、道路計画の立案を担当するHPUにとって日本の開発調査におけるフィージビリティ調査の実施手法は、なお参考になる部分が大いと思われる。過去、JICAではマレーシアにおいて道路交通に関するいくつかの開発調査を実施しており、その度毎に相手先機関に一定程度の技術移転に努めてきたものと思われるが、今回の協議においてマレーシア側からは一層の技術移転について考慮して欲しい旨の強い要望が出された。具体的には、調査作業の立案、実施における個々のカウンターパートとの緊密な意見交換及び意向の反映、適当なタイミングにおけるカウンターパートへのレクチャーの実施等であり、特に、交通需要予測、経済評価、概略設計の分野について、要望が強かった。本格調査を担当する調査団は、マレーシア側の要望を踏まえ、調査計画の中にこれらの技術移転をどう図るかに関する計画を盛り込むことが望ましい。

7-2 調査の概要

本格調査は、調査開始より先方政府への最終報告書提出まで約16カ月の期間で実施され、大きく次の3つの段階に分けられる。

- (1) 外郭環状道路の基本整備構想の策定
- (2) 外郭環状道路の最適路線案の選定
- (3) 外郭環状道路の最適計画の立案・評価

まず最初に、現地調査開始に先立ち、調査基本方針、調査方法、マ側への技術移転プログラム等を検討し、インセプションレポート(IC/R)を作成してマレーシア側に説明・協議の上、提出する。

現地調査では、関連資料および情報の収集を行うとともに、ローカルコンサルタントに再委託の上交通調査、測量調査、環境調査を実施し、この結果を日本側は照査、分析し、関連開発計画のレビュー、及び外郭環状道路建設予定地域の評価等を通して、道路基本整備構想を策定する。この段階で現状分析とこれらの検討結果をとりまとめたプログレスレポート(P/R)を作成し、マレーシア側に説明・協議の上、提出する。

次に需要分析、土地利用計画等の検討を基に路線代替案の設定を行う。路線代替案について概略経済・財務分析、環境、地域開発等への影響等を勘案し、マレーシア側と協議の上、最適路線案を選定する。環境に対する影響の検討結果をとりまとめたプレリミナリイEIAレポート(PEIA/R)、及びこれまでの調査結果をとりまとめたインテリムレポート(IT/R)を作成し、マレーシア側に説明・協議の上、提出する。

そして、選定された最適路線案に対して、概略設計、事業費積算を行い、施工計画／維持管理運営計画／事業実施計画の策定、経済・財務分析、環境影響評価等の結果から最適計画の立案、総合評価、提言を行う。

これらの結果をドラフトファイナルレポート（DF/R）に取りまとめ、マレーシア側に説明・協議の上、提出する。

最後に、マレーシア側のコメントを取り入れたファイナルレポート（F/R）を作成し、JICAの承認を得て、マレーシア側に提出し、全調査を終了する。

7-3 調査対象地域

調査対象地域は中央環状2号線（MRR II）の外側、クアラルンプール市中心部から半径15～20kmの距離に位置しており、North-South Expresswayを起点とし、クアラルンプール市の東側を通過し、North-South Central Link Expresswayを終点とする、延長最大約80km・幅約10kmの半弧状の地域である。

本地域は、平地部と山岳部に分類される。外郭環状道路の予定路線は、南部では人家密集地域の平地部を、また、北部では山岳地帯を通過することになる。平地部および山岳部の裾野においては、高層住宅および工業団地等各種の開発が急展開しつつある。また、山岳部においても、クアラルンプール市の水瓶である上水道の貯水ダムがいくつか存在している。従って、路線選定に当たってはそれらに重大な影響を及ぼさないように、相当の工夫を必要とする。

7-4 調査の項目と内容

1. 関連資料情報収集・分析

既存調査結果のレビュー・資料収集・データ分析を行い、関係機関におけるヒアリングを実施する。マレーシアの一般国情、クアラルンプール首都圏の社会・経済状況、交通概況、自然・環境関連情報、積算関連情報等を把握するとともに、ORRの位置付け・機能を確認する。ポイントとなる交通関連の項目を列記すれば次のとおり。

(1) 社会・経済状況

HPUとの協議を通じ、交通量配分対象道路網とゾーニングを決定する。ゾーンごとに人口・自動車保有台数を含む社会・経済状況関係資料を収集し、分析する。

(2) 関連道路網資料

クアラルンプール首都圏における関連道路網について、幅員、交通量等の資料を収集するとともに、道路設計のための規格、基準、環境基準等の参考となる資料を収集し、分析する。

(3) 開発計画・土地利用計画

クアラルンプール首都圏における地域・都市開発計画および土地利用計画に関する資料を収集し、ゾーン特性、開発ポテンシャル等を把握する。

(4) 道路事業計画

クアラルンプール首都圏における既存道路計画または事業進行中の道路事業等に関する資料を収集し、事業主体、路線線形、事業実施計画等の内容を把握・分析する。

(5) その他

上記の他に、有料道路の路線料金、有料道路と非有料道路との利用者転換率、道路輸送以外の交通機関に関する将来計画等必要に応じて資料・情報を収集し、分析する。

2. 現地調査

(1) 交通調査

既存道路における路側OD調査、交通量調査を実施し、既存OD表を補完する。併せて走行速度調査を実施する。調査地点数は、路側OD調査については同時観測可能な10地点とし、交通量調査は15地点とする。走行速度調査は10区間双方向とする。調査時間は、路側OD調査、交通量調査ともに16時間とする。調査票の作成、地点の決定は、HPUとの協議により行うものとする。これらの交通調査の実施、データ集計は現地再委託により行い、実施に当たっては関係各機関の協力を得る必要があるため、再委託先を含め十分調整を図るものとする。

(2) 自然条件／測量調査

代替路線案検討のため、1/20,000縮尺の航空写真を撮影し、1/10,000縮尺の略モザイク写真（約800km²）を作成する。また、最適路線案の選定後、同路線に沿って1/5,000縮尺地形図（約80km²）を作成するとともに、インターチェンジ、橋梁、トンネル等の主要構造物が予定される地点では、1/2,500縮尺地形図（約15km²）を作成し、併せてボーリング調査、土質試験を実施する。自然条件／測量調査の実施は現地再委託とする。

(3) 環境調査

社会環境、自然環境、公害の各項目について外郭環状道路建設中および供用後における環境への影響を調査し、HPUに環境影響評価報告書（Preliminary EIA Report - PEIA/R）を提出する。PEIA/Rの提出時期は最適路線案の決定1ヶ月前となっているため、HPU、DOE等各関係機関と綿密に協議し、協力を得る必要がある。環境調査の実施は現地再委託とする。

3. 将来社会・経済フレームの設定

収集した既存資料・情報の分析結果に基づき、目標年次2020年を目途とした将来社会・経済フレームを5年ごとに設定する。

4. 交通需要予測

既存調査における交通需要予測の再検討を行い、将来社会・経済フレーム等を踏まえ、目標年次2020年を目途として5年ごとに交通需要予測を行う。既存交通調査結果、需要予測結果の修正によるものとし整合を図る。

5. 設計基準の設定

マレーシアにおける道路の幾何構造基準、その他設計基準等に合わせ、想定される区間ごとの状況に鑑み、必要な設計仕様を設定する。

6. 路線代替案の設定

現状分析により抽出された問題点を解決すべく、首都圏外郭環状道路の性格、機能、役割等基本整備構想を明らかにした上で路線代替案を3案以上設定する。路線代替案の設定に当たっては、

将来交通需給、土地利用計画、環境調査結果等にも留意する。路線代替案の設定には、略モザイク写真（1/10,000縮尺）を作成し用いることとするが、PEIA/Rの提出時期を考慮すると既存航空写真（1/20,000縮尺）、既存地形図（1/50,000縮尺～1/10,000縮尺）を用いて早い段階から路線代替案を検討しておく必要がある。

7. 最適路線案の選定

設定された路線代替案について概略的な経済・財務評価を行い、環境、地域開発等への影響、トンネル、橋梁等構造物の有無、インターチェンジの位置・形態等を考慮の上で最適路線案を選定する。また、最適路線案の選定の際にはHPU・DOEの合意を得る必要があるため、十分に協議すること。最適路線案の決定後は、交通需給、経済開発効果等も勘案の上有料道路制の導入についても検討を行う。

8. 概略設計

決定された最適路線案について道路線形、舗装、構造物、排水等の他、有料道路とする場合は、インターチェンジ、料金所施設、管理施設等も概略設計する。道路設計には1/5,000の地形図を作成して用い、構造物設計には1/2,500の地形図を作成して用いる。

9. EIA

環境影響については、まず最適路線案の選定段階で、マレーシアのガイドラインに基づいて Preliminary EIAを実施し、レポートを作成しHPUに提出する。また、最適路線が選定され、概略設計や事業計画が立案される段階では、Preliminary EIAの結果を活用しながら環境配慮に係る検討及び計画を行い、この結果は、事業費積算に反映させるものとする。

10. 事業費積算

建設費、用地費、維持補修費等を算定する。有料道路の場合は料金徴収に係る人件費等の事業運営に係るコストについても積算を行う。費用は、経済費用、財務費用について、それぞれ内貨分と外貨分を算定する。

11. 経済・財務分析

経済分析では、道路の建設費、維持管理等に要する費用および道路建設による便益を経済価格で算定し、キャッシュフロー分析を行う。また、財務分析では、有料道路の場合は採算性について検討を行うこととし、費用、便益を市場価格で算定し、キャッシュフロー分析を行う。原資については沿道土地開発権を与え得る場合も含めた検討を行う。

12. 最適計画の策定

EIA、経済・財務分析等の結果を踏まえ概略設計を行った最適路線案の評価を行い、最適な道路計画を立案する。

13. 維持管理運営計画の策定

段階施工、部分的な民活方式導入の有効性等を勘案し建設計画を作成する。また、主な維持管

理の項目を想定した上で維持管理計画を作成する。有料道路の場合、料金体系、徴収システム、最適料金水準等の運営計画を策定する。

14. 事業実施計画の策定

財政に応じた実施可能な事業規模を想定し、建設区間および段階施工を検討する。さらに全体の事業実施工程を、事業内容、時期等を勘案し策定する。

15. 総合評価・提言

事業全体について、技術面、経済・財務面、社会面、環境面からの評価を行う。また、今後実施すべき作業、調査等を整理してフィージビリティ調査のまとめとする。

7-5 本格調査の実施体制とスケジュール

1. 実施体制

本格調査に必要な主な調査団員と業務内容は表7-1の通り。

表7-1 本格調査の実施体制

| 担当分野 | 業務内容 |
|---------------|--|
| (1) 総括 | 全体総括・管理、調査計画立案・決定・指示、諸機関との連絡・協議、現地再委託調査の管理、道路全体計画の策定 |
| (2) 道路計画 | 技術関連データ収集・分析、道路整備基本構想の策定、設計基準の設定、路線代替案の設定、最適路線案選定、有料道路制導入の検討、最適計画の策定、実施計画の策定 |
| (3) 交通計画／需要予測 | 交通現況調査・分析および交通需要予測・交通量配分、道路整備基本構想の策定、路線代替案の設定、有料道路制導入の検討 |
| (4) 地域開発計画 | 地域・都市開発計画の分析、社会・経済フレームの設定、土地利用計画の策定 |
| (5) 交通調査／解析 | 交通調査の実施・管理・分析 |
| (6) 自然条件／測量 | 土質・地質調査の実施・管理、航空写真撮影・地形図作成管理 |
| (7) 環境 | EIA（環境影響評価）の実施・管理 |
| (8) 道路設計 | 設計基準の設定、概略設計 |
| (9) 構造物設計 | 主要構造物の設計基準の設定、概略設計 |
| (10) 管理運営計画 | 維持・管理・運営計画の策定 |
| (11) 施工・積算 | 工事数量および事業費の算定、施工計画の策定 |
| (12) 経済・財務分析 | 便益の算定、経済評価、財務評価、有料道路制導入の検討 |

2. スケジュール

調査フロー（案）を図7-1に示す。

7-6 調査実施上の留意点

1. 路線選定

各種の開発が急展開しつつあるので、調査期間中においても現地の状況が大きく変わること留意して、各種開発計画等の情報収集、交通需要予測および路線選定等を行う。最新の開発動向、地形上の制約等を的確に把握する目的で、ヘリコプターを用いての空からの現地調査を行うことが必要であると考えられる。

2. 道路環境対策

マレーシアでは道路関係での環境対策を導入してから日が浅く、道路環境対策のマニュアルも整備されていない。しかし、本調査対象道路が都市内及び周辺部に路線が設定されることから、人家密集地域の中での路線選定を余儀なくされるので、地域分断および沿道環境を阻害しない等の特別の配慮が必要である。従って、日本国内での経験を踏まえ、的確な道路環境対策を考慮することは、大きな技術移転にもなり得るものである（我が国における「沿道環境整備手法」が参考になる）。

3. 調査重点項目

路線選定等道路計画、環境影響評価（Preliminary EIA）、有料道路制導入による経済・財務分析等がクリティカルパスになると思われる。

4. 分析手法

IC/Rの段階で各調査項目の手法を可能な限り明確にする。マレーシア側は特にデータの分析手法、計画立案方法について強い関心を持っているため、各種分析手法を明示することが必要である。

5. コンピュータソフトウェア

マレーシア側は、調査後に技術を活用するために需要予測や経済評価に係るコンピュータソフトウェアの引渡しを希望しており、調査団は可能な限り対応することが必要である。また、マレーシアではAT互換機が普及しているため、AT互換機用ソフトウェアを使用するのが望ましい。

6. カウンターパートとの連携

調査の実施に際して、マレーシア側カウンターパートと密接に連携・関与する。具体的には、OJTやレクチャーの実施を望んでおり、IC/RにOJTやレクチャーの計画等具体的な技術移転プログラムを明示する必要がある。特に強い関心を示しているのは、交通需要予測、概略設計、経済・財務分析の3分野である。

7. 代替案としてのトンネルの可能性

本調査対象地域の中で、北部並びに北東部地区はやや急峻な山地部となっており、路線選定に際して、トンネルが代替案として選択される可能性がある。このため、調査団員の中にはトンネルの計画に対する知識を有する団員（具体的には道路計画団員が兼ねる）を配することが望ましい。

8. 交通調査

調査対象地域に関しては、「クランバレー交通計画調査」、「全国道路網整備計画調査」でOD調査が実施され、OD表が作成されている。しかし、HPUとしては南北有料高速道路の完成によりODパターンに予想していた以上に大きな変化があったと認識している。従って、今回の交通調査でも有料高速道路の料金所で路側OD調査を実施し、高速道路利用交通の最新のODパターンを把握することが必要と考えられる。

9. 交通調査の実施体制

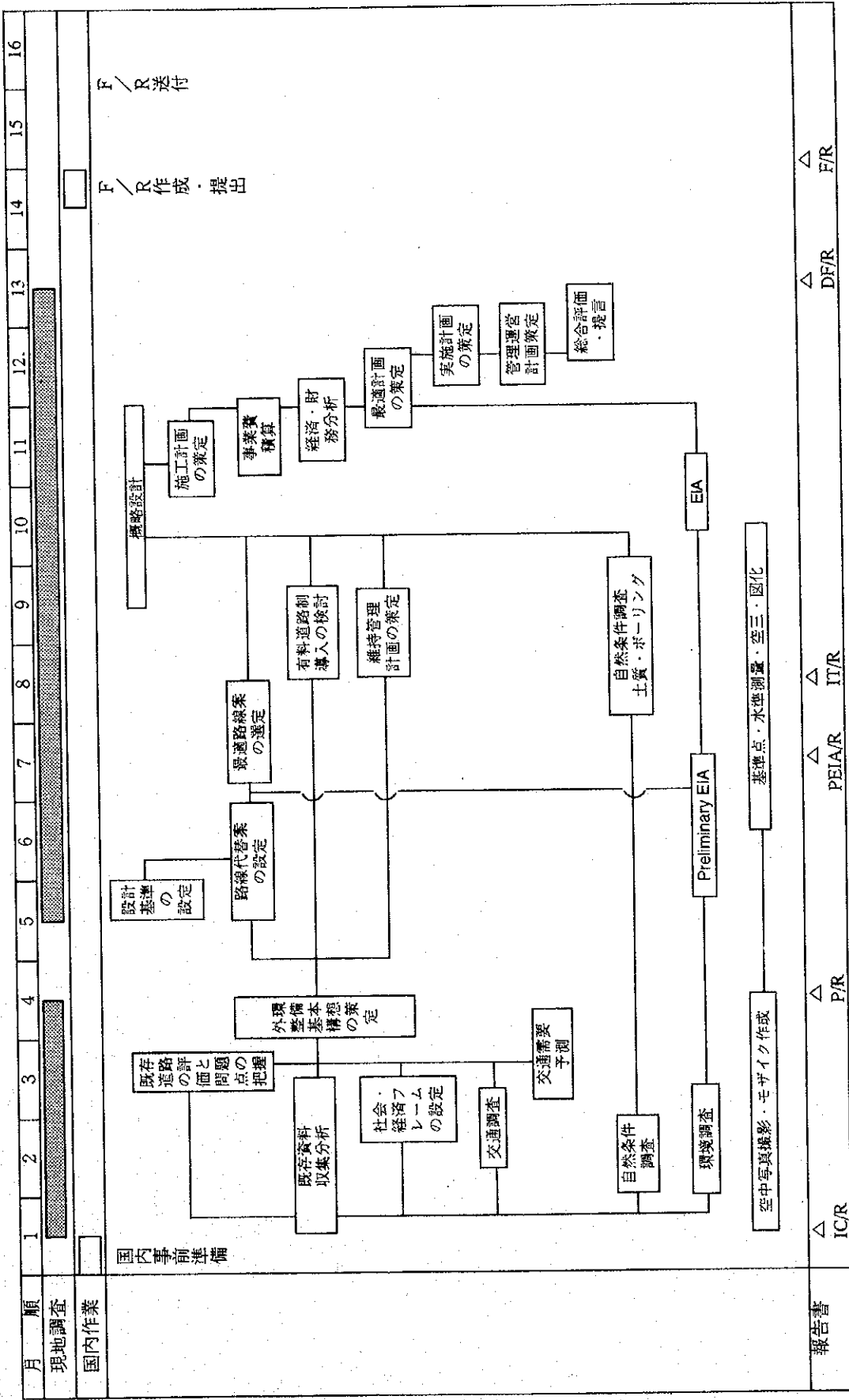
HPUでは毎年4月と10月に定期的に交通センサスを実施している。HPU側の意見としては、もし4月頃に交通調査を実施することになった場合、HPUが協力して直営で路側OD調査を実施することが可能であると明言している（直接費は調査団負担）。従って、交通調査の実施体制を考える場合、ローカルコンサルタントへの委託だけでなく、時期によってはHPUが協力した形での直営も可能であると言える。

10. 環境調査

環境調査はマレーシアの法制度（EIAガイドライン）に基づいて実施されるものの、環境対策の検討、EIAレポートの作成等に当たってはJICA開発調査環境配慮ガイドラインや日本における沿道環境整備手法の活用も十分考慮することが望ましい。また、ローカルコンサルタントとの現地調査再委託に係る手続きをスムーズに進めるために、必要書類の準備・作成には万全を期すとともに、契約行為はJICAの現地再委託業務に関するガイドライン、指示等に基づいて実施することが望ましい。

環境担当は、資料の収集・分析を通してマレーシアの環境質法、EIAガイドライン、Preliminary EIAレポートについて理解を深めるとともに、Preliminary EIAでカバーすべき調査の内容およびそのレベルを正確に把握することが重要であり、調査に手戻りが生じないようにローカルコンサルタントに適切な技術指導および助言を与えるとともに、十分なスケジュール管理を行うことが求められる。

図7-1 マレーシア国首都圏外郭環状道路計画調査フロー（案）



付 属 資 料

1. Terms of Reference (T/R)
2. Scope of Work (S/W)
3. Minutes of Meeting (M/M)
4. Questionnaire 回答
5. 収集資料リスト

付属資料 1. Terms of Reference (T/R)

GOVERNMENT OF MALAYSIA

TERMS OF REFERENCE

FOR

THE FEASIBILITY STUDY ON KUALA LUMPUR
OUTER RING ROAD IN MALAYSIA

June 1993

HIGHWAY PLANNING UNIT
MINISTRY OF WORKS

Introduction

The Highway Planning Unit, in the Ministry of Works has prepared the National Highway Network Development Plan with the technical cooperation of Japan International Cooperation Agency from May 1991 to February 1993. The National Highway Network Development Plan adopted by the Government of Malaysia is undoubtedly a very important document for the future development of highways and expressways in Malaysia. A well planned and timely development of highways and expressway within the transport sector is going to be one of the main thrusts in promoting further economic, industrial and regional land development in the country.

The National Highway Network Development Plan has recommended to conduct feasibility studies on several priority highway projects in Peninsular Malaysia, Sabah and Sarawak. One such project is the Outer Ring Road (ORR) for Kuala Lumpur.

The corridor passes through some very difficult terrain especially to the east of Kuala Lumpur as well as involving many complex designs on accesses to the city's other major highways. Moreover, some sections of the corridor are currently undergoing intensive urban development. The early identification of the highway alignment and reserves is very urgent.

The Ministry considers the feasibility study on the highway as urgent and the Government of Malaysia thus requests the continuous technical cooperation from the Japanese Government on the conduct of such a preliminary engineering and economic/financial feasibility study in the coming fiscal 1993-94, with the goal of implementation in the coming 7th Malaysia Plan (1996-2000).

2. Functions of the Proposed Kuala Lumpur Outer Ring Road (ORR)

The Middle Ring Road I is now a heavily congested road dispersing the CBD bound traffic. The Middle Ring Road II is intended to provide some relief to the saturated conditions on the Middle Ring Road I and to directly disperse traffic from the suburban residential areas such as Kepong (North-West), Petaling Jaya (West), Ampang (East), Cheras (South) and Melawati (North).

The ORR is to cater more for the Kuala Lumpur through traffic, i.e. traffic not destined for the city centre. It is a road planned to serve also the inter-urban traffic in the Klang Valley for example from Selayang to Bangi or Subang without causing unnecessary interference to the localised KL city traffic.

The ORR will also serve as a bypass for KL for inter-regional traffic from the KL-Karak Expressway to the other regions.

3. Objective of the Study

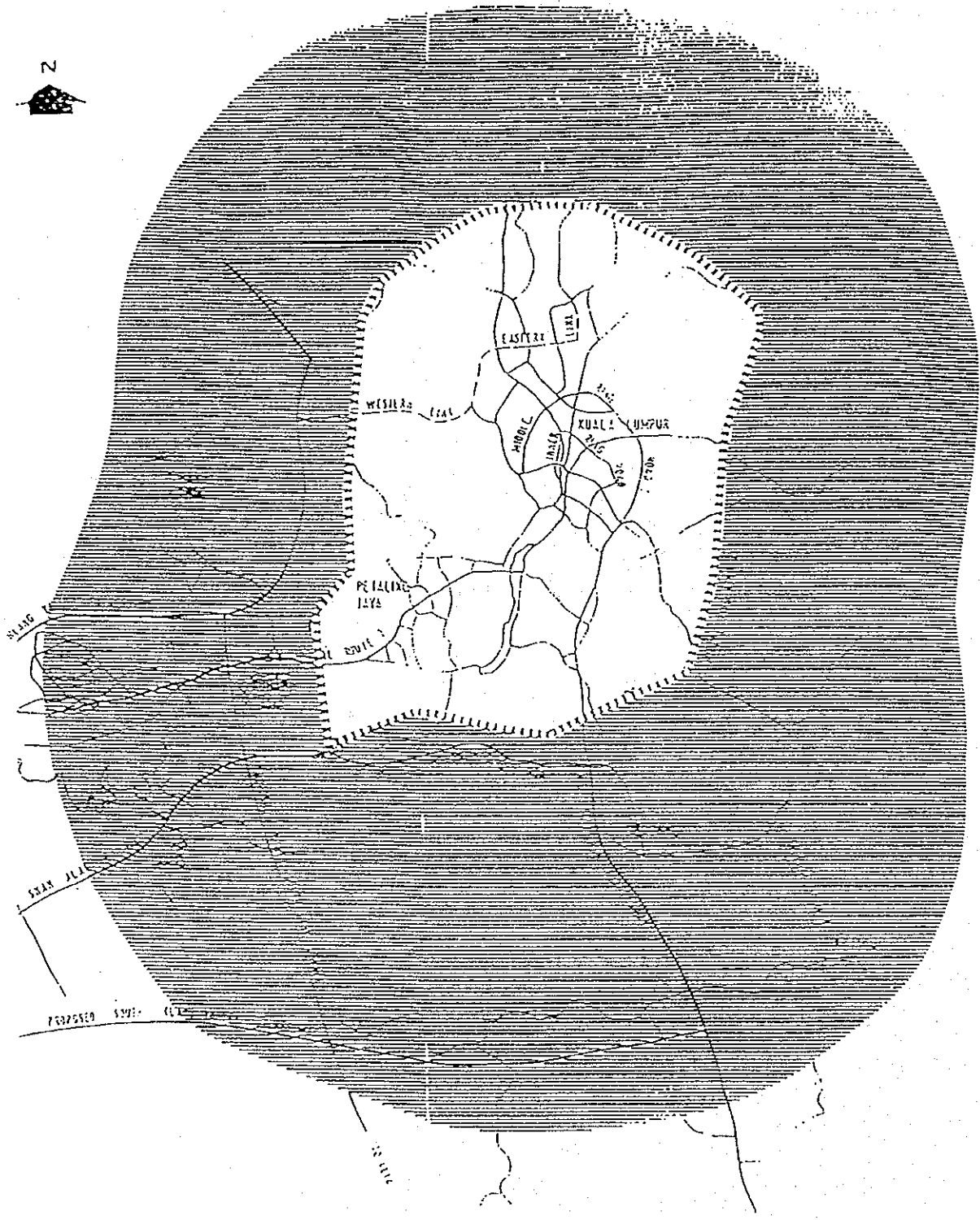
The main objectives of the study are:

- (1) To identify and select alternative corridors within the study area.
- (2) To conduct preliminary engineering, economic and financial feasibility studies.
- (3) To assess natural and social environmental impact in the corridor of the highway.

4. Study Area

The study area as shaded is indicated in Figure 1. The ORR is being planned as a principal highway encircling the Kuala Lumpur Metropolitan Area beyond the approved Middle Ring Road II. This ring road will directly link to the major radial arterials in the city such as Jalan Cheras, Jalan Ampang as well as the regional highways like KL-Kuantan Expressway, N-S Expressway and the North-South Link.

The Kuala Lumpur ORR is estimated at about 120 km in length from its intersection with the N-S Expressway near Bukit Lanjan to the North-South Link in a clockwise arc. Extension of the ORR beyond the North-south Link towards Klang in the southern section of the Klang Valley will be eventually planned as the South Klang Valley Expressway.



LEGEND

----- MIDDLE RING ROAD

[Hatched Box] FLOOD AREA

Study Schedule

Due to the diverse and disperse locations of the project road and substantial lengths of the study corridors, the study is to be conducted for at least 20 months. A tentative study schedule is given in Figure 2.

Reporting

The JICA Study Team is to prepare and submit to the Malaysian Government the following reports in English:

(1) Inception Report

Thirty (30) copies of the Inception Report are to be submitted before the official commencement of the study.

(2) Progress Report I

Thirty (30) copies of the Progress Report I are to be submitted within (4) months after the commencement of the study.

(3) Interim Report

Thirty (30) copies of this interim report are to be submitted within (10) months of the study.

(4) Progress Report II

Thirty (30) copies of the Progress Report II are to be submitted after (14) months of the study.

(5) Draft Final Report

Thirty (30) copies of the Draft Final Report are to be prepared after (19) months of study. The report shall thus contain all results of the feasibility study on the project.

The Government of Malaysia will provide JICA with its comments on the Draft Final Report within one (1) month after the receipt of the Draft Final Report.

(7) Establishment of Design Standards

The design standards to be applied to the project highways shall be examined in relations to their functions, traffic volume and other factors or constraints. Basically, the highway design standards as practised by the Ministry of Works will be adopted.

(8) Alternative Routes and Alignment Study

Several alternative routes and alignment studies shall be carried out for various sections of the project highways. These alternative routes or alignments shall be deliberated on their merits and demerits, such as costs of construction, degree of impacts on the environment, overall highway alignment, cut and fill and others. The best route among the possible alternatives shall be selected.

(9) Preliminary Engineering Design

Preliminary engineering design shall be conducted on the finalized highway routes or alignments using topographic maps prepared at the appropriate scales. The design for the highway itself and other facilities such as interchange or structures shall be done on maps at 1:5,000 scale or less.

(10) Estimation of Quantity and Costs

Based on the completed preliminary design maps and unit cost information gathered locally, the quantities will be taken off and the costs estimated.

(11) Economic and Financial Analyses

Economic and financial analyses are to be carried out on the project highways to ascertain their economic and financial viabilities. Analyses on B/C ratio, IRR and FIRR shall be carried out.

(12) Examination of Toll Application

Along with the financial analyses above, the possibility of toll application for the highway will be also examined through cash flow analyses. Toll application study will be studied in relation to the present toll system and rates as practised in Kuala Lumpur and Klang Valley.

(13) Implementation program and recommendations.

Finally, an implementation program for the project highway shall be prepared. Such a program shall therefore include recommendation on stage-construction, toll application and construction of priority sections.

Scope of Study

The scope of study is defined by the following study activities:

(1) Identification and Selection of Alternative Corridors

The Study shall identify alternative corridors within the study area and make recommendation on the preferred corridor/s.

(2) Land Use Study

The Study shall examine in more detail the land use conditions along the project highway corridor, based on information gathered from the HNDP Study or any other studies.

(3) Traffic Volumetric Survey Along the Corridors

The present traffic volume at some selected locations have to be surveyed to ascertain the current traffic demand along the project highway corridors. Such survey is intended to be a sample survey for updating the previous HNDP traffic volume planning data.

(4) Future Traffic Demand Forecasting

The future traffic demand as used in HNDP shall also be reviewed and adjustments made if necessary to ascertain the future traffic demand to be applied to this preliminary engineering study.

(5) Engineering Surveys

Topographic and geo-technical surveys are required to prepare detailed topographic maps for the engineering design of the project highway and soil conditions along the highway corridor.

The alignment study will be done on small scale topographic maps at 1:5,000 to be prepared by the study team. Maps for the design of highway facilities like interchanges will be carried out on maps with a scale of 1:5,000 or 1:2,500. Topographic surveys to prepare these maps will be carried out.

(6) Preliminary Environmental Assessment Study

The project highway passes through some mountainous terrain, natural reserves and primary or secondary forests. A preliminary environmental assessment on the impact of the proposed highway shall be carried out.

(6) Final Report

Fifty (50) copies of the Final Report shall be prepared within one (1) month after receipt of the comments from the Malaysia Government.

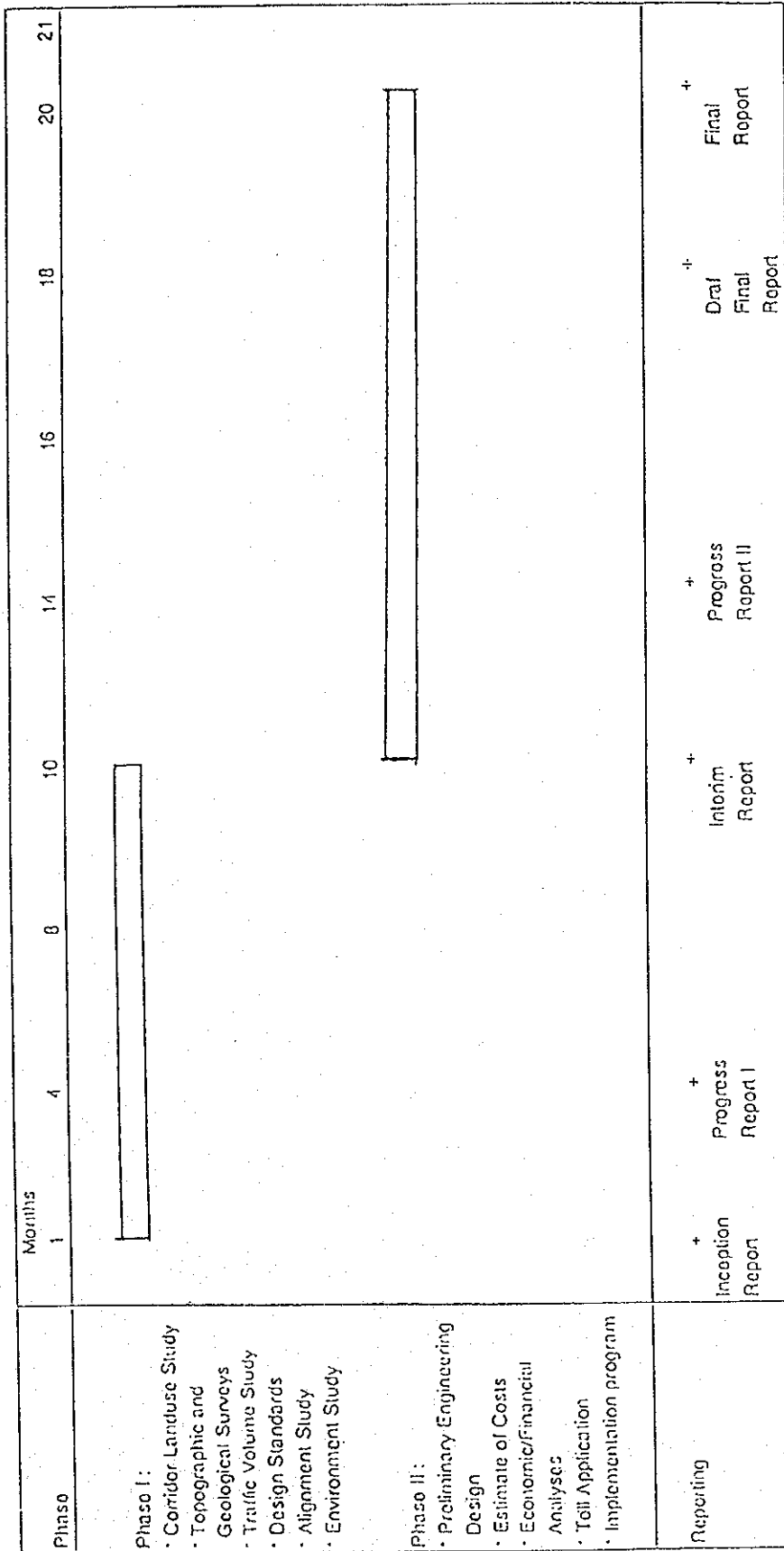
LOCAL STAFF PARTICIPATION

The Study shall be carried out by the Consultants in close association with the Steering Committee headed by the Economic Planning Unit. A Technical Committee chaired by the Ministry of Works and consisting of agencies such as the Implementation Coordination Unit and DBKL will be formed to provide guidance on technical issues pertaining to the Study. The Consultants will make available to the Government all EDP software which will be applied to store, access and manipulate the data assembled for the Study.

Economic Planning Unit,
Prime Minister's Department.

14 Julai 1993.

Figure 2: Tontalivo Study Schedule



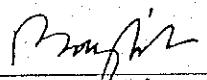
付属資料 2. Scope of Work (S/W)

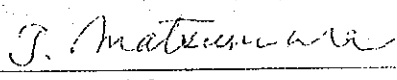
SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
KUALA LUMPUR OUTER RING ROAD
IN
MALAYSIA

AGREED UPON BETWEEN

THE ECONOMIC PLANNING UNIT
OF
THE PRIME MINISTER'S DEPARTMENT
ON BEHALF OF
THE GOVERNMENT OF MALAYSIA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

KUALA LUMPUR, 20th December, 1994


Ms. Aida Boey Abdullah
Director,
Infrastructure and Utilities Section,
Economic Planning Unit,
Prime Minister's Department
on behalf of The Government of Malaysia


Mr. Tetsuo Matsumura
Leader,
Preparatory Study Team,
Japan International Cooperation Agency

I. INTRODUCTION

In response to the request of the Government of Malaysia, the Government of Japan has decided to conduct the Feasibility Study on Kuala Lumpur Outer Ring Road (ORR) in Malaysia (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will undertake the Study in close cooperation with the relevant Malaysian authorities.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To carry out the feasibility study including assessing the financial viability of tolling on the ORR; and
2. To assess the environmental impacts of the project which will constitute one of the criteria for the selection of the preferred alignment.

III. STUDY AREA

The Study area is indicated in Figure-1. The Kuala Lumpur ORR is being planned as an expressway encircling the Kuala Lumpur Metropolitan Area beyond the on-going Middle Ring Road II (MRR II). This outer ring road will directly link to the major radial arterials in the city such as Jalan Cheras, Jalan Ampang as well as the regional highways like Kuala Lumpur - Karak Highway (future Kuala Lumpur - Kuantan Expressway), North-South Expressway and the on-going North-South Central Link Expressway.

The Kuala Lumpur ORR is approximately 80 km in length from the intersection with the North-South Expressway near Rawang/Serendah to the North-South Central Link Expressway in a clockwise arc.

IV. SCOPE OF THE STUDY

The Study shall cover all engineering works, physical surveys, operational, financial and economic analyses and other works herein described, as required to attain the objectives mentioned in Part II above. The main activities involved in the Study are as follows:

A. Data Collection and Field Surveys

1. Collection and Review of Existing Data and Information on:
 - a. socio-economic situation
 - b. traffic on the related roads
 - c. relevant development and land use plans
 - d. development programmes of related roads

- e. others necessary for the Study
- 2. Field Surveys on:
 - a. related traffic
 - traffic volume counting at appropriate points on existing roads
 - road-side interview survey to supplement the present OD Matrix
 - vehicle travel speed survey
 - b. natural conditions
 - geological survey at appropriate points in the Study Area
 - soil investigation at appropriate points in the Study Area
 - topographic survey and mapping in specific area
 - hydrological survey
 - c. environmental conditions
 - socio-economic environment
 - natural environment
 - quality of life
- B. Traffic Forecast
 - 3. Formulation of Socio-Economic Framework
 - 4. Future Traffic Demand up to the year 2020 at 5 year intervals
- C. Preliminary Engineering Studies
 - 5. Selection of Design Standard
 - 6. Formulation of Alternative Routes
 - identification and selection of alternative routes. Aerial photographs and/or topographic maps to be used should be 1:10,000 scale
 - 7. Identification of the preferred alignment
 - 8. Preliminary Engineering Design of the preferred alignment/sub-sections
 - conduct preliminary engineering design. Topographic maps to be used should be 1:5,000 scale
 - conduct preliminary engineering design for facilities such as interchanges or structures. Topographic maps to be used should be 1:2,500 scale
- D. Project Formulation
 - 9. Environmental Impact Assessment
 - preliminary environmental impact assessment of the ORR
 - recommend measures to mitigate adverse impacts
 - 10. Cost estimation for Construction, Land Acquisition, Operation and Maintenance
 - 11. Economic and Financial Analyses
 - including toll application studies
 - 12. Formulation of the Best Alternative Plan
 - 13. Formulation of Plans on Operation, Maintenance and Management
 - 14. Project Implementation Programme
- E. Conclusion
 - 15. Conclusion and Recommendations

V. STUDY SCHEDULE

The Study shall be carried out in accordance with the tentative study schedule shown in Figure-2.

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Malaysia.

1. Inception Report
Thirty (30) copies
Inception Report will be submitted at the commencement of the Study.
2. Progress Report
Thirty (30) copies
Progress Report will be submitted within four (4) months after the commencement of the Study.
3. Preliminary Environmental Impact Assessment Report
Twenty-five (25) copies
Preliminary Environmental Impact Assessment Report will be submitted within seven (7) months after the commencement of the Study.
4. Interim Report
Thirty (30) copies
Interim Report will be submitted within eight (8) months after the commencement of the Study.
5. Draft Final Report
Thirty (30) copies
Draft Final Report will be submitted within thirteen (13) months after the commencement of the Study.
The Government of Malaysia will provide JICA with its comments within one (1) month after the submission of the Draft Final Report.
6. Final Report
Fifty (50) Copies
Final Report will be submitted within two (2) months after the receipt of the comments on the Draft Final Report.

The Study Team shall ensure that all data, information, maps, materials, and findings connected with the Study be kept confidential and not disposed off or revealed to any third party except with the prior written consent of the Government of Malaysia. Such maps and aerial photographs are to be returned to the Government of Malaysia immediately upon completion of the Study. All reports, when finalised and submitted to the Government of Malaysia, shall remain the property of the Government of Malaysia.

VII. UNDERTAKING OF THE GOVERNMENT OF MALAYSIA

To facilitate smooth conduct of the Study, the Government of Malaysia shall take necessary measures:

- (1) To inform the members of the Study Team of any existing risk in the Study area and to take any measures deemed necessary to secure the safety of the Study Team;
- (2) To ensure the necessary entry permits for the Study Team to conduct field surveys in Malaysia and exempt them from consular fees;
- (3) To exempt the members of the Study Team from taxes and duties, as normally accorded under the provision of Malaysian General Circular No. 1 of 1979, on equipment, machinery and other materials brought into and out of Malaysia for the conduct of the Study;
- (4) To exempt the members of the Study Team from Malaysian income tax on their official emoluments in respect of their period of assignment in Malaysia in connection with the conduct of the Study, but the Government of Malaysia shall retain the right to take such emoluments into account for the purpose of assessing the amount to be applied to income from other sources;
- (5) To provide necessary facilities to the Study Team for remittances as well as utilization of the funds introduced into Malaysia from Japan in connection with the implementation of the Study;
- (6) To secure permission for entry into private properties or restricted areas for the implementation of the Study;
- (7) To make arrangements for the Study Team to take back to Japan the data, maps and materials connected with the Study, subject to the approval of the Government of Malaysia, in order to prepare the reports;
- (8) To provide the Study Team with medical services when needed, but the expenses will be chargeable to the members of the Study Team;
- (9) To provide the Study Team with available data, maps, and information necessary for the execution of the Study;
- (10) To appoint counterpart personnel to the Study Team during the Study period;
- (11) To provide the Study Team with suitable office space with clerical service and necessary office equipment in Kuala Lumpur;
- (12) To provide the Study Team with adequate means of local transport for official travel only; and
- (13) To indemnify any member of the Study Team in respect of damages arising from any legal action against him in relation to any act performed or omissions made in undertaking the Study, except when the two Governments agree that such a member is guilty of gross negligence or willful misconduct.

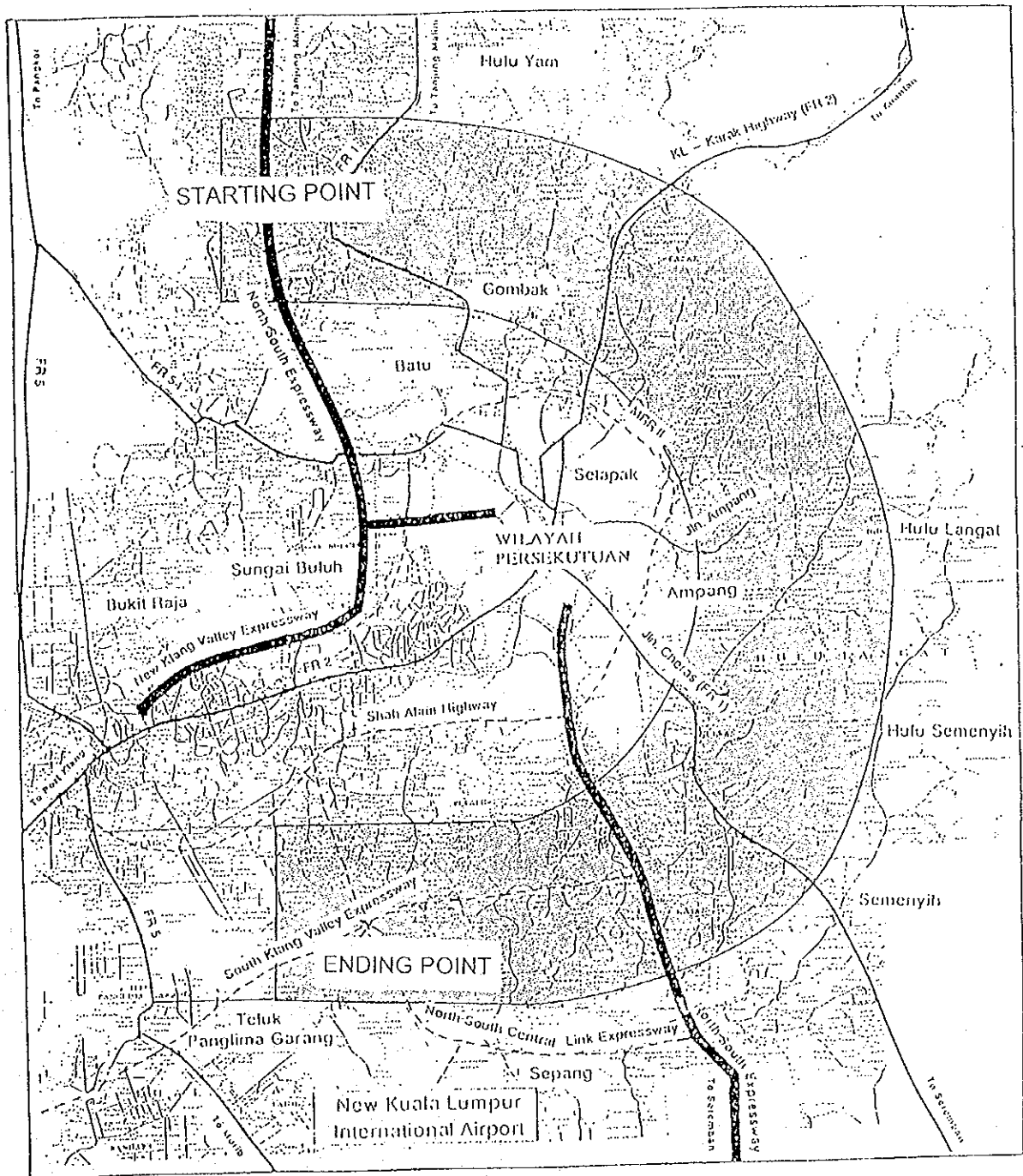
VIII. UNDERTAKING OF JICA

In order to conduct the study, JICA shall take the following measures:

- (1) to dispatch, at its own expense, the Study Team to Malaysia; and
- (2) to pursue technology transfer to the Malaysian counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA and the Government of Malaysia shall consult with each other in respect of any matter that is not agreed upon in this document and which may arise from or in connection with the Study.



| Legend | |
|--------|---|
| | Existing Expressways |
| | Existing Federal Roads |
| | Highways under construction or planning |

Figure-1 Study Corridor for the Kuala Lumpur Outer Ring Road

L

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FIGURE-2

TENTATIVE STUDY SCHEDULE

| MONTH | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------|------|---|---|-----|---|---|--------|------|---|----|----|----|------|----|----|-----|
| WORK IN MALAYSIA | | | | | | | | | | | | | | | | |
| WORK IN JAPAN | | | | | | | | | | | | | | | | |
| REPORT PRESENTATION | Δ | Δ | | Δ | | | Δ | Δ | | | | | Δ | | | Δ |
| | IC/R | | | P/R | | | PEIA/R | IT/R | | | | | DF/R | | | F/R |

[LEGEND]

- IC/R : Inception Report
- P/R : Progress Report
- PEIA/R : Preliminary Environmental Impact Assessment Report
- IT/R : Interim Report
- DF/R : Draft Final Report
- F/R : Final Report

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付属資料3. Minutes of Meeting (M/M)

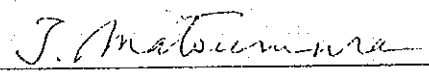
MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
KUALA LUMPUR OUTER RING ROAD
IN
MALAYSIA

AGREED UPON BETWEEN

THE ECONOMIC PLANNING UNIT
OF
THE PRIME MINISTER'S DEPARTMENT
ON BEHALF OF
THE GOVERNMENT OF MALAYSIA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

KUALA LUMPUR, 20th December, 1994


Ms. Aida Boey Abdullah
Director,
Infrastructure and Utilities Section,
Economic Planning Unit,
Prime Minister's Department
on behalf of The Government of Malaysia


Mr. Tetsuo Matsumura
Leader,
Preparatory Study Team,
Japan International Cooperation Agency

The Japanese Preparatory Study Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Mr. Tetsuo Matsumura (Research Coordinator for Traffic Safety, Road Department, Public Works Research Institute, Ministry of Construction) visited Malaysia from 12th December to 23rd December, 1994, in connection with the Feasibility Study on Kuala Lumpur Outer Ring Road in Malaysia (hereinafter referred to as "the Study").

The Team had a series of discussions on matters pertaining to the Study with the relevant authorities of the Government of Malaysia and conducted site visit to the proposed Study corridor.

The first Steering Committee Meeting of the Study was held on the 14th and 15th December, 1994 to finalize the Scope of Work (hereinafter referred to as "S/W"). The attendance list is as attached in Annex I.

Apart from finalizing the S/W, the main items deliberated and agreed upon by both parties are as follows:

1. It was agreed that the Study corridor indicated in Figure-1 of the S/W was mainly identified for the purpose of route selection only and other activities of the S/W may not necessarily cover the whole of the said corridor.
2. It was agreed that the Government of Malaysia would establish a Steering Committee and a Technical Committee under the chairmanship of the Economic Planning Unit, Prime Minister's Department and Highway Planning Unit, Ministry of Works, respectively.
3. The Meeting took note of the procedure involved in getting the approval from the Department of Environment for the Preliminary Environmental Impact Assessment Report. To expedite the approval, the Meeting agreed that the submission of the Report would be done by the Highway Planning Unit.
4. The Government of Malaysia took note of the request by the Team that all relevant maps, aerial photographs and other materials necessary for the Study be readily available prior to the commencement of the Study.
5. On clause IV D 11. of the S/W, the Meeting agreed that the toll application studies should include the following:
 - forecast toll traffic
 - recommend appropriate toll rates
 - estimate the additional construction, operation and maintenance costs due to toll application
 - determine the viability of tolling the proposed road
6. On clause VII of the S/W, the Meeting noted that the Government of Malaysia will undertake the necessary measures to fulfill its obligations where possible subject to Malaysian Laws and Regulations and other administrative procedures and practices.

7. On clause VII (6) of the S/W, the Meeting agreed that the Government of Malaysia would, as far as possible, secure permission for entry into private properties or restricted areas for the implementation of the Study.
8. On clause VII (7) of the S/W, the Team took note of the Malaysian regulations of not allowing restricted maps and aerial photographs to be taken out of the country.
9. On clause VII (11) and (12) of the S/W, the Government of Malaysia agreed to provide suitable office space with clerical service and necessary office equipment, and one (1) 4WD vehicle (including driver) for the purpose of the Study.
10. On clause VIII (2) of the S/W, the Team took note of the request by the Government of Malaysia and agreed to convey the request to JICA and other relevant authorities in Japan on the following:
 - I. three (3) counterpart training in Japan in the field of traffic demand forecast, economic evaluation and preliminary engineering design.
 - II. the Study would be conducted in close consultation with the counterpart personnel and staff of the Highway Planning Unit. On-the-job training and a series of lectures would be organized to secure effective technology transfer. This would be further detailed upon commencement of the Study and included in the Inception Report.

The Government of Malaysia shall assign one (1) full-time counterpart officer for each of the field mentioned in item I above.
 - III. the traffic forecast and economic evaluation softwares and all computer programmes developed during the Study shall be handed over to the Government of Malaysia at the end of the Study. All softwares used should be PC based.

To this end, the Team drew the attention of the Meeting to the copyright and other problems that may arise.

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J. M.

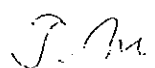
LIST OF ATTENDANCE

Malaysian Side :

1. Ms. Aida Boey Abdullah : Director of Infrastructure and Utilities Section,
Economic Planning Unit
2. Mr. Mannan Abdul Rahim : Economic Planning Unit
3. Mr. See Ah Sing : Economic Planning Unit
4. Ir. Md. Amir Kasim : Highway Planning Unit
5. Ir. Norliah Saidin : Highway Planning Unit
6. Ir. Mohd. Fozi Matori : Highway Planning Unit
7. Ir. Aminuddin Mohd. Zin : Road Division, Road Department
Headquarters
8. Mr. Md. Daud M. Yusoff : Klang Valley Planning Secretariat
9. Ms. Kamariah Ibrahim : Town and Country Planning Department

Japanese Side :

10. Mr. Tetsuo Matsumura : Team Leader, Study Team
11. Mr. Hiroaki Takashima : Study Team
12. Mr. Naofumi Yamamura : Study Team
13. Mr. Hikaru Nishimura : Study Team
14. Mr. Hajime Goto : Study Team
15. Mr. Yoichi Enokido : Study Team
16. Mr. Makio Shichijo : Embassy of Japan
17. Mr. Takao Kaibara : JICA Malaysia Office
18. Mr. Yuzo Yamamoto : JICA Malaysia Office



付属資料 4. Questionnaire 回答

QUESTIONNAIRE (DRAFT)

JAPANESE PREPARATORY STUDY TEAM

FOR

THE FEASIBILITY STUDY

ON

KUALA LUMPUR OUTER RING ROAD

IN

MALAYSIA

th December, 1994

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

Note:

- Please mark for the Data / Item in the "Availability" which is available
- Please mark for the Data / Item in the "Availability" which is not available
- List of required data / reports are as per attached

I. ORGANIZATIONS CONCERNING THE IMPLEMENTATION OF THE STUDY

| ITEM | DESCRIPTION | AVAILABILITY | | NAME OF MATERIALS |
|--|--|---------------|--|-------------------|
| | | AVAIL-ABILITY | PLACE OF DATA AVAILABLE | |
| <p>1. Agencies which are responsible for the followings:</p> <p>(A) Road development planning (B) Road construction (C) Road improvement / betterment (D) Road maintenance / management</p> | <p>(1) For the National roads (2) For the Provincial roads (3) For the Toll roads</p> | ○ | JKR, MHA Privats Conpam (tll Roadr) | |
| <p>2. Agencies in charge of and / or concerned with the followings:</p> <p>(A) Permission of aerial photography (Security clearance for flight) (B) Custody of topographic maps, aerial photographs and geodetic data (C) Area conservation (D) Geological data / information</p> | <p>(1) Name of Agencies and Departments (2) Name and position of the responsible persons in charge for the Japanese Study Team to contact</p> | ○ | Survey Dep. Ministry L/M Gsobogical Dap. | |
| <p>3. Organization to supervise and steer the management of the Study</p> | <p>(1) Necessity of the Steering Committee and proposed member institutions</p> | ○ | EPU HPU | |

II. TECHNICAL DATA / INFORMATION

| ITEM | DESCRIPTION | AVAILABILITY | | NAME OF MATERIALS |
|--|---|-----------------------|------------------------------|-------------------|
| | | AVAIL-ABILITY | PLACE OF DATA AVAILABLE | |
| 1. Maps to be used for field investigation | (1) Topographic maps covering the study area (1:250,000 to 1:50,000) | <input type="radio"/> | Survey Dep. | |
| 2. Availability of aerial photos and topographic maps | (1) Aerial photographs and index (1:20,000 to 1:10,000) (2) Topographic maps and index (1:5,000 to 1:2,000), etc. | <input type="radio"/> | Survey Dep. | |
| 3. Geological data | (1) Geological maps covering the study area (2) Existing report about data / information such as: - Location of soft ground - Results of geological / soil investigation | <input type="radio"/> | Geobogical Dep. Ministry L/M | |
| 4. Geodetic data in the Kuala Lumpur Metropolitan Area | (1) Existing horizontal ground controls network such as triangulation, traversing and GPS stations (2) Existing vertical ground controls network such as first and second order leveling (3) Descriptions of existing horizontal and vertical ground controls mentioned above (4) Coordinates and elevation data of existing horizontal and vertical ground controls mentioned above | <input type="radio"/> | Survey Dep. | |

| | | | |
|---|--|----------|--|
| <p>5. Meteorological data in the Kuala Lumpur Metropolitan Area</p> | <p>(1) Annual, monthly and daily precipitation data (2) Temperature (3) Others</p> | <p>○</p> | <p>Malayian meteorological service Misctey S. T. E</p> |
| <p>6. Hydrological data of rivers</p> | <p>(1) Road maps showing the road classification (2) Maps showing points of traffic congestion / traffic bottlenecks / vehicle speed (3) Road inventories (class, length, surface type, etc.) (4) Record of past disaster (flood, slope failure, etc.)</p> | <p>○</p> | <p>JPS(DID)</p> |
| <p>7. Data / information on related roads in the Kuala Lumpur Metropolitan Area</p> | <p>(1) Road maps showing the road classification (2) Maps showing points of traffic congestion / traffic bottlenecks / vehicle speed (3) Road inventories (class, length, surface type, etc.) (4) Record of past disaster (flood, slope failure, etc.)</p> | <p>○</p> | <p>DBKL HPU JKR</p> |
| <p>8. Traffic survey system in the Kuala Lumpur Metropolitan Area</p> | <p>(1) Location of periodic traffic count stations in the Study Area (2) Period (ex. once a year, seasonal, etc.)</p> | <p>○</p> | <p>DBKL HPU</p> |
| <p>9. Traffic data on the related roads</p> | <p>(1) Traffic volume by vehicle types for the past 5 years (2) Origin-Destination Matrix data for the Kuala Lumpur Metropolitan Area (3) Number of registered vehicles (4) Record of traffic accidents (type, causes, location, etc.)</p> | <p>○</p> | <p>DBKL, MOT DBKL, POLICE</p> |
| <p>10. Land use plans and maps in the Kuala Lumpur Metropolitan Area</p> | <p></p> | <p>○</p> | <p>DBKL LOCAL AUTHORITY</p> |

| | | | |
|---|---|---|--|
| <p>11. Specification and standard</p> | <ol style="list-style-type: none"> (1) Highway capacity manual (2) Geometric design standard (3) Bridge design standard (4) Pavement design standard (5) Environmental quality standard (6) Maintenance manual (7) Technical specifications on survey and mapping (8) Technical specifications on geological survey | <p>DBKL, HPU JKR DOE</p> | |
| <p>12. Transportation network map</p> | <ol style="list-style-type: none"> (1) Network maps and capacity of national transport system for roads, railways and commercial flights (2) Traffic flow data and forecasts of cargo / passengers by each mode (3) Transportation cost of each mode (by type of vehicle) (4) Development / improvement policies (5) Related materials, if any (national transportation studies, etc. | <p>GEOLOGICAL DEPT</p> <p>DBKL, UPU MOT, KTMB MAS</p> <p>SETAC Rejpot HNPP KUTS Rejpot Reoci EPU</p> | |
| <p>13. Reports / information of the road development projects closely related to the Study</p> <p>14. Road related budget</p> | <ol style="list-style-type: none"> (1) Intersection improvement plan (2) Widening plan for major road (3) Bridge plan <ul style="list-style-type: none"> - New construction - Reconstruction (1) Road construction budget (2) Road maintenance budget | <p>Rood HNOP Dcp. MOT</p> <p>DBKL, HPU JKR LOCAL AUTHORITY</p> <p>DBKL, MOW JKR LOCAL AUTHORITY</p> | |

| | | |
|------------------------------|---|---|
| <p>15. Road related cost</p> | <p>(1) Construction cost by type of road and location (2) Maintenance cost by type of road and location (3) Standard price for survey and mapping (photogrammetric mapping and ground survey) (4) Standard price for geological survey such as boring, soil laboratory tests, soil field tests, etc.</p> | <p>DEKL, HPU JKR</p> <p>SURVEY DEPARTMENT GEOLOGICAL DEPARTWENT</p> |
|------------------------------|---|---|

II. SOCIO-ECONOMIC DATA / INFORMATION

| ITEM | DESCRIPTION | AVAILABILITY | | NAME OF MATERIALS |
|--|---|--------------|---------------------------------|-------------------|
| | | AVAILABILITY | PLACE OF DATA AVAILABLE | |
| 1. Latest socio-economic indices (National, Kuala Lumpur Metropolitan Area) | (1) GNP and GDP (2) Population (3) Past and future population growth rate (4) Industrial, agricultural and mining products (by main sort) (5) Foreign trade (quantity and value) (6) Tourism development plans (7) Others | | DBKL, EPU | |
| 2. Existing development plans and reports (National, Kuala Lumpur Metropolitan Area) | (1) Economic development plans (2) Transportation development plans (3) Industrial development plans (4) Mining and agricultural development plans (5) Urban development plans (6) Forecast of socio-economic indicators | | TDB DBKL LOCAL AUTHORITY | |
| 3. Existing and on-going road development plans and road development projects | (1) Design, implementation schedule and current project status (2) Maps showing future road network | | DBKL, JKR LOLAL, AUTHORITY | |
| 4. Economic data for economic evaluation | (1) Time evaluation value (2) Running cost | | DBKL, JKR | |

IV. ENVIRONMENTAL ISSUES

| ITEM | DESCRIPTION | AVAILABILITY | | NAME OF MATERIALS |
|--|--|---------------|--|-------------------|
| | | AVAIL-ABILITY | PLACE OF DATA AVAILABLE | |
| 1. Legislation | <p>(1) Law / guidelines on environmental impact assessment</p> <p>(2) Quality standards</p> | | DBKL DOE " | |
| 2. International conventions on environmental conservation | <p>(1) Bilateral convention</p> <p>(2) Multilateral convention</p> | | EPU DOE | |
| 3. Present situation of the project area | <p>(1) Socio-economic environment</p> <ul style="list-style-type: none"> • Number of people to be resettled and plan of resettlement or compensation • Main industry or source of income of the residents • Number and distribution of schools, hospitals, religious facilities • Location of the community which might be split by the project • Cultural property or archaeological site • Use of river / lake water i.e. domestic industrial and agricultural • Existence of common land | | DBKL LOCAL AUTHORITY JKR, Statnc Dep. PID Musstyng 1/M | |

| | | | |
|--|--|--|--|
| | <p>(2) Natural environment</p> <ul style="list-style-type: none"> • Availability of meteorological data • Availability of land use and vegetation map • History of natural disaster, landslide earthquake and flood • Areas affected by soil erosion • Change of water level of rivers and lakes in recent years • Location of environmentally vulnerable areas such as wetland • Species of valuable animals and plants living in the project area • Location of particular areas officially protected such as national parks • Distribution of important landscape or scenery for tourism <p>(3) Quality of life</p> <ul style="list-style-type: none"> • Present air quality • Regulation on emission gas • Present water quality • Regulation on effluent • Present condition of soil contamination • Regulation for prevention of soil contamination • Present condition of noise and vibration • Regulation for prevention of noise and vibration | <p>METEOROGCAL DEPAR DWENT JPS JPBD JKR</p> <p>DOE</p> <p>TDB</p> <p>DOE</p> | |
|--|--|--|--|

V. OTHER INFORMATION

| ITEM | DESCRIPTION | AVAILABILITY | | NAME OF MATERIALS |
|---|---|---------------|-------------------------|-------------------|
| | | AVAIL-ABILITY | PLACE OF DATA AVAILABLE | |
| 1. Future budgetary plan for the implementation of the Project | | | EPU | |
| 2. Any specific restrictions related to the Study | | | EPU | |
| 3. Availability of the Government's equipment / instruments / apparatus for the Study | <p>(1) List up equipment / instruments / apparatus which are available for the Study by the following category with the following information:</p> <p>a) Category</p> <ul style="list-style-type: none"> - Instruments and facilities for aerial photography. - photogrammetry and geodetic data - Apparatus for geological / soil investigation - Apparatus for traffic survey - Computer - Services vehicle - Others <p>b) Information</p> <ul style="list-style-type: none"> - Name - Type (or model / maker) - Characteristics (or capacity) - Number of units - Condition | EPU/HPU/ | | |

| | | | | |
|-------------------------------------|--|--|------------------------------|--|
| <p>4. List of local consultants</p> | <ul style="list-style-type: none"> (1) For traffic surveys and analyses (2) For highway design (3) For environmental surveys and analyses (4) For mapping (5) For geological surveys and analyses | | <p>HPU/JKRI TREASURY</p> | |
|-------------------------------------|--|--|------------------------------|--|

付属資料5. 収集資料リスト

| NO. | 資料の名称 | 収集先又は発行機関 | 備考 |
|-----|---|----------------------------------|----|
| 1 | State of Selangor Road Map (1:175,000) | JKR | 原本 |
| 2 | Slangor 州地図 | National Mapping | 原本 |
| 3 | Road Traffic Volume Malaysia 1993 | HPU | 原本 |
| 4 | Malaysian Roads General Information 1994 | JKR | 原本 |
| 5 | Kuala Lumpur 地形図 1:10,000 | National Mapping | 原本 |
| 6 | Kuala Lumpur 地形図 1:15,000 | National Mapping | 原本 |
| 7 | Selangor 州 Road Map (1:500,000) | National Mapping | 原本 |
| 8 | Yearbook of Statistics 1993 | Department of Statistics | 原本 |
| 9 | State / District Data Bank 1992 | Department of Statistics | 原本 |
| 10 | Tender Document, Seismic Survey Works for the Feasibility Study of Batang Rajang Bridge at Durin Ferry Crossing and Surrounding Area Sibu Division, Sarawak | JKR | 北- |
| 11 | Tender Document, Soil Investigation Works for the Feasibility Study of Batang Rajang Bridge at Durin Ferry Crossing and Surrounding Area Sibu Division, Sarawak | HPU | 北- |
| 12 | Survey Term of Reference for Feasibility Study of Batang Rajang Bridge | HPU | 北- |
| 13 | Specification on Site Investigation Works Carried Out under Contracts and Schedule Rates | IKRAM | 北- |
| 14 | Institute Profile | IKRAM | 原本 |
| 15 | Geological Maps (1:63,360) No.93 Pelabhan Kelang and Kelang | Geological Survey Malaysia | 原本 |
| 16 | Geological Maps (1:63,360) No.94 Kuala Lumpur | Geological Survey Malaysia | 原本 |
| 17 | Geological Maps (1:63,360) No.95 Pahan and Negeri Sembilan | Geological Survey Malaysia | 原本 |
| 18 | Geological Maps (1:63,360) No.85 Rawang | Geological Survey Malaysia | 北- |
| 19 | Geological Maps (1:63,360) No.86 Kuala Kubu Baharu | Geological Survey Malaysia | 北- |
| 20 | Geological Maps (1:63,360) No.87 Bentong | Geological Survey Malaysia | 北- |
| 21 | Survey Terms of Reference for Detail Engineering Design Phase for Batang Rajang Bridge on First Trunk Road at Durin Ferry Sibul Division, Sarawak | HPU | 北- |
| 22 | Annual Summary of Meteorological Observations 1992 | Malaysian Meteorological Service | 原本 |
| 23 | Monthly Abstract of Meteorological Observations March, 1994 | Malaysian Meteorological Service | 原本 |

| NO. | 資料の名称 | 収集先又は発行機関 | 備考 |
|-----|---|-----------|-----|
| 24 | Proposed Kuala Lumpur International Airport (KLIA) Schedule of Rates | KLIA | 北°- |
| 25 | Kiso - Jiban Consultants Malaysia SDN. BHD. | | 原本 |
| 26 | UjitekNIK SDN.BHD. | | 原本 |
| 27 | Jurukur Perunding | | 原本 |
| 28 | Environmental Quality Act 1974, and Regulations | DOE | 原本 |
| 29 | A Handbook of Environmental Impact Assessment Guidelines | DOE | 北°- |
| 30 | Environmental Quality Report 1993 | DOE | 原本 |
| 31 | Environmental Impact Assessment | DOE | 原本 |
| 32 | Environmental Requirements : A Guide for Investors | DOE | 原本 |
| 33 | Guidelines for the Environmental Impact Assessment of Highway / Road | JKR | 北°- |
| 34 | Central Link and KLIA Epressway Preliminary EIA Report | DOE | 北°- |
| 35 | EIA of the Proposed Shah Alam Expressway, Southern Part of MRR II | DOE | 北°- |
| 36 | Preliminary EIA on the Proposed New Road from Ringlet to Kampung Berchang | HPU | 北°- |
| 37 | Batang Rajang Bridge Feasibility Study EIA Report | HPU | 北°- |

JICA