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Stakeholder perceptions of Environmental Management Plans as an environmental protection tool for major developments in the UK

Sophie Bennett [a], Simon Kemp [a], Malcolm D. Hudson [a,b,*]

[a] Faculty of Engineering and the Environment, University of Southampton, SO17 1BJ, United Kingdom
[b] Institute for Life Sciences, University of Southampton, SO17 1BJ, United Kingdom

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ABSTRACT

Insufficient implementation and the lack of legislative requirements for follow-up measures following the approval of projects are consistently highlighted as major shortcomings of Environmental Impact Assessment (EIA). Although adopted over 15 years ago by the World Bank, Environmental Management Plans (EMPs) were only semi-formalised in the UK in 2008 and arguably provide a continuous link or 'bridge' between the EIA process pre-consent and an Environmental Management System (EMS) post-consent. Drawing on twenty-one semi-structured interviews with stakeholders and thematic analysis of their responses, and a broad-scale practitioner survey, this study aimed to assess the effectiveness of EMPs as an environmental protection tool across the project lifecycle for major developments. The findings revealed a mixed picture of EMP effectiveness in practice, with EMPs only partially fulfilling a bridging role between EIA and EMS. There is no 'gold standard' terminology for EMPs, all having slightly different uses, thus presenting different focuses to different stakeholders and further enhancing variation in practice. For many stakeholders, the effectiveness was simply not known, due to the lack of communication and follow-up that still exists. EMP–EMS linkages were shown to be effective from the developer's perspective when a single organisation has involvement across all project phases, though weaknesses occur when multiple parties are involved. Among other stakeholders, knowledge varied significantly; whilst some were in agreement that the linkages worked, many were unaware of the connections and thought of them as two quite separate tools. Stakeholders advocated for the need to make EMPs a legal requirement; for improved communication between stakeholders during EMP implementation and increased documentation of project outcomes; and for EMPs to be consistently written by environmental professionals. Furthermore, weak links in the current process may be improved by providing detailed guidance for organisations on the potential for EMP–EMS linkages, with the additional aim of encouraging stakeholders to broaden their current specialist knowledge on environmental protection tools.

1. Introduction

Insufficient implementation of follow-up measures, and the distinct lack of legislative requirements following the approval of projects, have consistently been highlighted as major shortcomings of Environmental Impact Assessment (EIA), with literature subsequently questioning the overall effectiveness of EIA as an environmental protection tool (Wood, 1999; Nitz & Holland, 2000; Gallardo & Sanchez, 2004; Gallardo & Sanchez, 2004; Jay et al., 2007; Morrison-Saunders et al., 2007). EIA follow-up can be defined as 'the monitoring and evaluation of the impacts of a project or plan (that has been subject to EIA) for management of, and communication about, the environmental performance of that project or plan (Arts et al., 2001). Such shortcomings exist despite the World Bank establishing guidance in 1999 on Environmental Management Plans, documents established in order to provide a continuous link between predicted impacts and the measures specified to mitigate them (Durning, 2012).

However, a new EU Directive on EIA (2014/52/EU) includes the introduction of mandatory monitoring for significant adverse effects (Article 8) with the aim to correct what is arguably the biggest flaw in the existing regime. More so than ever, applying follow-up within EIA is no longer an option by a sound precaution and proactive measure to ensure a sustainable future (Marshall, 2004).

1.1. Integration of EIA and EMS

An EIA is carried out prior to a development taking place with the aim of minimising significant environmental effects (Glasson et al., 2013). Environmental impacts created during and post-development are controlled through environmental management practices based upon legislative requirements or internal policies. An Environmental Management System (EMS) is one means of managing ongoing impacts

* Corresponding author at: Faculty of Engineering and the Environment, University of Southampton, SO17 1BJ, United Kingdom.
E-mail address: mdh@soton.ac.uk (M.D. Hudson).

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during, and post completion of the development. Although an EMP might not stipulate a certificated EMS, organisations may choose to demonstrate externally verified credibility to their environmental practices through a formal EMS such as one certified to the International Organisation of Standardisation (ISO) ISO14001 (ISO, 2015). A certified EMS will involve the review, assessment and continual improvement of an existing organisation's environmental effects (Glasson et al., 2013). An EMS is said to have both tangible benefits in aspects such as reducing waste (e.g. Briggs, 2006), and intangible environmental performance improvements; for instance improved environmental awareness among employees (e.g. Rondinelli & Vastag, 2000) and has been adopted as global tool for environmental improvement with over 300,000 organisations certified in 171 countries (ISO, 2013). It should be noted that application of both a certified EMS such as ISO14001 and a non-certified EMS is voluntary, unless it is stipulated by a regulator as a legal condition of a permit to operate.

Both EIA and EMS can be seen as environmental protection tools that have complementary purposes, with EIA seeking to anticipate and mitigate/enhance impacts of proposed new projects at the planning and design stage, and EMS helping organisations to effectively manage the subsequent day-to-day impacts (Obradovic, 2011). Thus, within the 'environmental management toolbox' (Finkbeiner et al., 1998), they can be linked to manage environmental impacts across the development project lifecycle (Slinn et al., 2007; Hollands & Palframan, 2014).

Various theoretical approaches to linking EIA and EMS have been proposed (e.g. Ecclestone & Smythe, 2002; Sanchez & Hacking, 2002; Ridgway, 2005; Perdicoulis & Durning, 2007; Slinn et al., 2007; Perdicoulis et al., 2012). Such studies highlight a range of barriers that can hinder integration (Palframan, 2010), including challenges around the legal and policy framework (e.g. Ecclestone & Smythe, 2002); technical issues (e.g. Slinn et al., 2007); practitioner issues (e.g. Sanchez & Hacking, 2002); and proponent and stakeholder attitudes (e.g. Marshall 2004). It is widely acknowledged that there is most potential for linking EIA with EMS where organisations plan their own development for which they also oversee construction and/or occupy in the long term (Marshall, 2004; Slinn et al., 2007; Palframan, 2010).

1.2. Environmental Management Plans

Environmental Management Plans (EMPs) are one way of mitigating and managing the environmental effects of development projects (IEMA, 2008), defined as documents that 'outline the mitigation, monitoring and institutional measures to be taken during project implementation and operation to avoid or control adverse environmental impacts, and the actions needed to implement these measures' (Tinker et al., 2005).

The overall objective of an EMP is to provide a continuous link or 'bridge' between the EIA process pre-consent and the EMS operated by various stakeholders (e.g. project construction contractors, project operation managers) post-consent (IEMA, 2008; Glasson et al., 2013) (Fig. 1). Furthermore, where an organisation has an EMS, the EMP may refer to relevant policies and procedures within it, and a proponent's EMS may include processes for the preparation of EMPs. As such, recent experiences have described EMPs as a less formal, less bureaucratic, 'EMS-*lite*' approach (Marshall, 2002, 2004, 2005).

Around the world there has been some take-up of EMPs as part of the EIA process by, for example, the World Bank (see above) and in specific locations such as Western Australia (Dik and Morrison-Saunders, 2002) and Hong Kong (Durning 2012) or in specific sectors such as Environmental Action Plans in flood risk management works overseen by the UK Environment Agency (Fuller et al. 2012). There is no general statutory requirement for project proponents to deliver all mitigation proposed pre-consent or to prepare EMPs in the UK, and as such, their use varies significantly within sector, organisation and scheme (IEMA, 2008). The UK Institute of Environmental Management and Assessment (IEMA) has been a strong advocate of the EMP approach, and set out its position in its Practitioner Guide (IEMA, 2008). Prior to this, there has been little existing guidance available in relation to the production and implementation of EMPs.

The focus on EMPs within the academic literature is limited in scope. Early studies have identified issues associated with the use of EMPs in practice as a result of the need for voluntary uptake (Boyden, 2002; Mohamad-Said, 2002). The origins and the links EMPs can make between EIA and EMS have recently been explored by Durning (2012) through the review of current literature, noting their variation in practice, and their focus on construction rather than operational impacts (e.g. Broderick & Durning, 2006; Broderick et al., 2010). Most notable is perhaps a string of studies by Marshall (2002, 2004, 2005) documenting a single case study and advocating that, in the absence of statutory requirements, the development of an EMP will be motivated by a proponent/developer's individualistic desire to satisfy specific project requirements or for them to fit within existing management frameworks such as their EMS.

It is worth clarifying that the integration of EIA and EMS has received little attention in the literature; and it is complicated by a range of terminology and differing approaches to the level of independence of those involved in oversight of any monitoring. The World Bank and the International Finance Corporation set overarching performance standards related to sustainability, and typically have a requirement for environmental supervisors to oversee construction activities. The

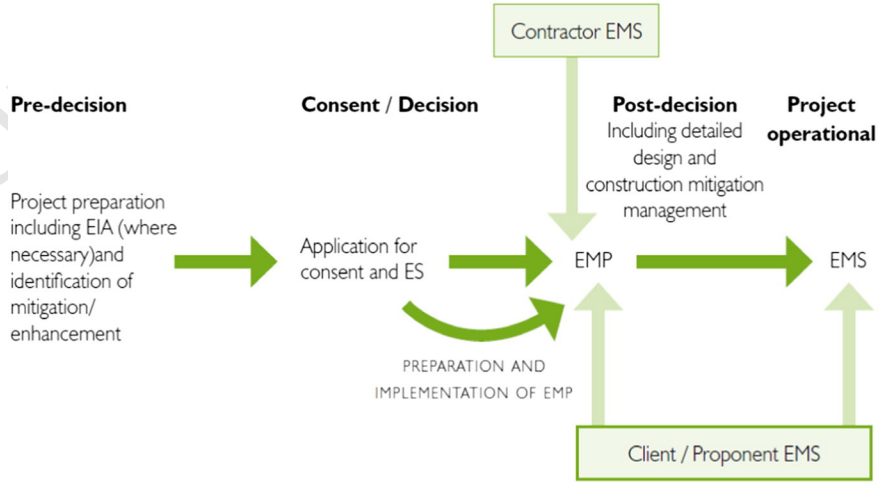

Fig. 1. Linkages between EIA, EMPs and EMS (IEMA, 2008).

terminology for such supervision varies, with 'environmental control officer' in use in South Africa and 'independent environmental checker' in Japan, both of which are usually independent of the developer (Wessels, 2013).

1.3. The study aims

In light of such limited literature on EMPs, the overwhelming desire for adequate EIA follow-up, and the more stringent requirements for monitoring in the 2014 EIA Directive (2014/52/EU), this study aims to assess the effectiveness of EMPs – as perceived by stakeholders – as an environmental protection tool across the project lifecycle for major development projects in the UK. We have defined 'effectiveness' as being whether impacts considered significant in the EIA process have been averted and/or mitigated effectively, based on the overall aim of the EMP being to 'ensure that the effort put into the EIA process pre-application and consent is effectively delivered post-consent' (Glasson et al., 2013).

This research represents the first broad-scale focus on EMPs by taking a sector-wide approach and involving a range of stakeholders who were given the opportunity to reflect on their experiences and express their views in in-depth interviews and via a wider questionnaire survey of the EIA professional community. The focus of the research was on the effectiveness of EMPs as environmental protection tools across the construction and operational phases, on the value of linkages with institutional EMSs, and to update and advance the effectiveness of EMPs where relevant for future practice.

2. Methodology

2.1. Semi-structured interviews with stakeholders

Twenty one semi-structured face-to-face interviews with stakeholders were undertaken from June to July 2014. The interviewees were from ten consultancies and five developers, four local planning authorities and two UK statutory consultees (i.e. government agencies with a formal role in EIA), chosen to reflect the different stakeholders involved.

The range of interviewees were chosen by making initial telephone enquiries to organisations. Potential candidates were selected by providing an overview of the intended scope of the research; those that confirmed having experience writing, using, and/or reviewing EMPs (involvement dependent on stakeholder) were deemed suitable candidates. An email was sent with a more detailed description of the research, allowing candidates to confirm that they had suitable experience with EMPs, or providing them with an opportunity to pass on to a more suitable candidate, and thus ensuring that the most suitable interviewees made themselves available.

An in-depth, semi-quantitative review of academic literature available on EMPs revealed four key subject areas for exploration, providing the framework for the interviews (Holbrook et al., 2003) and a starting point to stimulate further discussion (e.g. Hammond & Hudson, 2007; Hollands & Palframan, 2014). The interviewees were asked for their views and experiences with reference to the following subject areas:

1. The effectiveness of EMPs in providing environmental protection for the construction and operational phases;
2. The monitoring and follow-up requirements in EMPs;
3. The EMP–EMS linkages:

   (a) Does your company have an EMS and does this affect how you carry out your activities?
   (b) From past experiences, do you feel that the presence of an EMS enhances the practice of organisations you are working with?
   (c) From past experiences, does an EMS document processes for preparing and monitoring/auditing the EMP?
   (d) From past experiences, does the EMP provide a mechanism for the EMS to takeover in the operational phase?

4. Suggestions for improving the effectiveness of EMPs.

It should be noted that the third subject area was subsequently split into further related subject areas in order to explore the different aspects of EMP–EMS linkages. These subjects varied depending on the type of stakeholder, however, and were more relevant to developer interviewees; this was made clear to participants in such cases.

All interviews lasted between 15 and 60 min, with the majority lasting for approximately 30 min. Interview-related error was reduced by following guidelines outlined in Oppenheim (1992); for example, the interviewee was initially asked to briefly describe both the organisation's and their own involvement with major development projects, and then EMPs, ensuring the respondent's co-operation was readily forthcoming and that terminology was understood. The use of non-directive probes, as recommended by Foody (1993) allowed interviewees the opportunity to expand on their comments without being led. Confidentiality has been provided for each of the interviewees; identities and affiliations are not revealed, so interviewees are referred to anonymously as Consultant 1 (C1, C2 etc.), Local Authority 1 (LA1, LA2 etc.) and so on.

Following completion, interviews were fully transcribed from the recordings as an edited verbatim transcript, removing unnecessary stop words whilst retaining accuracy (e.g. Hollands & Palframan, 2014). Examination of interview content under the four key subject areas was based on the 'thematic analysis' methodology as outlined by Braun and Clarke (2006). Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data (Braun and Clarke, 2006). A theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set. Through its theoretical freedom, thematic analysis provides a flexible and useful research tool, and is thus widely used by qualitative researchers (Ritchie and Spencer, 1994; Fink, 2003; Braun and Clarke, 2006).

For each of the four exploratory subject areas, transcripts were coded and recurring themes and sub-themes were identified, allowing comparisons to be made within and between stakeholders (Braun and Clarke, 2006). Such analysis is beneficial, enabling the movement back and forth between different levels of abstraction without losing sight of the raw data (Siedman, 2006). The process of transcription is seen as a 'key phase of data analysis within the interpretative qualitative methodology' (Bird, 2005), allowing the researcher to become familiar with the data. For each of the exploratory subject areas, transcripts were manually coded, and codes were then sorted and allocated into overarching 'themes'; thematic maps were used to assist this process, enabling the relationships between codes, between themes, and between different levels of themes to be thoroughly considered (Braun and Clarke, 2006).

Themes were then identified in an inductive or 'bottom up' way, which describes a process of coding the data without trying to fit it into a pre-existing coding frame (Braun and Clarke, 2006). It should also be noted that themes were identified at a 'semantic' level (Boyatzis, 1998); with a semantic approach, the themes were identified within the explicit or surface meanings of the data and we did not look for anything beyond what an interviewee said. For the reader's information, recurrences of themes have been quantified. However, it should be noted that, in the case of thematic analysis, more instances do not necessarily mean the theme itself is more crucial. As such, researcher judgement has been used to determine what a theme is, and themes have been allocated to standalone comments if they are deemed as 'capturing something important in relation to the overall research question' (Braun and Clarke, 2006).

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2.2. Online practitioner survey

An online survey was produced and sent to the Chartered Institute of Ecology and Environmental Management (CIEEM) and the Association of Local Government Ecologists (ALGE) for inclusion in their e-newsletter to members, and the survey featured on an online discussion page for members of the Institute of Environmental Management and Assessment (IEMA). These professional membership bodies are UK-wide, allowing an extensively dispersed sample to be contacted. The survey was also sent to professionals whom interviewees had advocated as additional contacts suitable for interviews, but for which time was limited.

A set of questions were developed comprising nine closed and three open questions, designed to reflect the four main subject areas covered in the stakeholder interviews (Fink & Kosekoff, 1998) (see Supplementary Information A). A pilot study involving a variety of stakeholders working in the industry was performed to ensure that the study was clearly explained and the questions easily understood (Fink, 2003). A brief explanation providing the background to the research was provided and confidentiality was ensured, to allow for maximum response rate. Results are presented as percentages without further quantitative analysis due to low response rates.

3. Results

3.1. Semi-structured interviews with expert stakeholders

The views of the interviewees regarding the four main subject areas are drawn together below. Key details including a quantitative summary of the responses are highlighted in Tables 1–4.

For Subject Area 1, it became apparent that for all local authority and statutory consultee interviewees, the effectiveness of EMPs as an environmental protection tool was simply not known (Table 1). Commonly recurring sub-themes were that stakeholders were of the opinion that the effectiveness is dependent on the implementation of the EMPs; the construction phase is the primary focus; and that EMPs are only effective when project-specific. In addition, a statutory consultee noted the effectiveness of an EMP varied depending on the type, commenting "*I find Construction Environmental Management Plans (CEMPs) quite rigid, identifying the risks and this is how you manage that risk, whereas Ecological Management Plans go beyond that, and goes to great lengths to try to start exploring the possibilities of Ecosystem Services.*

Similarly for Subject Area 2 exploring monitoring and follow-up requirements, the fact that stakeholders didn't get updated following EMP implementation was a common theme for all local authority participants, statutory consultees and the majority of consultants (Table 2). The desire from statutory consultees and consultants to be updated in order to learn for future practice, and to voluntarily follow-up on novel mitigation strategies, were recurring themes. Developer interviewees noted the importance of an Ecological Clerk of Works (ECW), although their use was disputed by consultants. A standalone response from a developer interviewee highlighted; "*We undertake monitoring that makes up part of the planning conditions, but I am never pushed for the survey results. Interestingly I have just got the final monitoring report for a new scheme — I will be amazed if anybody actually chased me for it. I know that's not right but in practice I think that is the reality*" (D1).

Subject Area 3 posed the links between EMPs and EMS (Tables 3.1 & 3.2). It became apparent that statutory consultee and local authority interviewees were unfamiliar with both these links and EMS as an environmental management tool. Opinions on whether the presence of an organisation's EMS makes for better practice varied between and within stakeholder groups (Subject Area 3a & b). All developer interviewees were in agreement that their EMS provides a framework for producing and monitoring an EMP, but consultants were of varied opinions (Subject Area 3c), whilst Subject Area 3d, presented to just developer interviewees, produced a mixed response, with two interviewees advocating an apparent gap existing between the EMP and the ongoing EMS.

Subject Area 4 drew on the opinions for improving the effectiveness of EMPs in practice (Table 4). The most common recommendation was the apparent desire for EMPs to become a legal requirement. The importance of increased professional involvement was felt strongly by local authority interviewees, whilst consultants and developers advocated for improvements to the way the EMP is communicated on site and between stakeholders.

3.2. Online practitioner survey

In total, there were 41 responses to the survey. General information was collected to put the findings into context, including which

Table 1
Subject Area 1 — The effectiveness of EMPs providing environmental protection for the construction and operational phases.

Recurring themes	Recurring sub-themes	% of stakeholder groups*	Example comments from stakeholders
Effectiveness not known	Due to a flaw in the planning system	LA 100%	"It's incredibly difficult to know because the big gap in the planning process is the lack of resources for enforcements" (LA3)
	Due to the lack of follow-up	SC 100% EC 20%	"Whether our advice is implemented on the ground and the EMP works to convey this, I don't know. We don't get feedback on whether the advice we gave in the EMP was effectively implemented on the ground" (SC2)
Effectiveness depends on the implementation of the EMP	How well the EMP is communicated on the ground	EC 70% SC 100% D 100%	"The effectiveness of EMPs is dependent on how they are communicated on the ground – you can't very much expect the document to be effective just by printing it off and handing it to the site workers – they need explanations as to why certain mitigation is being proposed at particular points" (D2b) "I imagine really the effectiveness depends on who is involved and whether there is a good level of communication on the ground. We don't know though" (SC2)
	Whether the EMP is audited and by whom	EC 30%	"Their effectiveness depends on whether or not they are checked and audited by the right person throughout and at the end; a lot of the EMPs we do are for clients with project managers that don't necessarily have any environmental leanings" (EC5)
Construction phase is the focus, and the operational phase is overlooked		D 40% SC100% EC 60% LA 50%	"Construction is the main focus. It is a temporary impact in a lot of cases but we just don't put the money into follow-up" (D3a) "I think people think about construction a lot more. Quite often we will have to respond on EIAs saying you haven't really considered operational impacts. It's also decommissioning as well. I think decommissioning is also often overlooked too" (SC2)
Effective when they are project-specific		EC 10% D 20%	"For me when I review an EMP I catch things that haven't been considered. The contractors very regularly miss things and the CEMPs are quite often generic documents used for all projects. EMPs are particularly effective when they are project-specific and outline particular aspects focused on that site that need to be considered and communicated" (D2a)

*LA = Local Authority (N = 4), SC = Statutory Consultee (N = 2), EC = Environmental Consultant (N = 10), D = Developer (N = 5).

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Table 2
Subject Area 2 — the monitoring and follow-up requirements in EMPs.

Recurring themes	Recurring sub-themes	% of stakeholder groups*	Example comments from stakeholders
Stakeholders don't get updated	Rarely informed of monitoring surveys	LA 100%	"We set the conditions, but we are not informed of the monitoring results or how anything is going. I hope they submit them but I don't get informed" (LA1)
	A lack of resources to follow-up	LA 50% EC 30%	"We don't have the time to follow up on our conditions or monitor ourselves – we move on to the next project – the work load that is there means that there isn't the capacity. And the cuts have made it particularly bad" (LA3)
	Not updated on the outcomes of the development project but would like to know for future practice	SC 100% EC 80%	"If it is not conditioned, there is no legal mechanism for us to be consulted. Which is where the weakness is, that feedback loop isn't working, and sometimes we will provide advice and we won't hear about the decision. So we would have to go onto the Planning Portal website to see if it has been approved or not. We quite often won't get feedback but we'd like to know for future projects" (SC2)
Site managers provide effective monitoring	An ECW is effective when familiar with the scheme	EC 20%	"When we are able to see the project from beginning to end then our ECW role is extremely valuable, but very often we are only contracted to produce an EIA, we don't get contracted to do anything further once construction starts, so we hand over that documentation and whoever is contracted to do the next phase will have to pick that up and run with it, and will cause problems" (EC2)
	ECWs are important for developers	D 80%	"It is vital that we make sure that site inspections are undertaken to ensure the environment is protected and any follow-up monitoring can be delivered" (D2a)
Depends on the developer/who is managing the land afterwards		LA 75% D 20%	"My own personal view is that it depends on the company's approach to it, and I say that because I don't think there is any regulator engagement or involvement" (D1)
Innovative mitigation strategies can result in follow-up exceptions		SC 50% EC 10%	"Quite often where the mitigation is quite novel, for example habitat creation at a managed realignment site, and we will quite often be involved in this; people are interested to know because it's quite a new thing and no one is quite sure how these sites will develop" (SC2)

*LA = Local Authority (N = 4), SC = Statutory Consultee (N = 2), EC = Environmental Consultant (N = 10), D = Developer (N = 5).

stakeholder group participants belonged to, what terms for EMPs they were most familiar with (in total fourteen different terms were mentioned), how often they dealt with EMPs, and in what context they were mainly used. Although not evenly distributed, respondents represented all stakeholders: fourteen local authorities, sixteen consultants, four developers, three contractors, two statutory consultees and two non-governmental organisations (NGOs). The majority of practitioners (95%) dealt with EMPs either 'all the time' or 'fairly regularly', thus indicative of a high level of knowledge.

There was an apparent general consensus among stakeholders that EMPs are effective environmental protection tools during the construction phase (Fig. 2); however, their effectiveness during the operational phase was less highly regarded (Fig. 3). Respondents were asked whether the presence of a contractor and/or proponent's EMS led to improved practice; 51% of respondents answered 'yes sometimes', and 37% of respondents were unsure as to whether it did lead to improved practice or not.See Fig. 4 Q11

Following this, respondents were asked if any alterations could be made to improve the effectiveness of EMPs. Among stakeholders, 88% were in agreement that improvements were needed; the most recurring suggestions for improvements can be seen in Fig. 3. Standalone comments included the desire for better communication on site, advocated by a consultant, and the need for an on-site ecologist, suggested by an NGO worker.

Table 3.1
Subject Area 3 – The EMP-EMS Linkages.

Recurring themes	Recurring sub-themes	% of stakeholder groups*	Example comments from stakeholders
3A. Does your company have an EMS and does this affect how you carry out your activities?			
Yes the organisation has an EMS (or similar)	Yes it does contribute to better practice	EC 50% D100%	"Yes we have an EMS and it documents a lot of valuable information that improves and encourages best practice at the company level and the individual level" (EC1) "We have got two EMSs – that's the ISO14001 and the EMAS – and how it has worked is that that process has been developed by our technical EMS team, and so the core principals are embedded within everything that we do, and therefore affects good practise" (D3a)
	Yes but not aware of the contents of the EMS	EC 50%	"We have an EMS. This is maintained and kept up to date. Although funnily enough the environmental team don't have that much involvement with it" (EC3)
A lack of involvement and interest, and so do not know		SC 100% LA 100%	"We have an EMS definitely, but if I'm honest, I really don't know much about the contents of it and so I'm not sure if it affects good practice" (SC2)
3B. From past experiences, do you feel that the presence of an EMS enhances the practice of organisations you are working with?			
Yes it does	Yes it does contribute to better practice	EC 70% D 60%	"I think most of the time the presence of an EMS certainly does improve good practice for organisations we are working with. The EMS documents processes that they should follow and most of the time developers, contractors etc. follow all the necessary steps and seem environmentally aware, in my opinion" (EC6) "I think it does help, but I think often it will come down to the attitude to the specific people involved, so perhaps there is a behavioural element to it, it very much depends on the individuals involved, their experience, where they are coming from" (EC2)
	Yes, but perhaps only at a very basic level	D 40% EC 30%	"I think it probably does contribute to best practice but only at a very basic level. Because ISO is quite a basic thing. If you have a massive organisation, they are never going to get down to the project level that you are working on" (D2b)
A lack of involvement and interest, and so do not know		SC 100% LA 100%	"We are not really involved in this. It's not really something that we as a consultee think about, and I'm afraid I don't know" (SC1)

*LA = Local Authority (N = 4), SC = Statutory Consultee (N = 2), EC = Environmental Consultant (N = 10), D = Developer (N = 5).

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Table 3.2
Subject Area 3 – The EMP-EMS Linkages.

Recurring themes	% of stakeholder groups*	Example comments from stakeholders
3C. From past experiences, does an EMS document processes for preparing and monitoring/auditing the EMP?		
Yes an EMS feeds well into an EMP	D 100% EC 70%	"In most cases the clients provide us with their EMS, which then you can incorporate a lot of their policies in, so specific to each section. So if they have got a policy on emergency preparedness then that can feed in quite well" (EC7) "In my opinion the links work well. Our EMS can feed into the EMP if necessary, and will cover processes for monitoring and auditing the EMP, providing an effective link from the construction phase of a project to the operational phase" (D1)
We are not involved and do not know	SC 100% LA 100% EC 30%	"For some schemes there will be two – there will be a CEMP and there will be the Environmental Management and Monitoring Plan as a whole, and we tend to deal with that side, rather than the construction side. An EMP and a proponents EMS are two separate tools" (EC9)
3D. From past experiences, does the EMP provide a mechanism for the EMS to takeover in the operational phase? (N.B. Developers only)		
The EMP allows the project to be incorporated into our EMS during the operational phase	D 60%	"Post-construction activities become part of our EMS, and will become our day-to-day activities that we will then be audited against. So yes the EMP does provide a bridge between the high level EIA and the more general day-to-day activities covered by the EMS" (D1) "Yes, so eventually the development is subsumed into the wider day-to-day activities we undertake, so overall the project will have constant protection if you see what I mean, from both the EMP and then from the EMS" (D2b)
There are still gaps between an EMP and an EMS	D 40%	"Yes, I suppose in my opinion the short answer to what you are looking at is yes there is a real gap, potentially, between the EIA/EMP bit and the EMS bit. And what you would put in place to make sure that the future managers of the site in 10 years are still not necessarily adhering to the same environmental vision, but are at least considering it and know that 'things change so that is no longer relevant but we need to be doing that instead' – that is a hard link to make. You do almost need something legislative to make sure something happens and I'm not sure what vehicle you would use for that" (D3b)

*LA = Local Authority (N = 4), SC = Statutory Consultee (N = 2), EC = Environmental Consultant (N = 10), D = Developer (N = 5).

4. Discussion

Variation of protection across the project life-cycle

Interviewees indicated a significant variation in the use of EMPs in practice, and thus the effectiveness of EMPs providing protection was said to differ. This variation was noted between and within stakeholders; the majority of consultants and developers, for example, highlighted that when it was possible for the EMP to be communicated to those on the ground during the construction phase, then they were very effective. However, one consultant and one developer were under the impression that the effectiveness was dependent on the way the EMP was written, with project-specific EMPs being more effective than generic EMPs.

Such variation can be further highlighted by noting that EMPs were referred to using fourteen different names, including Construction EMP (CEMP), Habitat Management Plan, and Construction Method Plan, to name a few, all having slightly different uses. It became evident that an EMP as an EIA follow-up tool presents different meanings to different people; for some, if an EMP is well written and project-specific, then protection is guaranteed, whilst others view an EMP more as a plan that requires further guidance during implementation. These variations in practice agree with the findings of a recent scoping exercise of a randomised sample of EMPs produced between 2003 and 2010, showing wide variations in the remit of the EMP, with some being standalone documents and some chapters within Environmental Statements (Durning, 2012). It is also noted in this study that some are specific in the monitoring and auditing measures to be adopted in the EMP whilst others less specific, indicating variations in the level of environmental protection (Durning, 2012).

Furthermore, both data streams indicated that the effectiveness of EMPs was known more for the construction phase, justified by the tendency for EMPs to be construction-focused whilst the operational phase is largely overlooked. Such findings align with a study by Broderick & Durning (2006, 2010) that details the effectiveness of an EMP providing environmental protection during the construction of a high pressure natural gas pipeline, but providing a lack of reference to the operational phase protection measures. Durning (2012) further emphasised such findings by noting the tendency to concentrate the use of EMPs at the construction stage of the development, identifying the need for the EMP to link into the long term operation and ultimate decommissioning stage of a development. It seems that further emphasis on the operation phase within the EMP is still very much required.

Monitoring and follow-up requirements are rarely addressed

A frequent shortcoming of the EIA process heavily documented in academic literature is the insufficient implementation of follow-up measures (e.g. Wood, 1999; Nitz & Holland, 2000; Sánchez & Hacking, 2002; Gallardo & Sanchez, 2004; Jay et al., 2007; Morrison-Saunders et al., 2007). Despite the increasing presence of EMPs as a follow-up tool for major development projects (Tinker et al., 2005; Durning, 2012), a recurring theme for statutory consultee and local authority interviewees was the fact that they were never adequately informed of the monitoring and follow-up requirements, advocated by all local authority interviewees as a major flaw in the UK planning system. One local authority interviewee describes "*From my experience, monitoring and mitigation is always missed off. Unless we set conditions, follow-up is not addressed, and even with conditions set, we are rarely informed of the results*" (LA3). Although an absence of EIA follow-up is common knowledge within literature, the specific follow-up flaws related to the use of EMPs have been considerably under-studied thus far, due to the lack of research spanning the range of stakeholders involved, representing a clear focus for future improvements.

A benefit of EIA follow-up, in addition to the environmental protection that can be gained across the project lifecycle, is the extension of knowledge for future practice (Arts et al., 2001). Consultants and statutory consultees highlighted an apparent desire to be informed about the mitigation put in place and the monitoring results in order to build upon knowledge for upcoming projects, in an ideal world creating a virtuous circle of good practice, follow-up reporting and knowledge sharing. Some interviewees also advocated the need for a central database with access to the overall outcomes of projects, in order to develop knowledge for future practice. Impracticalities were, however, associated with these improvements; for example, Statutory Consultee 2 commented "*The problem is there is a lot of data out there but it is not accessible, because it is commercially owned by people*". Such disconnects are evident in a report by Lewis et al. (2014) examining mitigation of

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Table 4
Subject Area 4 — suggestions for improving the effectiveness of EMPs.

Recurring themes	Recurring sub-themes	% of stakeholder groups*	Example comments from stakeholders
Increased professional involvement	Written by an experienced professional	LA 75%	"I think it is vital that CEMPs are written by an experienced professional with background knowledge of environmental issues, and includes everything" (LA2)
	More involvement from the Environmental Clerk of Works (ECW)	LA 100% EC 20%	"For me the suitably qualified part is vital, making sure that the document is actually used, i.e. audited against, and that that is done by someone who is suitably qualified, preferably the ECW. This needs to happen for every project, not just a few" (EC2)
Improved reporting style	Improved writing style	LA 75% EC 10%	"I think they are effective as long as they are well structured and not too wordy, and not too much heavy detail. Getting this balance is tricky but needs to be improved" (EC6)
	Increased flexibility within the EMP	EC 20% SC 50% D 20%	"I would like EMPs to be more flexible and to include Ecosystem Services, I think this would encourage people to be a bit more broader in their thinking" (SC1)
The need to make legal requirements	EMPs should be a legal requirement under the EIA Directive	LA 100% EC 20% SC 100%	"We need clear permission from government that it is perfectly acceptable to condition an EMP" (LA3)
	Monitoring should be enforced	LA 100%	"Some measure/requirement that we could enforce that would require the developer to report back on the features that they have been required to install" (LA3)
Improved Monitoring	Improved monitoring feedback	EC 30%	"I'd like to know the outcome for a majority of schemes I have worked on, but don't hear much once I move on to the next job" (EC7)
	Information needs to be shared	EC 10% SC 50%	"I would like to see EMPs and the information that has gone into them be put a central place online as a way of sharing the information" (EC5)
Better communication	Increased communication on site	EC 30% D 40%	"A lot of it comes down to implementation; I can't emphasise enough how pointless a piece of paper is unless someone is actually responsible for delivering it" (EC1)
	Increased communication between stakeholders	EC 10% D 20%	"I would like there to be regular Steering Committees set up. There needs to be more communication between stakeholders" (D1)

*LA = Local Authority (N = 4), SC = Statutory Consultee (N = 2), EC = Environmental Consultant (N = 10), D = Developer (N = 5).

protected great crested newt *Triturus cristatus* populations associated with housing developments in the UK-;the authors suggest that the creation of a centralised accessible database could improve accountability and promote good practice.

Such aspirations for continued involvement and the need to be updated are also reflected by the international community. The key findings of a workshop on EIA follow-up conducted at IAIA'000 Back to the Future (the 20th Annual Meeting of the International Association of Impact Assessment held in 2000) that identified future directions for further development of successful EIA follow-up found that "*Openness, reporting and public participation in EIA follow-up is an important issue for strengthening follow-up practices. All stakeholders should be involved. Information sharing enhances local capacity building with benefits for proponents, regulators and local communities alike*" (Arts et al., 2001, p. 183). Similar findings are highlighted by Morrison-Saunders & Arts (2004), and it seems that, after over a decade of recognition, such communication and reporting is still a desired action that is yet to be executed effectively within EIA follow-up.

What certainly is encouraging is the voluntary EIA follow-up that was said to be undertaken for more innovative mitigation strategies by several consultees. Despite its South African context, a recent study by Wessels (2013) on independent verification highlighted several factors that influence EIA follow-up, categorised under five headings to include financial, commercial, professional, personal, and other; such research offers valuable insight into factors influencing follow-up measures. Such voluntary follow-up of innovative mitigation strategies can also be linked to the motivations for adopting an EMS, which is also voluntary; motivations often include the desire to increase competitive advantage, the preference for getting beyond regulatory compliance, and the desire to extend environmental management standards to suppliers (Morrow and Rondinelli, 2002).

However, for both interviewees who conveyed these opinions, overriding issues of time, as a result of human and financial resources not being allocated to follow-up, were limiting factors. Similarly, for the majority of interviewees who explained a lack of follow-up, the issue of time inhibiting the follow-up of projects was commonly expressed. Such limitations have been expressed in a study by Arts et al. (2001) noting that provision of adequate resource in terms of both finances and capacity is essential to make EIA follow-up reality.

Also notable was the discrepancy of opinions on the roles of different stakeholders and their involvement with EIA follow-up, perhaps reflective of the broader issue of a lack of communication between stakeholders (Arts et al., 2001). For example, a local authority participant (LA1) was of the impression that it is the developer's role to

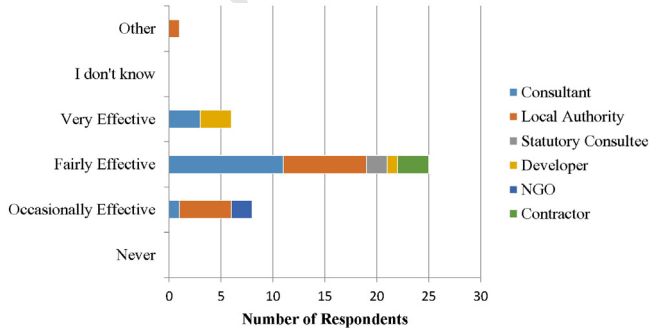

Fig. 2. Practitioner survey responses to the effectiveness of EMPs providing environmental protection during the construction phase of development projects.

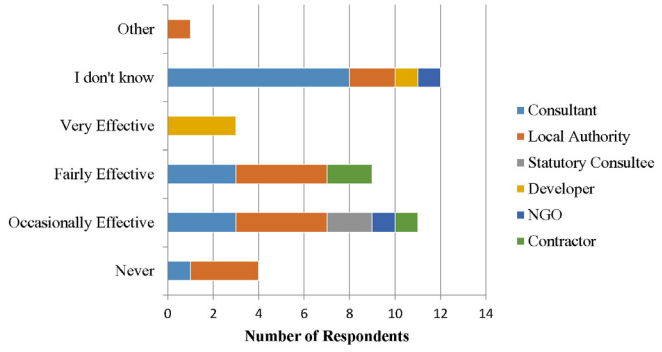

Fig. 3. Practitioner survey responses to the effectiveness of EMPs providing environmental protection during the operational phase of development projects.

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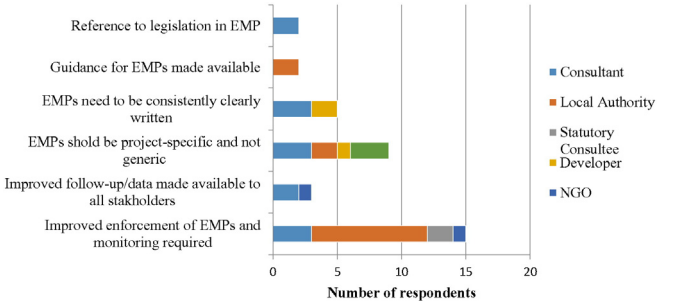
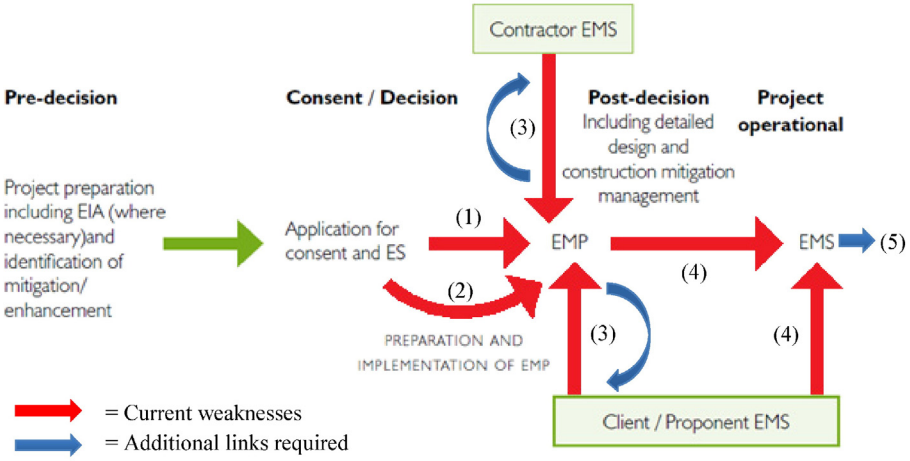


Fig. 4. Suggestions for improvements to EMPs by practitioner survey respondents.

feedback EMP monitoring surveys to the regulators. Statutory Consultee 2, however, stated that "whoever has issued the permission should be enforcing the condition and requesting monitoring results" whilst Developer 1 was under the impression that monitoring is undertaken but no one is "chasing them" for it. Such conflicting opinions indicate a clear need for stakeholder roles to be more clearly identified to ensure adequate follow-up for future practice. This aspect also surfaced as a requirement to improve follow-up practice in the use of conditions and contracts following EIA; the importance of clearly identified roles for follow-up activities has been identified in examples from the UK (Boyden, 2002; Marshall, 2002), among other studies in other countries (Morrison-Saunders et al. 2003).



	Current weaknesses	Suggested improvements
(1)	Even when conditions for monitoring in the EMP are set by the regulators, they are not being informed of the outcomes.	EMPs and monitoring requirements within them to become a legal requirement under the EIA Directive.
(2)	EMPs vary in how they are written, who they are written by, and how they are communicated on the ground, thus leading to a variation in the effectiveness of EMPs. The structure of EMPs has also been noted as too rigid.	EMPs need to be consistently project-specific, written by environmental professionals, and communicated on the ground to the range of stakeholders to ensure the EMP is well understood. Increased flexibility within the EMP is needed to adapt to each project.
(3)	Stakeholders have noted the presence of 'generic CEMPs' which reiterate a contractor and/or proponent's EMS within the EMP rather than being project-specific.	Guidelines explaining how an EMS can be successfully implemented into an EMP framework would improve practice. EMPs are 'live' documents, and so links between the EMP and EMS should exist so that alterations can be made if needed.
(4)	Information from the EMP is lost when different site managers are involved at different phases of a project.	Project-specific information within the EMP needs to be retained for different site managers to refer back to. Thus, future developments on that site can refer to any previous mitigation put in place. Improved communication between stakeholders is also vital during project handovers.
(5)	Stakeholders are not being informed of the monitoring results and the overall success of the project but have shown a desire to learn for future practice.	Stakeholders advocated for a central database documenting the outcomes of past cases and monitoring results in order to learn and develop knowledge for future practice.

Fig. 5. Apparent current weaknesses and recommendations for improving EMPs as a follow-up tool for the future, based on the semi-formalised process highlighted by IEMA (2008).

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Linkages between EMPs and EMS varies in practice and is poorly understood

The linkages between EMPs and EMS were the least understood topics of discussion, proving a challenge for many of the interviewees to build upon for several reasons. Most interviewees admitted that they had never thought about the links that EMPs can make with an EMS, with one consultant stating "Each development is seen in its own right far too much to link in with a proponent's EMS" (EC9). Such a disconnection between environmental management tools has also been found to be the case by Hollands & Palframan (2014) in which some interviewees claimed that EIA and EMS were not linked as they were seen as "two quite separate and distinct functions". These findings align with the broader conclusions of Ridgway (2005) who highlights that EIA and EMS tend to be the responsibility of different specialists due to their different skill sets.

Q12 Further reflective of Ridgway (2005) is the lack of knowledge and disinterest shown in EMS by local authority and statutory consultee interviewees; one statutory consultee interviewee remarked "*To be honest I have never even heard of EMS, and it doesn't interest me*" (SC1). The focus for the local authority interviewees was their specific role within the process, in one case being the need to see the monitoring surveys stated in the EMP; "*I'm not aware or interested in what is in their EMS. I'm looking at what surveys they have done, and whether or not the surveys have informed the EMP*" (LA1). A related problem that has arisen in the literature is the limited number of practitioners specialising in both tools, as emphasised by Sánchez & Hacking (2002) and Marshall (2004). There exists a strong need to improve the awareness of both EMS as an environmental protection tool and as a promoter of positive corporate behaviour, and the links that can be built with EMPs, across all stakeholders involved. Of course, encouragement for stakeholders to 'branch out' certainly is an ask when challenges of time and money are so central in the equation. Growth in awareness may be driven by international drivers, but it remains to be seen how the implementation of the new EIA Directive 2014/52/EU, and any updates to guidance, promote the need for increased awareness of ongoing environmental protection tools. Furthermore EMS represents a growing opportunity for environmental improvement given its reach round the world. For example, China has recently shown the fastest growth in certifications globally (ISO, International Organization for Standardization, 2013), so a more integrated approach could have wide benefits.

The links between the two environmental tools were better understood by developers and consultant interviewees who belonged to organisations that often acted as contractors for projects too. For these consultants, "*our EMS will document what should be incorporated into the CEMP if we are writing one for our own development, and alternatively when we are writing an EMP or CEMP for a client, we would ask to look at their policies (often part of their EMS) so that we can include all the relevant bits*" (EC5). For those consultants working for external clients, it was also made clear that the client's EMS was taken into consideration and relevant information incorporated into the EMP when writing. Knowledge beyond the production of the EMP was, however, limited; whether the EMS effectively 'took over' the operational management of the scheme was generally not known. Such a finding relates back to the lack of follow-up, particularly for the operational phase, that is Q13 currently in existence across the process (Arts et al., 2001; Morrison-Saunders & Arts, 2003, 2004).

Following a review of literature and in-depth case study analysis, Palframan (2010) highlights that "there is most potential for environmental benefit from linking EIA with EMS in sectors where organisations plan their own development for which they also oversee construction, occupy and/or operate". Similarly, for three developer interviewees belonging to organisations who continued to manage the project post-construction and during the operational phase, it was conveyed that the links between EMS and EMPs exist and work well. For example, one interviewee remarked "*Yes, in my opinion our EMS is very informative and tells us as a developer what should be included in our EMP, how to manage the project on the ground, and sets out how it should be monitored to proceed into the operational phase. Eventually, the EMS takes over and looks after the finished scheme when it becomes part of our day-to-day activities*" (D2b). Such findings are also reflective of the detailed documentation of a single organisation's EIA–EMS linkages, utilising EMPs, undertaken by Marshall (2002, 2004 & 2005); it is noted that "in the absence of statutory requirements, the development of an EMP will be motivated by a proponent/developer's individualistic desire to satisfy specific project requirements or for them to fit within existing management frameworks such as their EMS". It is reported that a proactive approach to EIA follow-up can enhance developmental success and "keep an eye on" the final outcome using a number of EMS/EMP approaches (Marshall, 2004).

Marshall (2004) also recognises that follow-up leads to improved interaction with stakeholders. This sits in contrast to a developer interviewee's response, who remarked that "*For us, the links and the processes we undertake work really well, but stakeholders don't take an interest. So I guess you could argue that it is up to the individual company to make sure that those conditions are discharged responsibly – this is within our system and we would do that – I send out the information to them – whether anybody looks at it I have no idea, and the whole system lacks stakeholder communication*" (D1). Thus, despite successful EMP-EMS linkages being evident within some organisations, it is clear that there are still weaknesses in the process, in this case the distinct lack of communication between stakeholders which must be addressed.

For those development projects where the operational phase is taken over by another company or where multiple parties are involved rather than a single project proponent, several challenges were highlighted. One developer stressed "*Despite agreements that may have been made with the statutory consultee during the project, the land may not be designated and so future site managers will not consult the statutory body and all that work is put to waste. Different specialists are consulted. Information is lost, definitely*" (D3a). Such difficulties align with the findings of Slinn et al. (2007) who highlight the challenges when multiple parties take ownership at each stage of the development, with environmental management requirements more in evidence when the developer maintains a longer-term leasehold interest. These weaknesses demonstrate the considerable need for information to be retained and suitably transferred across the project lifecycle, perhaps also largely attained through an increase in communication between stakeholders.

There is demonstrable literature regarding EMS that highlights not only the tangible benefits, but also the 'intangible' environmental performance improvements such as increased environmental awareness among employees (Rondinelli & Vastag, 2000). The case study documented by Marshall (2002, 2004, 2005), and the opinions of all developer interviewees in this study, are indicative that the presence of a developer's EMS can drive proponents to go above and beyond the requirements of initial EIA and to enhance environmental management through the production of an EMP. For consultants, however, opinions varied as to whether the presence of their company EMS affected good practice; half were not even aware of the contents of their EMS, inhibiting further development on this subject area.

Similarly, opinions on whether the presence of another organisation's EMS contributed to better practice produced a mixture of responses. For the majority of developers and consultants, organisations with an EMS were more environmentally aware, but some were of the impression that the EMS only affected good practice at a basic level. For example, one developer notes "*I think it is challenging for bigger organisations to be aware of their EMS and to have a buy-in to it and to actively contribute to it — inevitably you became a little distant. So yes it might affect practice, but only a little I think*" (D3b). Further adding to the variation, local authority interviewees were of the impression that the monitoring and follow-up requirements were dependent on the developer, advocating that those who were more environmentally aware were more likely to report back on the monitoring specified in the EMP.

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Although the local authority interviewee comments are only inexplicitly linked to the enhanced environmental performance improvements provided by an organisation's EMS (due to the lack of EMS knowledge shown by this stakeholder group), given that the majority of stakeholders were of the impression that EMS does promote better practice, it is tempting to advocate that the culture of an organisation, as informed by an EMS, leads to improved production and implementation of an EMP. However, what certainly cannot be discounted is the apparent need for stakeholders to be encouraged to broaden their knowledge of environmental tools so that EMS and its potential linkages with EMPs can be further understood. Until then, it seems that the intangible environmental performance benefits of EMS cannot be fully appreciated.

A final but equally significant point to note for this subject area is the number of interviewees who reflected on how interesting it was to discuss the linkages between the two environmental management tools, further strengthening the requirements for stakeholders to gain an extended knowledge of environmental management tools from what seems to be, for many, a starting point of low awareness.

Future improvements to EMPs as a follow-up tool are required

Guidance by professional bodies (e.g. IEMA, 2008) can give rise to the development of communities of practice (Lave & Wenger, 1991), and it is noted that this has potentially been instrumental in the rise of EMP use in the UK, but that more is needed (Durning, 2012). The majority of interviewees (95%) and survey participants (88%) agreed that improvements to advance the effectiveness of EMPs as an EIA follow-up tool were needed, and were able to provide at least one improvement, if not several.

The most commonly recurring improvement was the desire for both EMPs and monitoring to be legal requirements, felt by all local authority and statutory consultee interviewees, and the majority of survey participants. Such suggestions for improvement reflect the widespread recognition for a number of years that strengthened EIA regulations focusing on monitoring and follow-up would improve practice of EIA and the linkages with ongoing environmental management (ODA, Overseas Development Administration, 1998; Dipper et al., 1998; Morrison-Saunders & Arts, 2004; Wood, 1999; Tinker et al., 2005; Jay et al., 2007; Slinn et al., 2007). Specifically focusing on EMPs, Tinker et al. (2005) suggests that in order for EMPs to be relied on as an effective protection tool to implement mitigation measures, they need to be made a legal requirement. Furthermore, IEMA (2008) highlight that the lack of statutory requirements for EMPs has resulted in their use to vary significantly within sector, organisation and scheme. After years of receiving such little uptake, monitoring appears to have been recently strengthened through the new EIA Directive (2014). How this will change things remains to be seen and will depend on the strength of new domestic regulations; already UK regulators have an opportunity to make EMPs, when necessary, a legal requirement set by planning conditions in order to improve EIA follow-up and lead to a more consistent practice. It is also important to note that the provision of adequate resources in terms of both finance and capacity needs to be taken into account with the implementation of these new regulations (Morrison-Saunders et al., 2003).

Building on studies from different countries, Morrison-Saunders et al. (2003) note that having regulations in place is clearly an important first step in EIA follow-up, but that the presence of regulations does not necessarily guarantee that follow-up actually occurs in practice; see for example Van Lamoen and Arts (2002) and Dayo et al. (2002). In addition, more recent research carried out by Mordue (2008) using evidence from numerous countries with different legislative systems and cultures, shows that even when post-EIA monitoring is a statutory requirement there is still considerable room for improvement; regulation alone is not sufficient to instigate an effective monitoring regime due to reasons such as the lack of resources, lack of expertise and inadequate techniques (Durning, 2012). These aspects have also been advocated by interviewees; for example, necessary improvements suggested by local authority participants and two consultants included that EMPs should be more project-specific, due to the number of "generic CEMPs" (LA2) and should be written by professionals so that mitigation and monitoring are suited to each project.

A recurring improvement noted by stakeholders was the need for an accessible central database to share experiences of the use of EMPs and the mitigation and monitoring put in place, to enhance future practice. Although not directly a central database, Morrison-Saunders et al. (2003) document the EIA Ordnance website established by the Environmental Protection Department, encouraging project proponents to present EIA and environmental monitoring and audit (EMA) information in multi-media formats. Such a website requires significant investment in sophisticated information technology infrastructure, but brings substantial advantages including easy maintenance and free access to information for the public (Hui and Ho, 2002). This idea of central knowledge sharing has also been used by other organisations; the Department of Energy (DOE), for example, has a Corporate Lessons Learned Database, used to collect and share lessons learned and best practice pertaining to all DOE activities (DOE, 2015). In order for the central database to be as accessible as possible, we suggest for it to be held online by either IEMA, or perhaps a more local central database hosted by the Local Planning Authority, which stakeholders could access for local knowledge and experiences.

Another set of improvements, identified by consultant and developer interviewees, revolved around improved communication. This was, as stated above, highlighted as a useful and promising avenue for strengthening the practice of EIA follow-up (Arts et al., 2001), and has been advocated for in later literature (e.g. Morrison-Saunders & Arts, 2003, 200). Certainly the lack of communication between stakeholders has become a recurring theme in the previous subject areas explored too, and should be a focus for moving practice forward. However, the consultant respondents from the practitioner survey indicated the need for improved writing style, so that EMPs are consistently clearly written. Such differences, not only between stakeholders but also within stakeholders groups, are indicative of the variation in the use of EMPs in practice and the various meanings they present to different people.

EMPs, as environmental management tools, have the flexibility to suit individual project circumstances and to adapt with experience (Wlodarczyk, 2000; Marshall, 2004; IEMA, 2008). Despite this, interviewees advocated the need for greater flexibility within the EMP. One consultant also felt that "often there is not a lot of flexibility in terms of refining it and optimising it in terms of reducing environmental impacts" (C10). As such, it seems that either practice varies, owing to the fact that this improvement was not noted by all participants, or perhaps that their value as a flexible tool is simply not known.

The variety of views on improvements to EMPs can only further highlight the variation in practice that currently exists with the use of EMPs.

4.1. Moving practice forward: thoughts on further enhancement

This study describes some apparent weaknesses in the semi-formalised process outlined by IEMA (2008) (Fig.1). Suggestions for improvements to the idealised linkages between EIA, EMPs and EMS can be seen in Fig. 5, and reflect the stakeholder views from our interviews and surveys.

There is an apparent desire for stakeholders to be informed of the outcomes of an EMP, and it is suggested that EMPs become a legal requirement, as well as the suggested creation of a central database with project outcomes readily available to all stakeholders. In terms of the preparation of the EMP, it is suggested that EMPs are consistently project-specific and written by environmental professionals. The production of formal guidelines that are specifically targeted towards explaining how an EMS can be successfully implemented into an EMP

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framework are suggested to improve the incorporation of both the contractor and the client/proponent EMSs. In addition, the loss of information once a project is in operation requires information to be retained by relevant stakeholders, and for improved communication between stakeholders during project handovers, to ensure environmental protection across the life of the project.

4.2. Limitations and scope for future research

This research is the first broad-scale study on the opinions of the range of stakeholders involved in EMPs. However, several difficulties were experienced during the study, placing limitations on the project. A wider range of stakeholders would be preferable with better representation from planners and contractors. The sample size of the questionnaire survey was smaller than we hoped and thus precluded quantitative analysis, but offers reasonable breadth of stakeholder groups and allows some qualitative triangulation of points merging from the interviews.

A systematic review of EMPs was intended as part of this study, but their availability was very limited, due to their confidential status. This not only reduced the quantity of data available for analysis, but also highlighted the significant challenges present in terms of improving EMPs for the future if their availability is prohibited to the researcher or, for that matter any wider stakeholder groups. Future research should aim to focus on specific case study examples, providing opinions on each case study from a range of stakeholders, to further enhance knowledge of EMPs. In addition, academics could build upon the advantages and disadvantages of creating a central database to document lessons learned and improve knowledge, and perhaps raise the idea with IEMA and/or Local Planning Authorities, and document their responses.

5. Conclusions

Despite semi-formalised guidance existing for EMPs in the UK since 2008, and the increasing pressure on stakeholders to prevent or reduce environmental impacts, it is evident that the use and effectiveness of EMPs as an EIA follow-up tool vary considerably in practice, with EMPs only partially fulfilling their bridging role. There is no 'gold standard' terminology for EMPs, all having slightly different uses, and thus presenting different focuses to different stakeholders. Despite variations in practice, the majority of stakeholders were of the opinion that there existed a considerable lack of communication, with local authority and statutory consultee interviewees in particular not being informed of the monitoring results in an EMP, whether conditioned or not, and stakeholders advocating a strong desire to be notified of project results to improve knowledge for future practice.

Stakeholder opinions on the links EMPs can make with an organisation's EMS have also been shown to vary in practice; EMPs have shown to effectively 'bridge the gap' between the construction and operational phase of a project when the project proponent has involvement at all stages, but there are, however, apparent weaknesses and variation in the linkages that EMPs can make with the wider operational management, particularly when multiple parties are involved at differing stages of a project.

Opinions on the awareness of EMSs as an environmental management tool varied across all stakeholders. In some instances, the presence of an EMS and whether this influences good practice was simply not known, and often stakeholders highlighted considerable disinterest in the tool. For others, an EMS was said to better environmental awareness, but only at a basic level. Such aspects are reflective of the prominent specialist focus stakeholders have shown to a single environmental protection tool, rather than having knowledge regarding the wider links that can be made between tools during follow-up, which could potentially increase the chances of more succinct EIA follow-up in the future. For many stakeholders, it was advocated that discussing the links and 'taking a step back' was a novel, yet interesting experience, highlighting an overwhelming need for the linkages between EMPs and EMSs to be made more apparent, and thus possibly leading to stakeholders becoming familiar with more than one part of the overall process.

Updated and more formal guidance, perhaps emerging from the 2014 EIA Directive represent opportunities to formalise the process and widen the delivery of good practice across Europe. This change in legislation should, however, be coupled with the additional improvements highlighted above, to ensure practice is effectively enhanced to suit all stakeholders. In the meantime, those involved should be encouraged to consider the potential benefits of EMPs, linked when appropriate to wider corporate good practice, which our study has identified.

Malcolm Hudson is Associate Professor in Environmental Science. His research interests include ecosystem services in tropical forests and urban environments, environmental impact assessment and environmental monitoring of human impacts.

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Briggs and Hudson, 2013
IEMA, 2011
Tomlinson, 1997
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Sophie Bennett is a graduate Environmental Scientist for Mott MacDonald, with previous experience in local authorities, ecological consultancy and environmental NGOs.

Simon Kemp is a Professorial Fellow in Environmental Science, with wide-ranging experience in delivering sustainability initiatives with businesses and the HE sector, as well as consultancy focussing on environmental management systems, which he also teaches to postgraduate level.

Malcolm Hudson is Associate Professor in environmental science. His research interests include ecosystem services in tropical forests and urban environments, environmental impact assessment and environmental monitoring of human impacts

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