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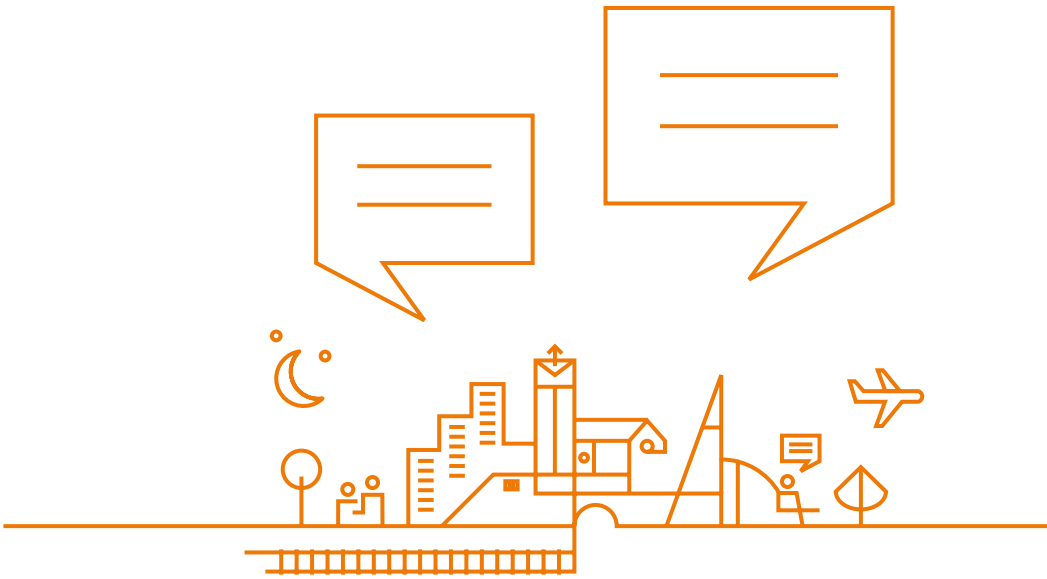
Perspectives upon renewable energy and EIA

Thought pieces from UK practice



Guest Editor
Lisa Mugan BSc (Hons), LLM, CSci, MIEnvSc, PIEMA

GUEST EDITORIAL

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Perspectives upon renewable energy and EIA

Following on from the two previous editions of the newly revamped Impact Assessment (IA) Outlook Journal, I am delighted to act as the guest editor for Volume 3: Perspectives on Renewable Energy and Environmental Impact Assessment (EIA).

In this edition, I have focused on different challenges and opportunities facing renewable energy in relation to EIA projects, namely:

- electricity transmission & interconnectors;
- greenhouse gases;
- the reduction of onshore renewable EIA projects;
- the Rochdale Envelope; and
- managing EIA projects in the post-consent phase.

Renewable energy projects have played a substantial role in reducing our carbon emissions in recent years. Following the Climate Change Act (CCA) 2008, the UK committed to a 34% reduction by 2020 with 1990 as the baseline year. The UK has far exceeded this target, with extra time to spare! In their latest progress report, the Committee on Climate Change (CCC) reported that UK emissions have reduced by 43% compared to the 1990 baseline even though the economy has grown significantly over the same period. The CCC explain that most of this reduction is due to the use of renewable and low-carbon energy sources[1].

Further into the future, the CCA 2008 required the UK to reduce GHG emissions by at least 80% of 1990 levels by 2050. Earlier this year, the UK has committed to change this legally binding target to at least 100% (net zero) reduction of 1990 levels by 2050[2]. Offsetting carbon emissions will be required to achieve the net zero target therefore we could expect to see more EIAs involving carbon offset technology in the near future, e.g. carbon sequestration. The CCA 2008 has considerably helped in increasing the number of renewable energy developments and hence their associated EIAs.

Renewable and low-carbon sources of energy will continue to play an important role if the UK is to achieve at least 100% (net zero) reduction of GHG emissions of 1990 levels by 2050.

1 www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament *Accessed 12 July 2019*

2 www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf *Accessed 12 July 2019*

As a nuclear professional who works on environmental workstreams in the nuclear industry, I could not write about renewable energy projects without a "shout out" to nuclear energy! Although nuclear is not a renewable energy source per se, it is a form of low carbon generation and is an important factor in the UK's energy mix. The need for nuclear related EIAs (including new nuclear builds and decommissioning projects) remains steady with decommissioning projects taking the lion's share of required EIAs.

This edition of the IA Outlook Journal looks at, what I feel, are important aspects to consider when undertaking the EIA process for renewable energy projects. With so many Q Mark articles and case studies written on EIA in renewable energy developments, I have attempted to choose a wide variety of topics from the huge amount of pieces available within the Q Mark archive. I believe they are mostly contemporary but in an ever-changing industry, please be aware that there may be some text which may now appear to be out of date.

Krishanthi's case study on the National Grid electricity connector to Belgium reminds us of the importance of managing supply & demand and the transmission of electricity from the location of generation to where it is needed. This is often the case for certain renewable energy developments as they can often be located far away from where electricity is required (i.e. high population areas). In 2019 the National Grid Nemo Link started commercial operation[3]. Krishanthi describes the project and the key EIA lessons learnt.

Renewable energy is generally considered as a low carbon option, however there are often hidden greenhouse gas (GHG) emissions, especially when considering the whole life cycle. I feel Paul's article on GHGs also applies to renewable energy developments in that their impact should be considered early on in the screening stage of the EIA process in order to fully appreciate the impact of GHGs during the whole life cycle. For renewable energy developments, the hidden GHGs are often emitted during the early stages of a project i.e. during the manufacture of equipment or the construction phase.

Michael's article puts forward a compelling case that there has been a decrease in onshore renewable projects in recent years, partly due to reduced subsidy incentives and a lack of investor confidence. However it is not all doom and gloom, Michael explains the new opportunities requiring EIAs which are beginning to show in the sector.

Louise's article explains the advantages and disadvantages of the Rochdale Envelope approach. The Rochdale Envelope is recognised in the Planning Act 2008 specifically for occasions where details of a development have not been resolved at the time when the EIA application is submitted[4]. This approach is often used in offshore wind farm developments which allows developers to get the most out of innovative technologies.

Sarah's article takes a look at post-consent management for wind farms. She discusses the post consent compliance risks such as new or changing consent criteria and the challenges facing the Rochdale Envelope approach.

The final piece is a case study on a hydro pumped storage scheme which had been previously consented but subsequently increased in capacity. Jennifer explains the lessons learnt from the EIA process including modifying various assessments of environmental impacts due to ever-changing design and survey assessment requirements.

Many thanks to all the writers of the Q Mark articles and case studies, I hope you find them as interesting a read as I did!

3 www.nationalgrid.com/group/news/nemo-link-open-business *Accessed 12 July 2019*

4 https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2011/02/Advice-note-9.-Rochdale-envelope-web.pdf *Accessed 12 July 2019*

Krishanthi Carfrae

Formerly Senior Environmental Planner, The Environment Partnership (TEP) Limited

Updated in 2019 by Ian Grimshaw, Director, TEP

National Grid Nemo Link: UK to Belgium Interconnector

Purpose of the project

The Project is a high voltage direct current (HVDC) electrical interconnector which allows the transfer of electrical power via subsea cables between the UK and Belgium.

The Project supports renewable power generation, such as wind, which is intermittent. Interconnectors have plant and equipment that can respond to rapid changes in generating electrical output and they provide access other markets. They provide an effective way to manage fluctuations in supply and demand.

Description of the project

The Project will has an approximate capacity of 1,000 megawatts (MW). The UK onshore infrastructure comprises a converter station, substation and 2.1km of onshore underground cables:

- Converter station and substation site utilises a former power station site;
- Construction commenced in 2015 and first operation was in January 2019;
- Operational life of the converter station, substation and cables is approximately 40 years; and
- HVDC cables pass through sensitive, internationally designated sites for ecology.

Key Issues

The Project is not in descriptions of development in Schedule 1 or Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 which applied and EIA was not mandatory under these Regulations. In Belgian law the electrical infrastructure required to connect to the UK required EIA. National Grid Nemo Link Limited (NGNLL) and its joint venture partner, Elia decided to prepare and submit an Environmental Statement (ES) to accompany the application for planning permission for the UK parts of the Project.

A screening request was not submitted to the local planning authorities in the UK. A scoping report was prepared to determine the extent of the matters to be covered in the ES.

The ES topic chapters assessed the likely significant effects of the Project on: Land Use; Ground Conditions and Contamination; Hydrology and Flood Risk; Ecology; Archaeology and Cultural Heritage; Landscape and Views; Traffic and Transport; Noise and Vibration; Air Quality; Coastal Tourism, Recreation and Socio-Economics; and Electric and Magnetic Fields and Electromagnetic compatibility.

Lessons learnt

Clear communication – The Project is unusual, large and complex and crosses UK administrative and international boundaries. At the beginning of the consent process the local planning authority officers and statutory consultees were unfamiliar with electrical infrastructure projects and had limited experience of EIA on such projects. Clear communication throughout the Project contributed to the successful approval of planning permission.

Cumulative Effects – The Project ES considered the cumulative effects of other projects in the same geographical area, as well as the infrastructure required for the onward connection to the wider UK national grid for electricity distribution. The onward connection comprised a Nationally Significant Infrastructure Project under the Planning Act 2008 promoted by National Grid. The Project ES provided details of the interrelationships between the Project and the onward connection and the forecast impacts. It was important to clearly distinguish between the two projects whilst allowing the local planning authorities and their planning committees to consider the cumulative effects of the Project and determine the application.

Maintaining open dialogue - Once the ES had been submitted, maintaining open dialogue with the local planning authorities and consultees throughout the determination period was essential in overcoming objections.

Collaborative working – Working together with the wider Project's Marine consultants overcame stakeholder concerns in relation to the intertidal area which is covered by both the Town and Country Planning Act 1990 and the Marine and Coastal Act 2009.

Using mechanisms for planning conditions under the Town and Country Planning Act 1990 to secure ecological mitigation set out in the ES, provided assurances to statutory consultees that there would be sufficient controls in place to influence and monitor proposed mitigation.

[Interconnectors] provide an effective way to manage fluctuations in supply and demand.

Paul Stephenson

Technical Director for Environment, Ecus Ltd

Originally published online - July 2018

Considering greenhouse gas emissions during screening

It can be unclear if significant effects are likely to result from the impact of greenhouse gas (GHG) emissions, particularly when considering the full life cycle of a development. In this article Paul Stephenson (Technical Director for Environment at ECUS) explores the challenges of considering GHG emissions when making a request for a screening opinion.

Directive 2014/52/EU, amending the Environmental Impact Assessment (EIA) Directive, includes the requirement to consider the impact of projects on climate. IEMA's overarching principles on Climate Change Mitigation & EIA make the case for greenhouse gas (GHG) emissions to be considered when undertaking both statutory and non-statutory EIA. At the same time, the IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance recognises that EIA should focus on a project's significant effects, and advocates that GHG emissions are always considered and reported, but at varying degrees of detail depending on the EIA project.

For "Schedule 1 development" GHG emissions will first be considered during the scoping stage. However, for "Schedule 2 development" the screening process will be the first opportunity for EIA practitioners to give consideration to GHG emissions.

Developers may request the relevant planning authority to adopt a screening opinion to determine if a development is EIA development. When requesting a screening opinion the person making the request must supply, amongst other information:

- "a description of the aspects of the environment likely to be significantly affected by the development;
- to the extent the information is available, a description of any likely significant effects of the proposed development on the environment....; and
- such other information or representations as the person making the request may wish to provide or make, including any features of the proposed development or any measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment."

As part of the request for a screening opinion it is good practice to always consider if the net GHG impact is likely to result in a significant effect. However, there is relatively little guidance on how to do this during screening. The first challenge is how to determine the likely GHG impact magnitude.

It is unlikely that a quantitative GHG assessment would have been undertaken at screening stage, and there may be limited historic project examples to benchmark against. In addition, past practitioner experience of life-cycle considerations (covering before use and end of life as well as use stage) may be limited. It is ECUS' experience that the net GHG impact of developments is often unknown at screening stage. Even if the net impact can be qualitatively or quantitatively assessed there are no definitive significance criteria or screening thresholds to compare emissions increases or reductions against.

Given the above, perhaps the most useful starting point is to assume all GHG emissions are significant. This is based in reasoning that although the contribution of any single project's emissions to climate change may be negligible, the combined GHG emissions from all human activity have been found to be significantly affecting the global climate. This then leads to a focus on minimisation of GHG emissions, rather than quantification and assessment.

At screening stage EIA practitioners at ECUS have been undertaking high level identification of potential GHG sources. Once potential sources are understood we highlight the envisaged mitigation and management measures that could be implemented to minimise impacts. Generally, GHG management measures are developed following an established hierarchy of minimisation actions that include:

1. *Avoid GHG intensive activities or features, where practicable;*
2. *Reduce embedded GHGs in construction materials and GHG emissions from construction activities;*
3. *Reduce energy requirements and maximise energy efficiencies;*
4. *Reduce the need for unsustainable travel and promote sustainable travel, where applicable;*
5. *Replace carbon intensive energy generation with low carbon energy, if possible; and*
6. *Sequester carbon, if practicable.*

The screening of Schedule 2 development can provide the opportunity to get an early design commitment to GHG mitigation and management measures and by including these within the request for a screening opinion, a developer can demonstrate that steps will be taken to minimise, as far as is reasonably practicable, any adverse impacts on GHG emissions. This helps provide the necessary information for the relevant planning authority to determine whether residual significant adverse effects are likely, and ultimately whether Schedule 2 development is EIA development.

We feel the approach of considering GHG emissions during screening, through a focus on minimisation actions (rather than quantification and assessment), helps avoid undue burden. At the same time it encourages GHG consideration at the early planning stages when opportunities for GHG reductions are greatest. As concluded by the Infrastructure Carbon Review (https://www.gov.uk/government/publications/infrastructure-carbon-review), tackling GHG early can reduce cost, drive innovation and contribute to climate change mitigation.

It can be unclear if significant effects are likely to result from the impact of greenhouse gas (GHG) emissions, particularly when considering the full life cycle of a development.

Michael Phillips

Principal Consultant, Dulas

Originally published online - January 2018

Onshore renewables EIA projects in the doldrums

It is no secret that onshore renewables in the UK, despite the well-publicised success of the past two decades, is in the doldrums. Reversals in policy and regulatory support since 2010 have hit the sector hard, and the pipeline of new projects has contracted significantly. The volume of renewable energy EIA projects has, as would be expected, reduced markedly in the past two years. So, what can we anticipate in the near future for EIA work in this sector?

The irony that the renewables sector is in the doldrums is thrown into sharp relief given that the UK has one of the best wind resources worldwide (World Energy Council, 2016), the sector has now reached a milestone of averaging at least 25% of power generation from renewables annually (The Guardian, Dec 2017), and renewables has finally demonstrated that, over time, it is complicit in driving down the wholesale cost of energy (Helm Report, 2017).

However, since 2010 policy emphasis on a low carbon future has diminished. The outcome is that many projects now do not have a route to market as they cannot garner investor confidence for funding, and the planning justification for new renewables infrastructure is now largely absent. Arguably as a result of back-bench activity in Westminster, there is now, in effect, a moratorium on new utility-scale wind and solar projects in England as the planning bar has been raised very high – new wind schemes must demonstrate spatial allocation in the development plan and demonstrate full community support; in Wales and Scotland there is still a strong appetite for new renewables capacity - - but without Government approval for wind and solar to enter the energy auction markets they cannot remove the risks of financial uncertainty. The sector is stumbling, and were it not for offshore wind, which still is permitted to enter the capacity auctions, there would be virtually no new renewables power capacity coming on line. In effect, the Government shift of emphasis to shale gas and nuclear has reduced the UK's renewable energy plans to tatters.

As a dispersed form of energy generation, the renewables sector was a boon to EIA consultancies. A large number of separate schemes and associated grid proposals, and hence planning applications, were necessary to match the capacity that could be delivered by one coal fired or nuclear power station.

This multitude of schemes offered many opportunities to consultancies big and small to conduct, and hone, their EIA services.

The majority of EIAs were for wind energy projects, as many solar farms were typically deemed non-EIA development on account that they are not specified in Schedule 2 and 3 criteria, and they were generally not viewed as adverse forms of development given their largely benign, and unobtrusive, nature. By contrast, the Schedule 2 (i) criteria for wind energy projects set a very low threshold:

(i) Installations for the harnessing of wind power for energy production (wind farms).	(i) The development involves the installation of more than 2 turbines; **or** (ii) the hub height of any turbine or height of any other structure exceeds 15 metres.

These thresholds were an open door for determining authorities to deem many new wind projects as EIA development, as they were unsure of the characteristics of such developments and how they might impact on environmental and amenity media. The precautionary approach was very evident, in part because of a history of legal challenges on procedural EIA screening grounds by third parties. Under such circumstances, the authorities perhaps over-prescribed the necessity for EIA on such projects and EIA consultancies benefitted from a glut of EIA projects that has provided a sustained base load of work now for many years.

Our experience in the last 3 to 4 years is that there has been a noticeable let-up in tender requests for onshore renewables projects. As a crude analysis, we have reviewed the IEMA EIA catalogue and derived the following figures on ES submissions:

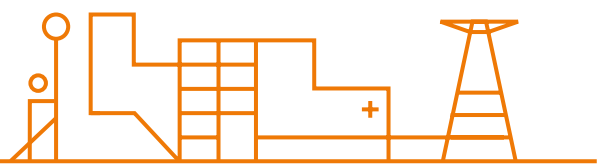
	Year				
Technology	2017	2016	2015	2014	2013
Wind	1	4	22	29	50
Solar	1	1	4	6	2
Hydro	-	1	1	-	-
Heat	2	-	3	2	-

Although not a definitive study, the figures do reflect the slow diminution of renewables EIA projects in recent year. Further, given the recent roll-out of offshore wind projects and the coming to an end of Round 3 schemes leased through the Crown Estates, it is likely that EIA work will dry up soon in this sector also. So where will the new generation capacity come from in the future that will power the electrification of our energy and transport networks, and help the UK continue on a trajectory for greenhouse gas reductions, and hence reinvigorate EIA work prospects?

Some green shoots of new potential are beginning to show. Early stage wind development projects in Scotland and Wales are now coming up for tender, whereby substantial increases in wind turbine size (up to 180m to tip and 4.5MW installed) are enabling developers to compensate for the loss of subsidy by increasing generator size, hence output and income. This is supported by the increase in growth in Power Purchase Agreements with large consumers, particularly high-tech and data storage businesses, which are prepared to pay for 'virtual power' as integral to their own carbon reduction commitments. In addition, storage mediums are advancing rapidly, whereby power from variable sources such as wind and solar is stored on site at times of excess production and delivered to the grid when needed. This improves the predictability and volume of power to the grid, thereby boosting project economics and presenting a more attractive business case to investors. A recently commissioned solar project at Clay Hill in Bedfordshire, which has 6MW of battery storage, commenced generation in September 2017, subsidy free!

For an EIA provider working solely in the low carbon sector, Dulas is pleased to see some light on the horizon, and we are now engaged in some early stage wind projects that have given us a base load of work for 2018. But pickings look slim in the short term for new EIA work, and this highly competitive sector comprising large, corporate and smaller bespoke renewables consultancies remains highly uncertain.

Reversals in policy and regulatory support since 2010 have hit the sector hard...



Some of the statistics in this article are now out of date, but that the main thrust of the argument remains valid.

Louise Ross

Senior Environmental Consultant, Xodus Group

Originally published - March 2018

The challenges faced with use of Rochdale Envelope in offshore wind and marine renewables EIA

The offshore wind and marine renewables industry is rapidly evolving, with on-going improvements and developments in turbine technology, infrastructure and installation techniques. This means, of application for consent, defined details of proposed developments are not often available at time of application. An approach often used in consenting applications is the 'Rochdale Envelope'. The Rochdale Envelope approach has found favour with emerging industries that are developing innovative new technologies in the offshore renewables industries. The approach (also termed 'Design Envelope') allows issues associated with projects where there are uncertainties over the final details of the proposed development to be addressed, whilst ensuring compliance with environmental legislation. These uncertainties could include scale, type of device, elements and dimensions of the device or other factors, if there remain limitations in the amount of details that are available on the project at the time when consent is being sought.

The Rochdale Envelope approach provides essential flexibility to enable projects to take full advantage of on-going improvements and developments. To commit to a detailed project design at consenting stage would prevent projects benefiting from lessons learned from other work being done in the industries, including the continued testing of the proposed tidal technology.

The approach also allows the detailed design of a project to vary within specific defined parameters, the procurement process and detailed design of technology remains flexible and can make use of technology evolution, whilst retaining a competitive market.

The Environmental Impact Assessment (EIA) is based on assessing the realistic worst-case scenario where flexibility on a range of options is sought as part of the consent application. The project description and methodology will fall within a range of defined criteria, an envelope of potential development, which describes the potential extent and nature of the development. This approach allows a degree of flexibility for determining the final specific project details post-consent, maintaining flexibility, while still meeting the requirements of the EIA process.

The Rochdale Envelope is not problem free, however; at very start of the application process, for example, providing a detailed Scoping Opinion to inform what is required for a full EIA may be difficult. Later in the application process, a lack of adequate information may result in delays related to difficulties for regulators in making a consent decision and in the drafting of consent conditions to ensure the development does not have any significant impacts.

Difficulties are also faced when defining and presenting a 'worst-case' to both the general public and the regulators. 'Worst-case' will be different for different receptors, and ways to present this will need to be considered carefully, particularly in cumulative impact assessments.

The use of the Rochdale Envelope has the potential advantages and disadvantages:

Advantages

- Flexibility to attract a wide range of technology developers;
- Reduce cost and time for technology developers to install devices that are within 'envelope';
- Flexibility to select optimum device technology for the conditions; and
- Flexibility in supply chain options.

Disadvantages

- Complex EIA;
- More information provided in EIA could actually result in less flexibility;
- Regulators are most satisfied where flexibility is constrained and the project, and resultant environmental impacts, can be precisely defined;
- How big an envelope is acceptable to the regulators? If an envelope is too wide, this could result in more potential environmental impacts, making it more difficult for regulator to consent project;
- Theoretical cumulative impacts of projects may exceed regulatory thresholds for certain environmental receptors;
- A tightly defined envelope presents risks to the project if later changes are required, primarily in terms of delay to programme and additional costs in revisiting the assessments; and
- Stakeholder and regulator consultation can be challenging when seeking agreement on the approach to EIA and the assessment results.

The Rochdale Envelope approach provides essential flexibility...

But

The Rochdale Envelope is not problem free...

The Rochdale Envelope principle has been used successfully in the consenting of tidal energy developments, include the MeyGen Tidal Array with conditions that the final details are within the envelope and fully approved by the consenting authority prior to construction.

The offshore wind farms in development around Scotland have used the Rochdale envelope approach, and some have struggled with getting them sufficiently narrow. Even then, with advances in technology, some of the offshore windfarms are having to revisit the consenting process because technology has changed so much since submission.

Sarah Strong

Senior Consultant, GoBe Consultants Limited,

Originally published online - November 2018

Management of post-consent compliance for offshore wind farms – a challenging journey

Management of offshore post-consent compliance should, in theory, be a relatively straight forward procedural process, focused on demonstrating that the final scheme conforms with the consent, and agreeing a suite of pre-commencement activities (such as monitoring).

However, (typically) at the time of consent application for an offshore wind farm, the scheme design is not fully defined (due to technical and commercial reasons), and therefore, the consent is granted on the basis of a range of design parameters (the 'design envelope') and construction approaches.

Recent experience has shown that management of post consent compliance for offshore wind farm projects that are consented on a design envelope basis to be an unexpectedly challenging process.

This article summarises two of the primary challenges encountered and discusses potential solutions.

Testing of the consented envelope

The bulk of the development phase of an offshore wind farm project is typically driven by consent teams. The design envelope that informed the EIA is established through liaison with internal engineering teams who will not necessarily be responsible for the construction of the project.

Following consent award, and as the project moves towards defining its final scheme design, the process becomes led by specialist engineering teams (often many years since the design envelope was established) and also, detailed site investigation works are undertaken to inform the final scheme design. It is often the case that technology, industry standards and construction methods have developed significantly since the point at which the design envelope was established. As the scheme is defined, the consented envelope is 'tested', and occasionally results in the identification of methods and or design options that potentially fall out with the consented envelope. Programme and cost risks then emerge if it cannot be immediately confirmed that preferred methods or designs are covered by the existing consent. This scenario is particularly challenging if raised late in the pre- construction phase as it can take up to a year to secure the necessary approvals (depending on the nature of those changes).

Any delay to the construction process has hugely significant financial implications and therefore, must be avoided at all costs. To de-risk the process it is critical that there are efficient communication channels (interfaces) between the engineering and consent teams. If potential conflicts with the consent are identified early, this challenge can be effectively managed. Of course, the more significant the deviation from the consented envelope, the more potential there is for consent and programme implications, but experience suggests that most issues are manageable given adequate time.

New, or changing, consent criteria

New, or changing, consent criteria in the post consent phase can lead to challenges that are difficult to manage simply because they usually cannot be predicted, particularly if the situation arises immediately prior to, or during, construction, when absolute certainty is required regarding consent limitations. Recent examples include:

- New or updated industry guidance;
- Changing stakeholder positions; and
- Establishment of new designated sites.

The introduction of new consent related matters often take time to work through in terms of how consent practitioners modify their approaches, how stakeholder positions are affected and how regulators manage these changes. However, in the post consent compliance phase, the process is often very time limited.

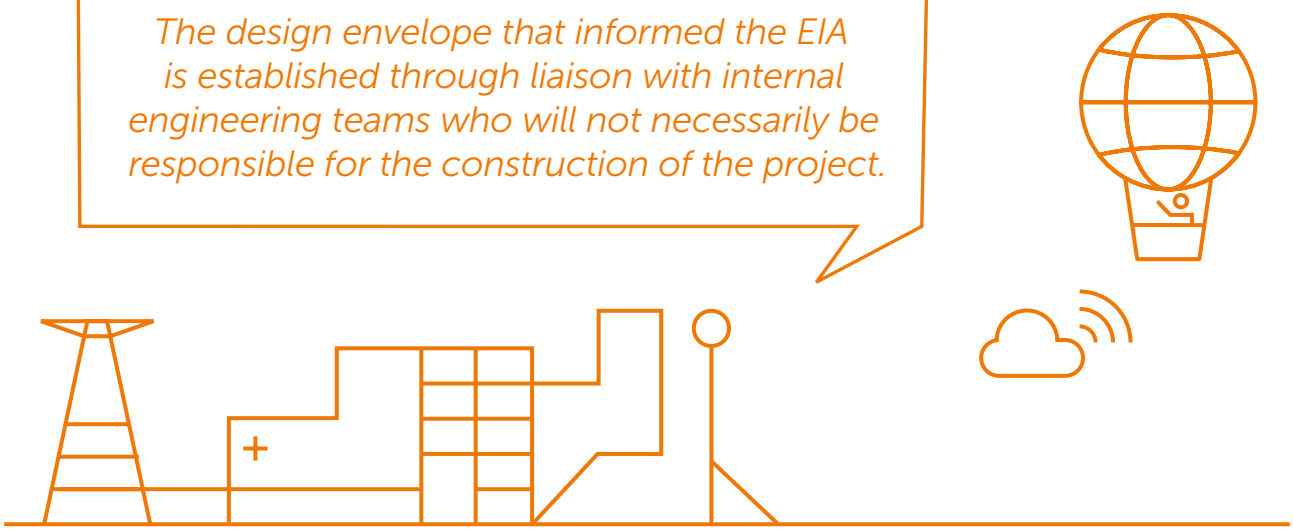
Whilst it is not possible to avoid such scenarios impacting the process, it is possible to implement measures that can help identify the risk as early as possible and/or make the management process more effective;

- Develop and maintain good relationships with primary consultees and hold regular project meetings;
- When a challenging situation arises, establish a clear plan with all interested parties, which includes regular 'catch up' meetings with stakeholders (internal and external);
- Where agreement on the consented envelope is required, or new consents and licences are needed (which is often where new, or changing, consent criteria are realised), include additional programme float, where possible;
- Don't make assumptions that a consenting matter will be straightforward from an approval's perspective, even if this has been the case previously; and
- Regular lessons learned sessions with colleagues and/or wider project teams.

Summary

Post consent compliance risks are to an extent unavoidable given the Rochdale Envelope approach, and the duration between the point that the envelope is established and when the final scheme is defined. The extent to which these risks manifest into actual material issues for the project can, for the most part, be managed through effective communication channels both internally and externally to ensure that consent compliance risks are identified early and managed efficiently.

The design envelope that informed the EIA is established through liaison with internal engineering teams who will not necessarily be responsible for the construction of the project.



Jennifer Skrynka

Managing Director, ASH design + assessment

Originally published online - July 2017

Coire Glas Revised Pumped Storage Scheme

Purpose of the project

This project involved undertaking EIA for the revised design of a Pumped Storage Scheme, previously consented in 2013 but not yet constructed. An increase in scale of the consented project from 600 MW to 1500 MW was proposed and Screening determined that a new EIA would be required.

Advice was also provided in terms of design and layout in order to assist the client in reaching the best environmental outcome for the project.

Description of the project:

The project involves development of a hydro pumped storage scheme with output of up to 1500 MW.

The project is located in the Great Glen, in the Highlands of Scotland and involves the creation of a new dam of up to 92 m in height forming an upper reservoir within a mountainous area to the west of the glen, and an operations building and intake / outfall on the shore of the existing Loch Lochy (the lower reservoir), on the floor of the glen. A network of tunnels would feed water between the two reservoirs via an underground power station. The project would also require the construction of a surge shaft on the hillside, and various tracks to enable access during construction and operation.

ASH's EIA input included undertaking and commissioning survey work for terrestrial and aquatic habitats, protected species, ornithology, forestry, hydrology and peat, landscape, visual and recreation, socio-economics, traffic and transport, and noise.

Key Issues

Key environmental issues which were identified during the EIA process for the project included:

- Protected and designated landscapes: The site lies within a Highland Council Special Landscape Area, and close to an identified Wild Land Area;
- Residential Amenity: Parts of the works would be close to properties with potential for visual and noise effects.
- Land Use and Recreational interests: The site is set within an area popular with hill walkers and would potentially utilise part of the Caledonian Canal;
- Protected Species: A number of protected species including mammals, sensitive bird species and fish were known to be present within the vicinity;
- Effects on hydrology and peat: Large quantities of peat would need excavated for the works at the upper reservoir and sensitive Ground Water Dependent Terrestrial Ecosystems (GWDTE) were present; and

Removal / reuse and transportation of rock: A solution was required for the large quantities of rock which would be generated by tunnelling.

Wider consultation can help provide innovative or previously unconsidered solutions...

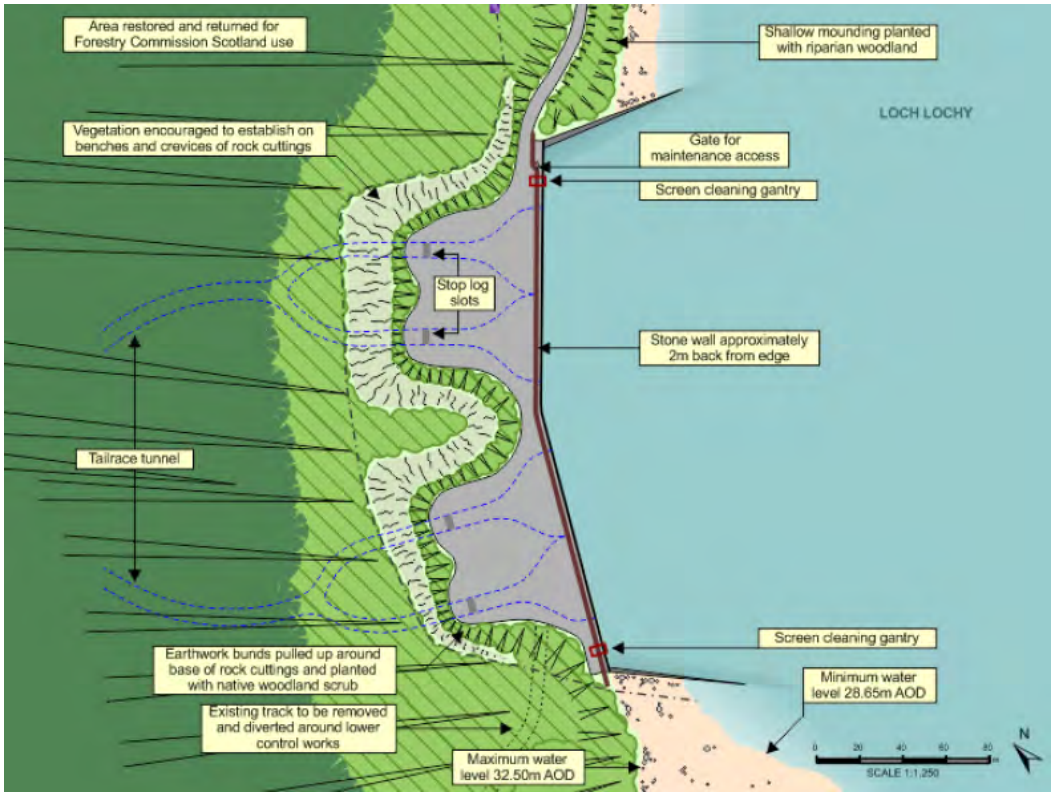
Lessons learnt

A number of lessons were learnt during the process of the project as follows:

- A high standard of design that takes into account environmental considerations at EIA stage can lead to greater understanding and acceptance of a development by stakeholders and members of the public: Particular consideration was given to the design of key elements of the scheme including finishes, colours and landscape treatments, detailed in a design statement. This included a thorough research of similar development types and the strong heritage of the local area for such development, and helped to positively present the scheme as part of this context.

- Wider consultation can help provide innovative or previously unconsidered solutions: Consultation with Statutory consultees such as SNH and SEPA helped to inform the scope of the EIA and potential solutions for design. However, consultation more widely with local groups also led to further options being considered for issues such as re-use of rock and design and mitigation proposals.

- An understanding of how design requirements and survey and assessment requirements can change, even over a relatively short space of time: Whilst the revised pumped storage scheme was bigger than the consented development, most of the changes were to underground elements. However, it was interesting to note how changes in the baseline (such as new nesting birds which had moved into the area, and an increase in use of tourism and recreation facilities) had occurred. Certain subject areas also required modified assessments due to changed emphasis on particular features (such as GWDTE) and different design requirements from the client (such as health and safety or emergency features). This emphasises the importance of taking a fresh approach and avoiding reliance on older baseline information or studies.



Do you make effective use of ALL of IEMA's IA member resources?

IEMA's website contains a treasure trove of IA related content, as well as information about IEMA's volunteer network groups, from regional groups, through UK impact assessment to ESIA across international finance. But not everyone makes the most of this free member content, including:

- Future events and webinars.
- Recordings of past webinars, with over 24 hours' worth of IA content.
- IA Guidance & advice: From Effective NTS, through climate (GHG and Adaptation), health, influencing design and delivery, to forthcoming documents on material assets and major accidents & disasters.
- The Proportionate EIA Strategy.
- Over 400 EIA articles and 200 case studies related to EIA, developed by Q Mark registrants in recent years.
- Individual and Organisational recognition specific to EIA, through the EIA Register and EIA Quality Mark schemes respectively.

  Contact details to engage with the steering group members for the:

  - IA Network
  - GESA Group (Global Environmental & Social Assessment)
  - Geographic/Regional Groups

www.iema.net

Summary

Lisa Mugan - Guest Editor

In summary, after reading through these Q Mark articles and case studies on the theme of renewable energy EIA projects, here are my key take-home messages:

1. RENEWABLE ENERGY PROJECT CHANGES

Renewable energy projects will continue to play an important role in decarbonising the UK and renewable technologies are advancing at pace. For instance, energy storage for renewables (and non-renewables) is becoming more popular to overcome the intermittent generation issues with renewable energy types such as wind and solar. I believe interconnectors and energy storage schemes will continue to grow to maximise the potential of renewables and help achieve our decarbonisation commitments. Technologies to offset carbon emissions is also likely to increase. As a result, we may come across more of these types of projects in our EIA work.

2. LIFE CYCLE APPROACH

Many of the articles and case studies in this edition highlight how certain aspects of the life cycle of a project are important in certain stages of the EIA process. For instance, it is beneficial to consider GHGs during the screening process. Considering the life cycle of the proposed project at all stages of the EIA process can help reduce costs and eliminate compliance risks. The whole life cycle approach of course relates to all EIA projects but is a recurring theme amongst many Q Mark renewable energy articles and case studies.

In addition, speaking from an EIA consultant viewpoint, some new developers may be of the understanding that the EIA process only comprises the screening, scoping and production of an Environmental Statement - it is so much more than that! The EIA process is as dynamic as their associated projects are. The EIA process can also:

- develop Environmental Management Plans;
- help manage conditions in planning consents; and
- assist with other general issues of post-consent compliance.

As competent experts, we can spread the word that the EIA process is multifaceted and contains multiple stages. This ensures that all EIA stakeholders understand these key elements from the inception of a project.

3. ROCHDALE ENVELOPE

The Rochdale Envelope approach offers plenty of advantages and disadvantages due to the flexibility of options. This approach can be helpful for new technologies undergoing development, assuming technology does not advance so much that the consenting process has to be revisited. There are many lessons learnt for projects using this approach. For instance, the range of flexibility parameters needs to be very carefully specified. Sharing any lessons learnt from the use of the Rochdale Envelope can only be beneficial to the next set of developers and EIA stakeholders making use of this approach.

I hope you enjoyed the third edition of the IA Outlook Journal. If you are interested in contributing to a future edition, please see the information and advice overleaf.

The IA Outlook Journal will return in Autumn 2019 featuring:

- **Articles from Q Mark registrants on the topic of net gain, biodiversity, ecosystem services and EIA**
- **Edited by Emma Magee, Environmental Project Manager from the Environment Agency and member of the IEMA Impact Assessment Steering Group**

Interested in Contributing?

A key role of the IA Outlook Journal is to enhance the readership and thus impact of articles produced by registrants to the EIA Quality Mark scheme. However, the IA Network Steering Group is keen to see the Journal also provide opportunities for all members who have a useful perspective to share in relation to IA.

As such, once the relaunched Journal has bedded a little in 2019, the intention is to begin highlighting future themes for the Journal on these pages and on IEMA's website, with a date by which any member can contribute an article. All articles submitted will be reviewed for quality, by a small panel from the Steering Group, and all accepted articles will be passed to the relevant issue's Guest Editor for consideration. Any articles that don't make the Guest Editor's selection for inclusion in the relevant Journal issue will be made available as additional resources online.

Articles in IA Outlook must be approximately 800 words in length and provide a perspective on the theme of the issue they are seeking to be included within. Articles will generally be written by a single author and must avoid being directly advertorial of the services provided by the author's organisation.

The Role of the Guest Editor

The initial IA Outlook Guest Editors will be selected from the IA Network Steering Group; however, as the publication becomes more established, we would like to expand this to enable others the opportunity to take the helm.

To help members get a feel for what is involved in the Guest Editor role, they are responsible for:

- Helping define the core theme that runs through that issue of IA Outlook;
- Selecting five or six perspectives articles/ case studies to be included;
- Producing a short Guest Editorial at the front end of their issue, which introduces that edition's theme and presents a narrative across the selected articles and their subject matter, and;
- Provide a summary to draw the issue to a close and provide any concluding remarks on the theme.

If you feel you would make a good Guest Editor - on a specific theme – please contact IEMA's Head of Policy and Practice, **Spencer Clubb (E: s.clubb@iema.net).**

Acknowledgements

IEMA's Impact Assessment Network (IA Network) Steering Group is a group of 15 members that volunteer their time to provide direction to the institute's activities in the field. The Steering Group members play a vital role in ensuring good practice case studies, webinars and guidance are developed and shared across the UK EIA community.

Lisa Mugan, a Senior Consultant at Hydrock, has acted as the guest editor for this edition of the new IA Outlook Journal. We recognise and appreciate her contribution. We also offer thanks to the editors and reviewers of this edition: Spencer Clubb, Thomas Clayton and Charlotte Lodge (IEMA), plus members of the IA Network Steering Group in producing this issue of the IA Outlook Journal. We would like to thank the authors of the articles in this third edition of Impact Assessment Outlook: Krishanthi Carfrae, Paul Stephenson, Michael Phillips, Louise Ross, Sarah Strongand Jennifer Skrynka. Alongside the authors we would also like to thank the EIA Quality Mark registrant organisations, who both gave the authors time and encouragement to write the articles and allowed their publication in this IEMA IA Network publication, they are: The Environment Partnership (TEP), Ecus Ltd, Dulas, Xodus Group, GoBe Consultants Ltd and ASH design + Assessment.

IEMA's EIA Quality Mark - a scheme operated by the Institute allowing organisations (both developers and consultancies) that lead the co-ordination of statutory EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed. The EIA Quality Mark is a voluntary scheme, with organisations free to choose whether they are ready to operate to its seven EIA Commitments: EIA Management; EIA Team Capabilities; EIA Regulatory Compliance; EIA Context & Influence; EIA Content; EIA Presentation; and Improving EIA practice.

Perspectives upon renewable energy and EIA

Thought pieces from UK practice

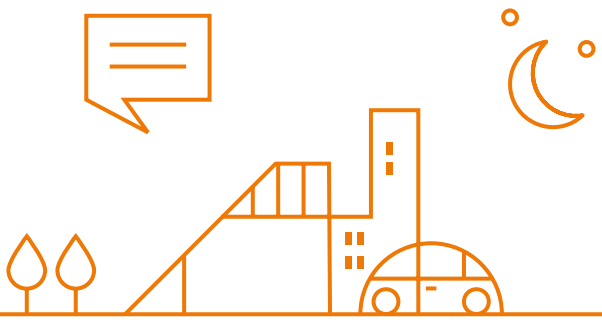
This third edition of the re-launched Impact Assessment Outlook Journal provides a series of thought pieces on the different challenges and opportunities facing renewable energy in relation to EIA projects. In this edition, the Guest Editor (Lisa Mugan) has selected six articles and case studies produced by EIA professionals from respected organisation's registered to IEMA's EIA Quality Mark scheme. The result is a thought-provoking quick read across different aspects of UK practice exploring different aspects of renewables and EIA.

About the Guest Editor: Lisa Mugan BSc (Hons), LLM, CSci, MIEnvSc, PIEMA

Lisa is a Senior Consultant at Hydrock, with eight years' experience in the environmental sector within the nuclear industry. She has extensive experience in environmental assurance, regulation and compliance gained through working within large nuclear organisations. Lisa's professional expertise includes Best Available Techniques (BAT), Environmental Impact Assessment (EIA), Environmental Permits and radioactive waste management.

Over her career she has gained practical experience of nuclear operations and wastes generated across the UK nuclear industry and has working knowledge of environmental and nuclear legislation. She is a Chartered Scientist and benefits from a unique background of Environmental Science (BSc Hons) and Environmental Law (LLM) academic qualifications.

Lisa has specific experience with coordinating EIAs in the nuclear sector for decommissioning projects. This includes undertaking screening, scoping/ Pre-Application Opinions, producing Environmental Statements and providing ongoing support through planning, consent and beyond.



IEMA Transforming the world to sustainability

About IEMA

IEMA is the professional body for everyone working in environment and sustainability. We're committed to supporting, encouraging and improving the confidence and performance, profile and recognition of all these professionals. We do this by providing resources and tools, research and knowledge sharing along with high quality formal training and qualifications to meet the real world needs of members from their first steps on the career ladder, right to the very top.

We believe that together we can change perceptions and attitudes about the relevance and vital importance of sustainability as a progressive force for good. Together we're transforming the world to sustainability.

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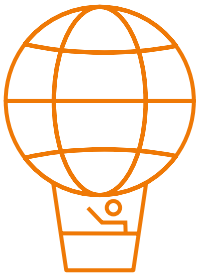

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