

## ***Environmental Management Plans to Operationalise EIA findings***

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### **Abstract**

*Mitigation measures are a key output of environmental impact assessments (EIAs) but are often neglected in subsequent project stages. Environmental management plans (EMPs) need to be prepared at the same time as the EIAs and may be included as part of the EIA documentation. EMPs should document how the project's adverse impacts on the environment will be mitigated, controlled, and monitored during the commissioning, mobilization, construction, operation, maintenance and decommissioning stages and show how the positive benefits of the project can be enhanced. EMPs can be fully integrated or separately prepared as Operational EMPs, Construction EMPs, Social Impact Management Plans, and Decommissioning EMPs. Just as mitigation measures in an EIA can be neglected, EMPs can also be neglected unless the final step of embedding these plans in construction contracts, staff instructions, and operations and maintenance manuals is also ensured. Once multiple organisations become involved in different stages of a project, as is often the case when multiple planning, construction and operational permits are required, the linkages back to EIAs and EMPs are significantly weaker. Monitoring and routine audits should check that these linkages have been made, the mitigation measures have been implemented as planned, and the intended improvements in environmental outcomes have been achieved.*

### **1. Introduction**

Environmental impact assessment (EIA) is a tool used globally to assess the environmental and social impacts of specific projects. While EIAs include specific mitigation measures and residual impacts, they are often fairly limited in documenting detailed arrangements for implementing those measures. Accordingly, one of the weaknesses of EIAs is that they often fail to ensure that sensible mitigation measures are translated into construction contracts and operational permits, which are usually no longer the responsibility of the national environment agency. Accordingly, it is increasingly common to insist on a detailed environmental management plan (EMP) to ensure that the mitigation measures are implemented as planned.

There is some confusion, however, between EMPs that are linked to EIAs and EMPs that detail corporate level environmental management arrangements, although they both have many features in common (Hunter Water 2018). For example, the Melbourne Airport EMP “is designed to assist in the delivery of the environmental management principles described in the Melbourne Airport Environment Policy by identifying the potential environmental risks that are posed by airport operations and describing the measures that will be taken to eliminate or mitigate those risks” (Melbourne Airport 2019).

There may also be some confusion with environmental and social management systems (ESMS) which provide a systematic approach to managing environmental and social risks and impacts and incorporate the management of environmental and social risks and impacts into the organisation's business processes and procedures (SPREP 2019).

A useful definition of an EMP is “a plan or programme that seeks to achieve a required end state and describes how activities, which have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored during the commissioning, mobilization, construction, operation, maintenance and decommissioning of a project; and that the positive benefits of the projects are enhanced” (Baby 2011).

Accordingly, it is necessary to stipulate that this paper only deals with EMPs that are linked to EIAs, notwithstanding the undoubted value of corporate level EMPs and ESMSs. A further clarification is that EIA-related EMPs are typically divided into construction and operational EMPs, as the permitting authorities may be different for these two stages of a project. Occasionally, social impacts are dealt separately from EMPs, in the form of social impact management plans (SIMPs), again reflecting different institutional arrangements (Australia Pacific LNG 2011).

## **2. Global Experience of EMPs**

In Australia's Northern Territory, an EMP "must demonstrate how environmental risks are controlled and reduced to a level that is as low as reasonably practicable and acceptable in addition to meeting the principles of ecologically sustainable development", and ensure that stakeholders who are affected by the activity are properly consulted and engaged. The full contents of an EMP, "with the exception of strictly in confidence information as defined by the Information Act 2002", must be made public (Department of Environment and Natural Resources, Northern Territory (2020)).

In Europe, the EIA Directive provides the guidance for member states to address environmental impacts of projects, but the need to improve the delivery of mitigation measures after the consent to proceed is also recognised. In this connection, an EMP is recommended "alongside or within" the EIA document. The advantages of making it a section of the EIA are that it can be updated as new information becomes available and enables a clear link to planning conditions, developer obligations, and consent conditions (IEMA 2016). The EMP is seen as a bridge between pre- and post-consent processes and a key tool for risk and change management.

In the United Kingdom, an EMP is seen as an operational manual for implementing appropriate environmental controls and monitoring procedures in the construction phase, ensures that the construction of the works complies with relevant environmental legislation, licence conditions and accepted good practice, and ensures that the mitigation measures outlined in the project EIA are fully implemented (Broderick and Durning 2006).

One important objective of EMPs is to ensure that there is sufficient project budget allocated to implementing the mitigation measures identified in the EIA, including any contingency for unforeseen impacts or emergencies, and for project closure (Lochner 2005; Endeavour Energy 2017).

EMPs can be used throughout the project lifecycle – commissioning, mobilization and construction, operation and maintenance, and decommissioning – allowing the plans to be updated as the project progresses, and unforeseen issues arise (Baby 2011).

### **Construction EMPs**

Construction covers demolition, site preparation, building maintenance or repair, vehicles entering or leaving the site, activities at, or in the immediate vicinity of, the site, persons working at the site and activities associated with work at the site (EPA South Australia 2019). A construction EMP (CEMP) is needed when there is a risk that construction activities could cause environmental harm or nuisance. Impacts could include discharge of polluted water, noise, dust, litter, odours, removal of vegetation, excavation or importation of contaminated soil etc.

Typical contents of a CEMP include (i) description of the site and receiving environment, including the location and details of sensitive receivers; (ii) description of the construction

work, including schedules; (iii) potential environmental and social impacts; (iv) mitigation measures; (v) residual risks; (vi) planned management measures; (vii) specific responsibilities, including enforcement; (viii) reporting and verification; (ix) contingencies; and (x) communication and complaint resolution (EPA South Australia 2019).

### **Operational EMPs**

Operational EMPs (OEMPs) show how the operational phase of a development can benefit the local environment and affected communities. An OEMP should show how ecologically sensitive areas will be not only protected but also enhanced during the operation phase (Chamberlayne 2012). A typical OEMP includes (i) statutory and policy considerations; (ii) overview of the site, facilities, operational impacts, and management measures; (iii) implementation arrangements, responsibilities, communications, and emergency responses; (iv) monitoring and review (Veolia 2017). A key appendix is the pre-operation condition compliance report that sets out the compliance conditions set by the permitting agencies and how they are embedded in the OEMP.

### **Social Impact Management Plans**

In some jurisdictions, separate social impact assessments (SIAs) are conducted at the same time as EIAs. Where they are conducted separately, Social Impact Management Plans (SIMPs) are required. Where social impacts are included as part of the EIA process (which is the case in most countries), the EMP is often referred to as an Environmental and Social Management Plan (ESMP).

Generally, the SIMP will include specific actions to mitigate the social impacts identified in the SIA, a monitoring programme, and a community engagement programme. For a large LNG project in Australia, the SIMP included an integrated housing and accommodation strategy, community investment strategy, indigenous engagement strategy, community health and safety strategy, and a workforce and training strategy. It also outlined the company's local content policy, a monitoring, review and reporting programme, and a grievance and dispute resolution policy (Australia Pacific LNG 2011).

### **Decommissioning Environmental Management Plans**

Environmental impacts may continue for the full lifecycle of a project, extending beyond the operational stage to closure and decommissioning. In some cases, the full EMP will also include a decommissioning environmental plan (DEMP). For example, the Port Augusta renewable energy park's EMP includes a CEMP, OEMP, and DEMP (Department of Planning Transport and Infrastructure, South Australia 2017). The DEMP in this particular case includes native vegetation and fauna, cultural heritage, noise, pollution prevention, traffic and transport, fire and emergency. Some of the specific measures in the DEMP are (i) access tracks may be left *in situ* subject to the requirements of landowners; (ii) solar PV modules will be removed from the site for dismantling; (iii) all surface cabling will be removed for recycling; (iv) underground cable will be ended below the surface and left *in situ*; (v) all buildings will be removed down to the foundation or concrete pad as required by the landowner; and (vi) all substation equipment will be removed for recycling and the building removed (Department of Planning Transport and Infrastructure, South Australia 2017).

## **3. Implications for Asia**

In Bangladesh, for Orange B and Red categories under the Rules on Environmental Clearance Certificates, an EMP is required, along with obtaining site clearance and environmental clearance. Where an EIA is required, it must include an Environmental

Management and Monitoring Plan (EMMP). The Environmental Clearance Certificate (ECC) is not provided until construction is completed, however, and the project is ready for operation (Khadka and Shrestha 2011).

In India, a mitigation plan is developed for the selected project option and supplemented by an EMP, which is seen as an important input to obtaining project clearance permits. In Bhutan, the EIA must contain baseline conditions, impact identification and prediction, mitigation measures and an EMP and a monitoring plan. The environmental permit will usually include compliance conditions for construction and operations. Similarly, in Nepal, monitoring, auditing, and compensation plans are an integral part of the EIA process and the project developer is responsible for monitoring.

For all four South Asian countries reviewed, an EMP is an integral part of the EIA process ((Khadka and Shrestha 2011). According to Lima et al. (2015), all South Asian countries (with the exception of Afghanistan) include “reduction, prevention, mitigation, and compensation measures” in their EMPs. Despite these provisions, however, the main challenges are (i) developers not taking responsibility to implement the mitigation measures; and (ii) government agencies lacking the resources to confirm effective application of the measures. Also, EMPs are often used to remedy the lack of legally established environmental standards or formal government programmes that lack budget and human resources (Lima et al. 2015).

In the lower Mekong countries (Cambodia, Vietnam, Lao PDR, Myanmar, and Thailand) an EMP is required to be submitted together with an initial environmental examination (IEE) or a full EIA (Baird and Frankel 2015). The responsible government agency reviews the EIA and EMP prior to issuing an ECC. The project proponent is responsible for monitoring and compliance with the EMP and ECC. Only Lao PDR, however, specifies that project affected communities should participate in the monitoring and compliance stage—which is seen as a major weakness in current EIA procedures (Baird and Frankel 2015). While most countries in Asia allow public consultation on EIAs, if the EMP is treated as a standalone document then public participation is not clear.

An EMP should (i) be balanced, objective, and concise; (ii) clearly state any limitations and how conclusions were reached; (iii) include strategies for managing uncertainty; (iv) be easily understood; (v) ensure that responsibilities for action are clear; and (vi) clarify sources of adequate funding for implementation (Department of Environment 2014).

#### **4. Observations**

A review of stakeholder perceptions regarding EMPs in the United Kingdom found that the bridging function between pre- and post-consent is only partially effective (Bennett, Kemp and Hudson 2016). As there is no “gold standard” for EMPs, they have considerable variation in practice. Where a single organisation, like an environment agency, is involved across all phases of development, this bridging role is reasonably effective. Once multiple organisations become involved, as is often the case when multiple construction and operational permits are required, the linkages are significantly weaker. EMPs should be a legal requirement, consistently prepared by environmental professionals, and the public should be given an opportunity to contribute to formulation and monitoring of the EMP (Bennett, Kemp and Hudson 2016).

There is some debate over whether the EMPs should be part of the EIA documentation or separate standalone plans. There is clear evidence that, at a minimum, the CEMP and OEMP should not only be made available to the construction companies and operations managers, but also should be translated into construction contracts, company budgets, staff

instructions, and operation and maintenance manuals. Without this crucial step, the EMPs become divorced from the entities responsible for implementing the plans. Monitoring and routine audits should check that these linkages back to the EIA and EMPs have been made, the mitigation measures have been implemented, and the intended improvements in environmental outcomes have been achieved as planned.

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