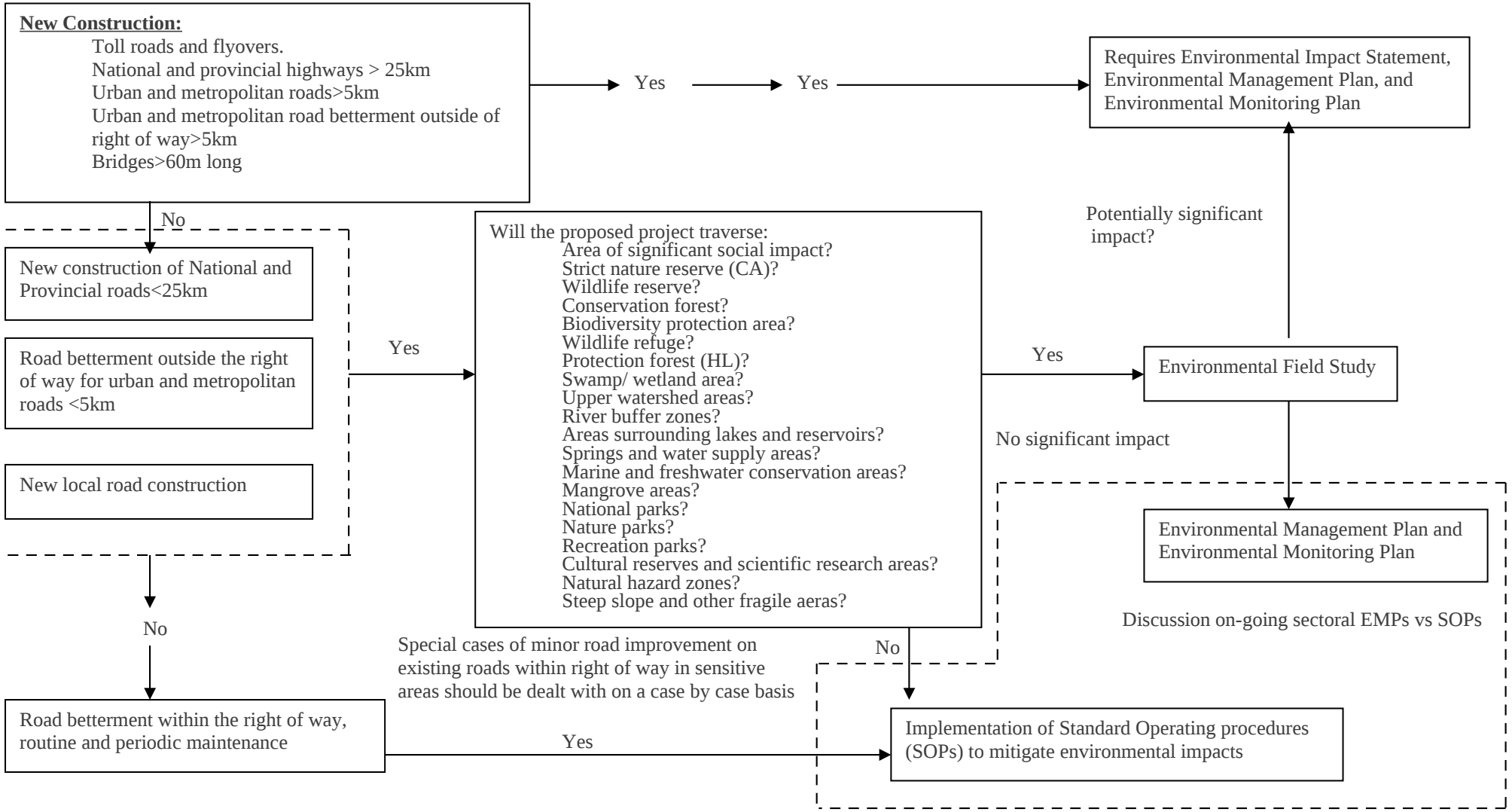
**Appendix (1)**

Example of EIA screening procedure developed by directorate general of highways, ministry of public works, Indonesia



## Appendix 2

## Environmental Management Plan

| Environmental Issue | Mitigatory Action | Approximate Location | Time Frame | Suggested Responsible party | |
|---|---|---|---|---|---|
| | | | | Implementation | Supervision |
| 1. Alignment | The alignment should be selected from 3 alternatives so as to minimize the land occupation, air pollution, and noise impacts on residents, to avoid unfavorable geological conditions and cultural relics. | Entire project length. | During design period | MPPPU/ Design Unit, Consultant | MPPPU, HCENR |
| 2. Location of construction camps & contractor facilities | Construction camps should be located at least 500m away from community areas and away from water resources. | Project construction sites. | During planning and design stage | MPPPU, consultant, local village representatives | MPPPU, HCENR |
| 3.Location of quarry & Borrow pits sites | Only government approved quarry sites should be planned for project use. They should not be located in the locations of reserve. Borrow should be located in environmentally sound areas. | Environmentally and technically suitable sites and near the project road. | During planning & design stage. | MPPPU, consultant, NHA | MPPPU, HCENR |
| 4. Other concerns related to possible change of road alignment. | The necessary environmental assessment study will be need to be carried out. | At a certain sections of the road. | During planning & design stage | MPPPU, Consultant | MPPPU, HCENR |

| | | | | | |
|---|---|---|---|---|---|
| 5. Flood & Soil erosion | Bridges and culverts should be well designed for the purpose of flood discharge. In slopes and suitable places along the road-side, bush grass will be planted, and retaining wall, water intercepting ditches, and masonry rubbles will be built to prevent soil erosion. | At suitable relevant locations | During planning & design period | MPPPU/ Design Unit, Consultant | MPPPU, HCENR |
| 6. Dust/ air pollution | * Water should be sprayed during construction phase, in the line of earth mixing sites, asphalt mixing sites, and temporary roads.<br>* Vehicles delivering materials should be covered to reduce spills.<br>* Stone crushers should be located away from settlements. | Stone crushing sites and road construction. | During construction stage | Contractor | MPPPU, NHA, Consultant. |
| 7. Water pollution | * In sections along the river, earth and stone will be properly disposed of so as to block rivers, resulting in adverse impact on water quality.<br>* All justifiable measures will be taken to prevent the waste water produced in construction from entering in to rivers and irrigation system | All water suspected bodies | During construction stage | Contractor | MPPPU, NHA |
| 8. Noise | * Workers in vicinity of strong noise will wear earplugs and helmets.<br>* In construction sites within 150m where, there are residences, noise construction should be stoped at night.<br>* Maintenance of Machinery and vehicles should be enhanced to keep their noise at a minimum. | Throughout the trace & adjacent areas. | During construction period. | Contractor | MPPPU, NHA, Consultant. |
| 9. Site safety | Adopt standard site safely measures. Warning, awareness, protective clothing, masks for workers, first aid, training to work safely and regular safety checks. Obtain necessary insurance cover. | At work places | During construction period | Contractor | MPPPU, NHA, consultant |
| 10. Impacts in | Liaise with National water & electricity | At predetermined | During construction | Contractor | MPPPU, |

| | | | | | |
|---|---|---|---|---|---|
| infrastructures facilities (water, electricity, telecommunication | Cooporations as well as telecommunication companies, and obtain utility plans & shifting arrangement, machine operator awareness about utilities. | locations especially in urban zones | period | | NHA consultant. |
| 11. Soil erosion | Proper compaction, work done in dry periods, soil dumps covered. | Cut & fill areas | During construction period. | Contractor | MPPPU, NHA, |
| 12. Construction camp | Provision of proper waste disposal facilities as well as health facilities | Construction camps & work place | During construction period | Contractor | MPPPU, NHA, consultant |
| 13. Implementation of EMP during construction | Strictly following and implement the EMP measures mentioned in the contract documents and maintaining proper documentation of measures taken | Construction camp and sites | During construction period | Contractor | MPPPU, NHA consultant. |
| 14. Movement of vehicles | * According to monitoring results, at places with excessive noise, sound barries or other measures will be adopted. Exhaut inspection will be enhanced. Unqualified vehicles should not be allowed to run on this road.<br>* Effective traffic management should be carried out. | Sensitive | During operation | PPPU, NHA, traffic administration | MPPPU, NHA |
| 15. Clogging of culverts & side drains by sediment & other debris | Recurrement maintenance program | At culverts & side drain locations | During operation period | Contractor | NHA |
| 16. Creation & potholes or other distresses on the road surface | Quality assurance of construction work. Requirement maintenance program. | At affected locations where distresses are observed | During the operation stage | Contractor | NHA |

## Appendix 3 Environmental Monitoring Plan

| Environmental Issue | Project stage | Parameters to be Monitored | Location | Frequency | Responsible party | |
|---|---|---|---|---|---|---|
| | | | | | Implementation | Supervision |
| 1. River water quality | Design, construction stage | Should be identified by MPPPU & HCENR | Major water bodies | Design- 1 times/ year construction 3 times/ yr | MPPPU, NHA | MPPPU, HCENR |
| | Operation stage | As above | Same as above | 2 times/ year | MPPPU, NHA | MPPPU, HCENR |
| Air quality & Noise level | Design, construction stage | As mentioned above | Main constructions sites | Design-1times/ year construction 3 times/ yr | MPPPU, NHA | MPPPU, HCENR |
| | Operation stage | As above | At selected locations | 2 times/ year | MPPPU, NHA | MPPPU, HCENR |