

# THE INTEGRATION OF ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT SYSTEMS: EXPERIENCES FROM THE UK

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## Abstract

Environmental impact assessments (EIA) and environmental management systems (EMS) enable organisations to identify, assess and manage environmental impacts throughout a development's lifecycle, improving overall environmental performance. To ensure these tools are used efficiently and effectively, their synergies and links ought to be recognised and exploited, although the extent to which this occurs in practice is uncertain. Focusing on the UK, this paper reviews experience of linking the tools and presents four case studies demonstrating different aspects of integration. Further efforts are needed to seek and share good practice in order to improve prospects for integration. These efforts should prioritise sectors where EIA development regularly occurs, EMS is well established and a single organisation commonly has involvement across project phases.

## Introducing EIA and EMS

EIA and EMS are environmental protection tools with complementary purposes. While the goal of EIA is to anticipate and mitigate the environmental impacts of proposed new projects at the planning and design stages, an EMS can help organisations to effectively manage the day-to-day environmental impacts arising during the construction, operation and decommissioning of such projects. Organisations can have their EMS certified to standards such as ISO 14001 (ISO, 2004). By supporting a systematic approach to the identification and evaluation of impacts, both tools can ensure that resources are focused on those impacts deemed to be "significant", identifying them at an early stage in project planning and systematically addressing them throughout the project lifecycle. The strengthening of links between EIA and the ongoing environmental management of a project has been recommended as a specific way in which UK EIA practice could be made more effective (Jay, Jones, Slinn & Wood, 2007).

A comparison of the two tools demonstrates their rather different origins and regulatory status within the European Union, including the UK, although their goals are similar. While ISO 14001 is designed to be adopted voluntarily by organisations operating in any sector, EIA is restricted to projects listed on the annexes of the EIA Directive for which it is legally required. EMS activity could be considered more widespread, with nearly 10,000 ISO 14001 certificates held in the UK (ISO, 2009) against 450 EIAs carried out in England each year (Barker, 2006).

## The integration of EIA and EMS

Various theoretical approaches to linking EIA and EMS have been proposed (eg Perdicoúlis & Durning, 2007; Ridgeway 2005; Sánchez & Hacking 2002;) and a small number of studies has investigated environmental management links to EIA in real-life projects (eg Barnes & Lemon, 1999; Marshall, 2004; Slinn, Handley and Jay, 2007;). At a basic level, these two tools could be linked if an EIA recommended that an EMS be implemented during project construction or operation and this commitment was fulfilled by the site developer or operator(s). However, this link would be strengthened further if the EIA findings directly informed the EMS. For example, Sánchez and Hacking (2002) suggest that the criteria defined and used during EIA should be later used in planning the EMS for the relevant project. EIA findings might contribute to the register of aspects and impacts or inform a risk-based internal audit programme. The EIA provides an essential source of baseline information against which "continual environmental improvement" (a key requirement of the ISO 14001 standard) can be demonstrated year-on-year. Likewise, EMS for an existing site can generate environmental information that could be useful when carrying out EIA for a similar new site (Glasson et al., 2005). This approach gives the organisation the opportunity to translate generic recommendations into implementable procedures or instructions and helps address stakeholder concerns (Sánchez & Hacking, 2002).

However, the extent to which these linkages are recognised or exploited more generally across different sectors and locations seems to be relatively unknown, including in the UK. Furthermore, Ecclestone & Smythe (2002) claim that comparatively little consideration has been given by

researchers to the potential environmental protection and efficiency benefits of linking or integrating EIA and EMS.

Previous research has identified a range of barriers that actually or potentially hinder integration between EIA and EMS (see Table 1). In particular, the planning and implementation phases of a project are frequently separated in terms of accepted procedure, professional expertise and time. In common with many other EU countries, there are separate consenting procedures in the UK for planning, sometimes involving EIA, and pollution control (under the IPPC Directive 96/61/EC, as amended) for which EMS is a useful tool. The interface between these consenting processes has been recognised as often lacking in terms of effective communication (eg Defra, 2007; Environmental Resources Management, 2004). Statutory guidance recognises that EMS can help ensure EIA commitments are implemented (eg CLG, 1999), but even in the oil and gas sector where use of both tools is obligatory (BERR, 2008) research suggests that in practice, more effort is needed to link them (University of Manchester, 2007).

**Table 1: Perceived barriers to linking EIA and EMS**

Type of barrier	Example	Reference
Legal and policy framework	Different consenting regimes for planning and environmental protection (implied)	ERM Ltd, 2004
	Potential overlap in requirements leading to inefficiencies	Eccleston & Smythe, 2002
	Voluntary basis of EMS providing little incentive for uptake	Slinn et al., 2007
Process / technical issues	Complexities of site ownership and occupation	Slinn et al., 2007
	Time lag between EIA being carried out and detailed design of the project	Ridgeway, 2005
	EMS orientated towards day-to-day activities, environmental implications of new development not considered	Marshall, 2004
Practitioner issues	Limited number of practitioners specialising in both tools	Sánchez & Hacking, 2002; Marshall, 2004
	Different personnel undertaking EIA and EMS for any given project	Ridgeway 2005; Sánchez & Hacking, 2002
Proponent and stakeholder attitudes	Public debate around new developments centred on whether or not to grant consent, not on mitigation	Sánchez and Hacking, 2002
	Companies consider EMS to be outside the normal scope of operational activities	Marshall, 2004
	EIA viewed by proponents as a bureaucratic step rather than a useful process to aid the delivery of the project	Sánchez & Hacking, 2002
	Reluctance of proponent to put resources into operational management before the outcome of the application is known	Slinn et al., 2007

The lack of integration between EIA and EMS could be considered symptomatic of a larger problem of limited EIA follow-up. Where post-consent activities have been studied, shortcomings have been identified. For example, an investigation of EIA applications found that 50% of mitigation measures were not translated into planning conditions or obligations (Tinker, Cobb, Bond & Cashmore, 2005).

#### **Examples of UK experience in linking EIA and EMS**

A small number of UK studies have documented single or multiple examples of EIA and EMS being explicitly linked. For example, Slinn et al. (2007) followed the development of twelve business parks from their planning to occupation, to assess the quality of site-based environmental management and the extent to which it was influenced by the EIA. There are a greater range of case studies illustrating EIA and Environmental Management Plan (EMP) links (eg Marshall, 2004; Broderick and Durning, 2006) and guidance has recently been published (IEMA, 2008). An EMP is a less formal approach than EMS, which Marshall (2004) describes as “EMS-lite”, being simpler and less bureaucratic than an EMS.

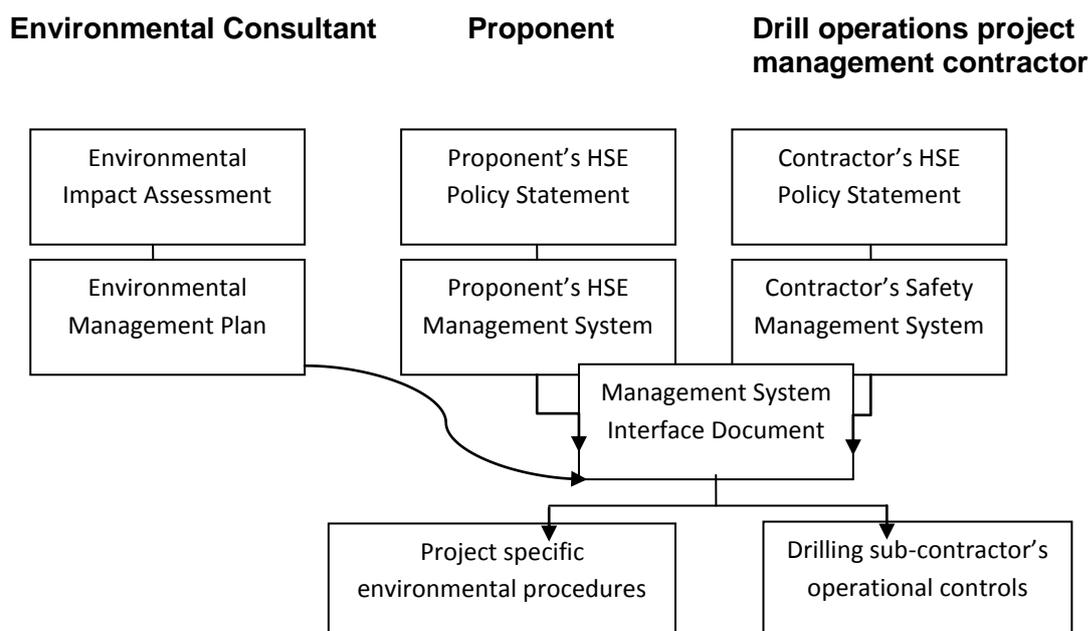
To expand the range of documented EMS examples from the UK, EIA and EMS practitioners were contacted through industry associations and professional bodies during May and June 2008 (see Appendix 1). The industry associations were purposively selected on the basis of coverage of sectors where EIA was considered to be routinely employed for new developments. Responses were limited despite requests reaching several thousand individuals. However, from the literature review and contact with practitioners, four case studies were identified and developed from the oil and gas, renewable energy, flood risk management and urban development sectors. They are not intended to be representative but simply to provide further details on how EIA and EMS could be linked in practice. They are presented in the following section.

### Active tiering of environmental protection tools

#### Case study 1: Desire Oil PLC

Desire Oil PLC published an ES in November 2005 which reported the EIA of proposed exploratory drilling in the North Falkland Basin, near to the Falkland Islands which are a UK Overseas Territory located in the South Atlantic Ocean. The UK EIA Regulations do not apply to the Falkland Islands, but EIA is required for such activities under domestic legislation (the Offshore Minerals Ordinance 1994, Part VI). The ES presented details of the relationship of the various environmental management controls in place (see Figure 1). The Management System Interface Document includes details of the policies, standards and procedures for the project including environmental considerations and risk management. It therefore links the EIA, through the project EMP, to the management systems operated by the three parties (proponent, contractor and sub-contractor).

**Figure 1: Tiers of environmental management controls in place for the Desire Oil PLC exploratory drilling proposal (adapted from RPS Energy, 2005)**



This approach ensures that from the outset (submission of consent application accompanied by ES), it is clear to the regulator, the interested public and the companies themselves how the EIA findings will be taken forward. It also clarifies the relationship between the different organisations' management systems, which is essential if these systems are to work effectively in achieving high standards of health, safety and environmental performance.

### Corporate approach to taking forward EIA mitigation measures

#### Case study 2: Environment Agency

The Environment Agency is the statutory environmental agency for England and Wales whose responsibilities include flood risk management. In this capacity, it plans and oversees the construction of multi-million pound projects, many of which require EIA. Contractor environmental management and performance is assessed during procurement. Maintenance of an ISO 14001-certified EMS is considered essential.

All ES produced by the Agency incorporate an Environmental Action Plan (EAP) which sets out how actions identified as necessary in the ES (mitigation, enhancement, monitoring etc) should be taken forward during the detailed design, preconstruction, construction and post-construction phases. The EAP acts as an interface between the ES and the contractor's EMS and forms part of the contract for work. The EAP keeps the EIA as a 'live' document through project. The Agency carries out construction site audits during the project and each individual action must be signed off. By naming individuals responsible for action, accountability is assured. The EAP actions are reviewed regularly as part of the project gateway review.

By agreeing the EAP actions well in advance with stakeholders and the consenting authority, the Agency ensures that all the mitigation measures can be budgeted for and practically implemented. From a business perspective, this negotiation process helps ensure the consenting authority does not set unexpected conditions which could increase the project cost and have adverse programme implications. The consenting authority has greater confidence that the Agency is committed to implementing the actions contained in the EAP than if they were simply alluded to within the ES without a firm commitment. Increasingly, their use is helping to refine the EIA and EMS by ensuring that the contractor's EMS can deal with routine pollution prevention issues while the EIA can focus on the significant, unique and more stringent issues for each project. The Agency has been able to link the tools due to overseeing the process at every stage. They are also incentivised by their role in promoting environmental protection, therefore needing to ensure that their practices are exemplary.

### **EMS as the framework for delivery of a Construction Environmental Management Plan**

#### **Case study 3: Tornagrain**

Tornagrain is the site of a proposed new town, designed to accommodate the growth of Inverness. An outline planning application and Environmental Statement were submitted by landowner Moray Estates to the Highland Council in January 2009. The ES included a Construction Environmental Management Plan (CEMP), setting out how the mitigation measures for the construction phase as proposed in other chapters would be delivered, to form the basis for discussions with the statutory authority and other stakeholders (Moray Estates, 2009). An ISO 14001-consistent EMS was stated as the management framework by which these commitments would be delivered, overseen by an Environment Manager. Other components of the EMS would include management plans and methods statements providing day-to-day instructions on the specific technical and legal requirements, a monitoring / management programme and regular audits.

Due to the complexity of the project, a consenting decision is still awaited and construction would be several years away. "Reserved matters" applications will be needed for each phase of the project, at which point the CEMP will be developed in more detail. Options for the delivery of the development (eg whether the land will be sold or if a design and build contract will be let) are still open. However, by setting out at the EIA stage of development how key commitments ought to be delivered through EMS, the applicant demonstrates an understanding of the measures that need to be in place to enable the effective delivery of the identified actions.

### **Taking forward EIA findings into a site-based EMS**

#### **Case study 4: A UK power company**

A UK power company has recently constructed a biomass energy plant. A site-based EMS is currently being set up at the plant, which environmental staff intend to use to implement actions arising from the EIA. A programme of quarterly Environmental Review Meetings has been initiated already. Prior to the setting of objectives and targets, the ES will be reviewed to ensure that appropriate actions are integrated from the EIA findings. The EIA will also influence the audit programme where relevant. A Register of Consents has been set up to include all of the site's environmental requirements and the EIA requirements and these will be monitored and closed out as time goes on. The site's environmental advisor reports that the benefits of using the EIA in development of the EMS include closing the loop on any environmental issues highlighted at the planning stage, ensuring that environmental improvement can be maintained into the operational stage of the project.

### **Concluding discussions**

This review has demonstrated that organisations can benefit in various ways by making connections between EIA and EMS. While active integration of EIA and EMS does not appear widespread, a more

systematic approach to the identification of case studies could confirm this. This appears to be for several reasons, as identified through the literature review and case studies:

- EIA is a legal requirement for certain developments, but EMS is usually voluntary;
- The lack of requirement in the EU / UK for EIA follow-up;
- The separation of the planning / EIA process and pollution consenting process;
- The timelag between EIA being carried out for a project and the construction or operation of the project, including the different personnel potentially involved;
- Environmental practitioners tending to be specialists in either EIA (planning) or EMS (site-based environmental management).

It appears there is most potential for benefit from linking EIA / EMS in those sectors where:

- a) EIA development is undertaken regularly (a mineral processing company were interested in the project but had not undertaken any EIA development in many years);
- b) Use of formal EMS is commonplace (Ridgway, 2005);
- c) Organisations plan their own development for which they also oversee construction, occupy and / or operate. The Environment Agency is a good example, and the business parks study (Slinn et al., 2007) shows the difficulties when multiple parties take ownership at each stage.

This means most effort to improve practice and learn from experience could be concentrated in sectors such as utilities, oil and gas and waste management. Further case studies demonstrating the gains achievable from linking the tools and organisations which have gained experience in this area should be shared, even if companies do not routinely publicise their EMS outside their companies. Dialogue between EIA and EMS practitioners ought to be supported through the professional bodies.

After more than fifteen years of having both EIA and EMS at our disposal, practitioners need to ensure that both are used appropriately to ensure that new developments are delivered while environmental protection is achieved efficiently and effectively.

## References

Barker, K (2006). *Barker review of land use planning. Final report – recommendations*. London: HMSO.

Barnes, J. & Lemon, D. (1999). Life-of-project environmental management strategy: case study of the Confederation Bridge project, Canada. *Journal of Environmental Assessment, Policy and Management*, 1(4), 429-439.

BERR (2008). *BERR Guidance and Reporting Requirements Environmental Management System Requirements in relation to OSPAR Recommendation 2003/5 to Promote the Use and Implementation of Environmental Management Systems by the Offshore Industry*. Retrieved May 27, 2008, from [https://www.og.dti.gov.uk/environment/ospar\\_eems\\_recomm\\_v2.pdf](https://www.og.dti.gov.uk/environment/ospar_eems_recomm_v2.pdf) .

Broderick, M. & Durning, B. (2006). Environmental impact assessment and environmental management plans – an example of an integrated process from the UK. In J.F. Martin-Duque, J.F., Brebbia, C.A. Emmanouloudis, D and Mander, U. (eds) *Geo-Environment and Landscape Evolution II WIT Transactions Ecology and the Environment Volume 89*. Southampton: WITPress

CLG (1999). *Circular 02/99: Environmental Impact Assessment*. London: HMSO.

Defra (2007). *Planning and pollution control. Improving the way the regimes work together in delivering new development*. Retrieved January 18, 2010, from <http://www.defra.gov.uk/environment/waste/controls/documents/planning-pollution-control.pdf>.

Eccleston, C. & Smythe, R. (2002). Integrating environmental impact assessment with environmental management systems. *Environmental Quality Management*, Summer 2002.

Glasson, J. Therivel, R. & Chadwick, A. (2005). *Introduction to environmental impact assessment*. 3<sup>rd</sup> ed. London: Earthscan.

IEMA (2008). *Practitioner Vol 12: Environmental Management Plans*. Lincoln: IEMA.

- International Organization for Standardization (2004). *ISO 14001: Environmental management systems: requirements with guidance for use*. Geneva: ISO.
- International Organization for Standardization (2009). *The ISO Survey – 2008*. Retrieved January 18, 2010, from <http://www.iso.org/iso/survey2008.pdf>
- Jay, S., Jones, C., Slinn, P. & Wood, C. (2007). Environmental impact assessment: retrospect and prospect. *Environmental Impact Assessment Review*, 27(4), 287-300.
- Marshall, R. (2004). Can industry benefit from participation in EIA follow-up? In M. Morrison-Saunders & J. Arts (Eds.), *Assessing Impact*. (pp. 118-153). London: Earthscan.
- Moray Estates (2009). *Environmental statement: Construction environmental management plan*. Retrieved May 15, 2009, from [http://www.tornagrain-newtown.co.uk/UserFiles/File/Jan09/Tornagrain\\_CEMP\\_WEB.pdf](http://www.tornagrain-newtown.co.uk/UserFiles/File/Jan09/Tornagrain_CEMP_WEB.pdf)
- Perdicoulis, A. & Durning, B. (2007). An alternative-sequence conceptual framework for EIA-EMS integration. *Journal of Environmental Assessment Policy and Management*, 9(4), 385-397.
- Ridgway, B. (2005). Environmental management system provides tools for delivering on environmental impact assessment commitments. *Impact Assessment and Project Appraisal*, 23(4) 325-331.
- RPS Energy (2005). *Environmental impact assessment for offshore drilling the Falkland Islands to Desire Petroleum plc*. Retrieved January 20, 2010, from [http://www.desireplc.co.uk/pdfs/eis\\_full.pdf](http://www.desireplc.co.uk/pdfs/eis_full.pdf) .
- Sánchez, L. & Hacking, T. (2002). An approach to linking environmental impact assessment and environmental management systems. *Impact Assessment and Project Appraisal*, 20(1), 25-38.
- Slinn, P., Handley, J. & Jay, S. (2007). Connecting EIA to environmental management systems: lessons from industrial estate developments in England. *Corporate Social Responsibility and Environmental Management*, 14, 88-102.
- Tinker, L., Cobb, D., Bond, A. & Cashmore, M. (2005). Impact mitigation in environmental impact assessment: paper promises or the basis of consent conditions? *Impact Assessment and Project Appraisal*, 23(4), 265-280.
- University of Manchester (2007). *Quality review of Environmental Statements for Offshore Petroleum Production and Pipeline developments*. Retrieved July 7, 2008, from [https://www.og.berr.gov.uk/environment/oppapr\\_2007.htm](https://www.og.berr.gov.uk/environment/oppapr_2007.htm)

#### **Appendix 1: Organisations contacted for assistance in identifying case studies**

Association of Electricity Providers (request sent on to Environmental Committee)  
 British Retail Consortium  
 British Wind Energy Association  
 Chemical Industry Association  
 CIRIA (request published in CIRIA News, May 2008)  
 Environmental Services Association  
 IEMA (request published in IEMA Downloaded, June 2008)  
 IAIA (request emailed to Ireland-UK branch list and EMS listserv)  
 Nuclear Industry Association  
 Oil and Gas UK  
 Royal Town Planning Institute Environmental Planning and Protection Network (request emailed to network members)