A PRACTICAL GUIDE FOR ENVIRONMENTAL PROTECTION & ENHANCEMENT WORKS

Cawangan Kejuruteraan Jalan & Geoteknik
Ibu Pejabat JKR Malaysia
Peti Surat 18 & 19, Menara Tun Razak
Jalan Raja Laut
50350 Kuala Lumpur
GREEN MISSION

Being the key implementing agency for governments’ projects, Jabatan Kerja Raya (JKR) is committed and dedicated to steer the organization and safeguard the environment by adopting the following principles:-

- Natural resources protection and enhancement
- Resource efficiency
- Sustainable consumption
- Sustainable construction
- Adherence to relevant laws and regulations

In doing so, Jabatan Kerja Raya (JKR) is guided by their environmental management system (ISO 14001 EMS) particularly during the construction stage to minimize and mitigate impacts to the environment through controlled site clearing, protection and maintenance of slopes, waste minimization and management and compliance to legal requirements.

In moving forward, JKR is committed in ensuring that all projects are developed in a sustainable manner, focus shall be given at planning stage in order to take into account the need to identify and mitigate environmental impacts for developments in Environmentally Sensitive Areas (ESAs) or within its vicinity. Protection of ESA is one of the key steps towards protecting our country’s natural resources.

DATO’ SRI PROF. DR. JUDIN BIN ABD KARIM
Ketua Pengarah Kerja Raya
Malaysia
6 May 2008
PREFACE

In line with the MS: ISO 14001 requirement, a continual improvement of the system must be done to ensure success and effectiveness of environmentally sustainable approach in construction. To produce a clear and comprehensive tender document, revision of JKR Tender Documents on environment protection and enhancements has been done by itemising the environmental works into the Bill of Quantities to allow contractors to tender a realistic price. Arahan Teknik (Jalan) 16/03, produced in 2004, provided changes to the items in the Tender Document with regards to the Condition of Contracts, Instruction to Tenderers, Specification to Environmental Protection and Enhancements, Preamble to Bill of Quantities, Need Statement, Bill of Quantities and Drawings.

In 2006, a committee comprising multi-disciplinary personnel was set up to revise the Arahan Teknik (Jalan) 16/03. Changes have been made in accordance to problems encountered and inadequacies of the previous Arahan Teknik. The overall improvement is aimed to ensure contractors understand the application of the environment protection works that they have tendered in the Bill of Quantities. Notwithstanding the importance of other technical agencies requirements to protect the environment, some parts have been added such as the preparation of Erosion and Sediment Control Plan (ESCP) and management of disposal site for surplus material as part of the latest EIA requirements. Drawings of mitigation works have been revised and amended. The revised Arahan Teknik (Jalan) 16/03 is made applicable, not only to road projects, but to all projects in JKR. It is important that all parties involved in the construction industry, be made aware of the latest government requirements in environment protection to ensure our nation has the capacity to be sustainable in the long term future.
ACKNOWLEDGEMENT

This revised Arahan Teknik (Jalan) 16/03 was prepared by a sub-committee comprising thirty-seven (37) multi-disciplinary personnel as listed below:-

(1) Ir. Cheong Pui Keng
   Pengarah, JKR Cawangan Alam Sekitar dan Tenaga (CAST)

(2) Dato’ Ir. Dr. Hj. Roslan bin Md Taha
   Pengarah, JKR Negeri Sembilan

(3) Ir. Hj. Abu Harith bin Shamsuddin
   KPPK, JKR Cawangan Kejuruteraan Senggara

(4) Ar. Cik Lee Bee Chew
   Retired, (formerly Pengarah, JKR Cawangan Alam Sekitar dan Tenaga.

(5) En. Meor Mohamed Haris bin Meor Hussein
   KPP, JKR Perak (Jalan).

(6) En. Muhamad Rahimi b Abdullah
   KPPK, Cawangan Kej. Jalan & Geoteknik

(7) Pn. Hjh. Sujatiah binti Tamrin
   PPK, Kementerian Kewangan (formerly JKR Cawangan Kontrak
   dan Ukur Bahan)

(8) Pn. Hjh. Faridah binti Abdul Rashid
   KPP, JKR WPKL

(9) Tn. Hj. Abdul Rahman bin Idris
   KPP, Cawangan Kej Mekanikal

(10) Pn. Nor Shahrene binti Mohd Ibrahim
    KPP, Cawangan Pengurusan Korporat

(11) En. Amran bin Majid
    Jurutera Senggara, JKR Daerah Kuala Terengganu

(12) Pn Emmy Sherina binti Ismail Hashim
    Juruter Bangunan, JKR Hilir Perak

(13) En. Nasrrollah bin Mohamad
    PP, (ECER)

(14) En. Hamizan bin Husain
    PP, Cawangan Kej Mekanikal

(15) En. Mohd Nor Rashidi bin Abd Jalil
    PP, Cawangan Pengurusan Korporat

(16) En. Mohd Aznan Shukri b Mohamed Safian
    Juruter Senggara, JKR Daerah Kuala Terengganu

(17) Pn. Nurazaini binti Mokhtar
    PPK, Jabatan Pengairan dan Saliran

(18) YM Raja Nur Ashikin binti Raja Zainal

(19) Pn. Geetha P. Kumaran
    Europasia Eng. Services Sdn. Bhd. & ENSEARCH

(20) En. Romzi bin Mat Zainul
    ATZ Consult Sdn. Bhd. (formerly HSSI S/B)

(21) En. Shamsul Azhar bin Ismail
    Wiranda (M) Sdn. Bhd.

(22) En. Mohd Zikri bin Azmi
    Wiranda (M) Sdn. Bhd.

    KPP, CAST

(24) Cik Siti Nor bt. Othman
    PP, CAST

(25) Pn. Siti Noor Aiza bt. Abd. Aziz
    PPA, CAST

(26) Cik Nurazura bt. Ali
    PPA, CAST

(27) En. Azizul b. Hashim
    PPA, CAST

(28) Pn. Hawa Liza bt. Zahari
    PPA, CAST

(29) En. Khairol Nazri b. Abdul Khaiyom
    PPA, CAST

iii
Finally, the publisher wishes to express its gratitude to the above committee members for their valuable contributions and preparation of this guide.

Published by:-

Unit Standard & Spesifikasi
Bahagian Penyelarasan & Khidmat Sokongan
Cawangan Kejuruteraan Jalan & Geoteknik
Ibu Pejabat JKR Malaysia
Tingkat 14, Menara Tun Razak
Jalan Raja Laut
50350 Kuala Lumpur

Reproduction of any part from this publication may be made subject to due acknowledgement of the source. However, the publisher does not accept any responsibility for any consequences arising from the use of the information within this guide.
# A PRACTICAL GUIDE FOR ENVIRONMENTAL PROTECTION & ENHANCEMENT WORKS

## CONTENTS

<table>
<thead>
<tr>
<th>CHAPTERS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2.0 Environmental Requirements</td>
<td>5</td>
</tr>
<tr>
<td>3.0 Contractual Requirements</td>
<td>14</td>
</tr>
<tr>
<td>4.0 Specifications</td>
<td>16</td>
</tr>
<tr>
<td>5.0 Method of Measurement</td>
<td>35</td>
</tr>
<tr>
<td>6.0 Bill of Quantities</td>
<td>71</td>
</tr>
<tr>
<td>7.0 Best Management Practices</td>
<td>82</td>
</tr>
<tr>
<td>8.0 Standard Drawings and Figures</td>
<td>91</td>
</tr>
</tbody>
</table>

## REFERENCES

104

## APPENDIX 1

105


SECTION A: PRELIMINARIES AND GENERAL CONDITIONS
AND SECTION C: EXCAVATIONS AND EARTHWORKS

## APPENDIX 2: Government Requirements (Need Statement)

111

(Term of Reference) (For Design and Build Projects Only)

## APPENDIX 3: Standard Report Format for :-

120

(i) Environment Management Plan (EMP)

(ii) Environment Quality Report (EQR)

(iii) Environment Management Audit Report (EMAR)

(iv) Closure Audit Report (CAR)