Working Paper

THE ROCHDALE ENVELOPE APPROACH TO FLEXIBILITY IN PROJECT PLANNING
EXPERIENCE FROM THE UK’S OFFSHORE ENERGY INDUSTRY

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1. **Introduction**

Environmental Impact Assessment (EIA) helps decision-makers consider the environmental consequences of proposed actions (Sadler 1996; Morgan 2012) and is the primary tool utilised by regulatory authorities to ensure that the environmental protection goals are met as projects are approved. EIA is now a well-developed concept in environmental law, having been adopted in over 100 jurisdictions and by many bilateral and multilateral aid and funding agencies (Petts 1999).

Ideally EIA is conducted in the context of perfect information, such that the project in question is comprehensively defined, and that any likely impacts are known and elaborated with a high level of detail and certainty. However, in relation to new or rapidly evolving technologies, or novel project environments, such a level of certainty is often not attainable. Nonetheless, in most jurisdictions, existing EIA regulation is applied unaltered to such innovative project proposals. This is partly because EIA is intended to apply to any and all activities that may cause an environmental impact, and is therefore a generalised process.

It is common for developing technologies to elicit new legal responses as they approach commercialisation, as they are initially conceived in the context of existing legal frameworks that may not be appropriate for effective regulation (Nyhart 1974). An example of this process has recently emerged in relation to the UK’s rapidly developing offshore energy industry, comprising offshore wind, and wave and tidal energy (referred to here as marine renewable energy or MRE). As the technology has approached commercialisation, regulators and developers have developed new regulatory mechanisms, or modified existing mechanisms, to improve the regulatory process.

One such response is the ‘Rochdale Envelope’ approach to EIA, sometimes also called the ‘project envelope’ or ‘engineering envelope’. This approach was born out of a UK planning law case involving a shopping centre,¹ but has recently been reinvigorated by the offshore energy industry as a means of tempering rigid application of standard EIA processes. The Rochdale Envelope allows a developer to describe its project within a number of agreed parameters for the purposes of an EIA (the eponymous ‘envelope’) and provide its environmental impact statements (EIS) based on the maximum extents of the parameters, i.e. a ‘worst-case’ scenario. This provides the developer with a level of flexibility and allows for the evolution of the technology and the project in the years between consenting and deployment.

The evolution of the Rochdale Envelope therefore an effort to balance the needs of developers, regulators and the environment in the development of a new marine industry. There are, however, tensions inherent in striking such a balance.

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¹ R. v Rochdale MBC ex parte Milne (No. 1) and R. v Rochdale MBC ex parte Tew [1999] and R. v Rochdale MBC ex parte Milne (No. 2) [2000].
The Rochdale Envelope has “very quickly become popular” in the context of the developing offshore wind and MRE sectors (Dolman and Simmonds 2012), where it has emerged as a crucial tool for enabling flexibility in project development and has thus become increasingly important. Despite its growing popularity, a comprehensive discussion of the Rochdale Envelope approach is yet to be published in the academic literature. As such, this paper represents the first substantive analysis.

This paper sets out the ‘Rochdale Envelope’ approach to EIA, considering the relevant case law, key principles and subsequent development. A detailed case study of the offshore energy industry is then provided, consisting of a quantitative analysis of eight major projects and one MRE test site. The key issues and challenges are discussed and some directions for future development are proposed. Some concluding thoughts are offered, highlighting the need for further development and complementary regulatory reform.

2. The Rochdale Envelope

The Rochdale Envelope approach is named after two cases concerning planning applications for a proposed business park in Rochdale. While it is not necessary to discuss the UK’s onshore planning system or the cases in detail, an understanding of the provenance of the Rochdale Envelope principle is of interest as several key principles for its use were set out by the original cases. Indeed, the Scottish Government recommended that its Heads of Planning read the judgments carefully (Davidson 2007).

2.1. The Rochdale cases

The cases concerned a planning application for a business park in Rochdale, which was initially approved by the local authority. The planning application was an ‘outline application’, i.e. it formed the first step towards the construction of the business park, with detailed matters reserved for further consideration at a later time. The permission granted allowed a period of 10 years within which the reserved matters had to be detailed and a full application made. The permission was subject to numerous conditions, including that further detail be provided in relation to mitigating environmental impacts. In particular, one condition required the preparation of a framework document that would show the design and layout of the proposed development with plans for phasing different aspects of the development.

The complainants sought to challenge the approval on a number of grounds, primarily that there was: (1) a failure to adequately describe the project as required by the relevant planning laws; and (2) a failure to give the relevant information required environmental effects regulations (which themselves implement an EU Directive).

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2 E.C. Directive No. 85/377 on the assessment of the effects of certain public and private projects on the environment.
As to the first ground, the court held that the nature of an outline application meant that many of the particulars of a development would not be available at the early stages of an application, and that this lack of detail was therefore not necessarily problematic in itself. However, it was held that the submission of a merely illustrative master plan and indicative schedule of uses was tacit acknowledgement that the description of the development was inadequate for the purposes of supplying relevant information for environmental effects regulations. That is, as the application did not contain any information as to the design, size, or scale of the development, it was not possible to evaluate the environmental impacts, thereby precluding the ability to grant planning permission within the law.

Despite the failure of this particular application, the Rochdale Envelope principle was elucidated by Justice Sullivan, who colourfully observed that projects had been confined “in a legal straitjacket by the assessment regulations... drawn so tightly as to suffocate such projects”. He states:

\textit{If a particular kind of project... is, by its very nature, not fixed at the outset, but is expected to evolve over a number of years depending on market demand, there is no reason why [planning regulations] should not recognise that reality. What is important is that the environmental assessment process should then take full account at the outset of the implications for the environment of this need for an element of flexibility. The assessment process may well be easier in the case of projects which are “fixed” in every detail from the outset, but the difficulty of assessing projects which do require a degree of flexibility is not a reason for frustrating their implementation. It is for the authority responsible for granting the development consent... to decide whether the difficulties and uncertainties are such that the proposed degree of flexibility is not acceptable in terms of its potential effect on the environment.}

Justice Sullivan noted the clear wording of the relevant EU Directive, that planning applications must be approved in “full knowledge of the project’s likely significant impact on the environment.” However, he stated that this

\textit{should not be regarded as imposing some abstract state or threshold of knowledge which must be attained in respect of all projects, but should be applied to the particular project in question. For some projects it will be possible to obtain a much fuller knowledge than for others. The directive seeks to ensure that as much knowledge as can reasonably be obtained, given the nature of the project, about its likely significant effect on the environment is available to the decision taker. It is not intended to prevent the development of some projects because, by their very nature, “full knowledge” (in the sense of an abstract threshold level of detail) is not available at the outset.}

The Rochdale cases thereby establish the basic idea that it may be appropriate for an environmental assessment to assess the impacts of a range of possible project
parameters, and that conditions can then be imposed within the consent to ensure that any permitted development stays within those ranges.

In short, the Rochdale Envelope allows a project description to be broadly defined, within a number of agreed parameters, for the purposes of an environmental assessment and planning application.

2.2. The Rochdale cases: key principles

It is clear from the cases that an application seeking to make use of the Rochdale Envelope should acknowledge the need for details to evolve over a number of years. In practice this has meant that proponents have explicitly signposted the fact that they will use the Rochdale Envelope.

As to the definition of impacts themselves, the level of detail of the proposal must be sufficiently clear and adequately described and tested in order for an EIA to be able to properly consider the range of likely environmental effects and necessary mitigation measures. While the assessment may conclude that a particular environmental impact could fall within a fairly wide range, it is consistent with EU regulations to adopt the worst-case scenario. Mitigation measures should then be developed that could deal with this worst-case so as to ensure that the development is environmentally benign, even if the worst case eventuates.

On this basis, an EIS must specify the upper and lower limits of a range of parameters, such as height, width and length of each building in the context of a business park development. Without such details, it is very difficult to assess likely environmental impacts, and any permission granted without such detail will be highly vulnerable to legal challenge. In this regard, the cases make it clear that the flexibility provided by the Rochdale Envelope is not to be abused and does not excuse developers from their obligation to provide adequate descriptions of their projects.

The planning authority determines what degree of flexibility can be permitted in each case, having regard to the particularities of an application. Any consent awarded by an authority based on the Rochdale Envelope approach must create ‘clearly defined parameters’ for the developer to work with. The authority can impose conditions to ensure that the project evolves within these parameters. It will clearly be prudent for developers and authorities to ensure they have assessed the range of possible effects implicit in the flexibility provided by the permission.

Finally, the cases established that a ‘worst-case scenario’ approach, i.e. elaborating the worst possible potential effects of the maximum extents of the envelope, would be appropriate. This approach has been one of the defining facets of the use of the Rochdale Envelope to date, allowing for the greatest level of flexibility while a project is in the early

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3 Specifically the objectives of European Council Directive 85/337/EEC.
stages of development, but also creating some challenges regarding the overestimation of impacts, discussed below.

2.3. Development of the Rochdale Envelope

The UK’s *Overarching National Policy Statement for Energy* alludes to the Rochdale Envelope approach, though not explicitly naming it as such, stating (Department of Energy and Climate Change 2011):

> In some instances it may not be possible at the time of the application for development consent for all aspects of the proposal to have been settled in precise detail... the [EIA] should set out, to the best of the applicant’s knowledge, what the maximum extent of the proposed development may be... and assess, on that basis, the effects which the project could have to ensure that the impacts of the project as it may be constructed have been properly assessed.

The Infrastructure Planning Commission (IPC) has also published a guidance note on using the Rochdale Envelope (IPC 2011). While certainly of use to developers, the guidance note merely sets out the elements of the Rochdale Envelope developed in the cases, as set out above. The IPC reiterates that the flexibility provided by the Rochdale Envelope is not to be abused and does not excuse developers from their obligation to provide adequate descriptions of their projects.

A number of documents have cited or outlined the principle, or provided guidance in much the same way as the IPC guidance note. However, only a very small number of publications have moved beyond this to explore the approach in more detail, and even this consideration is limited (Walker 2012; Freeman 2013; Wright 2014).

3. Case Studies: offshore wind and marine renewable energy

The Rochdale Envelope approach has recently found favour with emerging industries that are developing innovative new technologies to exploit renewable energy sources in the marine environment. This section considers the use of the Rochdale Envelope by the offshore wind and MRE industries, including application of the approach, best practice and future directions.

The popularity of the Rochdale Envelope within these industries is the product of a number of factors. In particular, the long time scale between consent application and construction, coupled with the rapid pace of technological development, means that various aspects of a project, such as the technology or installation techniques, are likely to be subject to significant developments that were not foreseen at the time of application. Committing to a detailed project design at an early stage of a project where construction is not likely to commence for a number of years would be restrictive for the developer. Such ‘lock-in’ does not allow for continued improvement or for lessons to be learned from the progression of the industry, or from results of interim device testing.
At the same time, there is a strong political and policy focus on developing economic activity in the marine environment. The EU, for example, is focused on developing the ‘Blue Economy’ and has identified offshore renewable energy as the first of “five value chains could deliver sustainable growth and jobs in the blue economy” (European Commission 2012). The need for flexibility is therefore particularly acute given the high expectations and investment in offshore wind and MRE. Without concessions for flexibility in the planning process, regulation could unnecessarily delay development.

In order to identify the practical details regarding use of the Rochdale Envelope and identify the challenges, this paper provides an overview of the two case study industries and their use of the Rochdale Envelope, followed by a brief quantitative analysis of projects. This analysis comprises four fully consented/built offshore wind projects, and four full-scale MRE projects in the process of applying for consents (two wave and two tidal projects). These projects were chosen based on size, as the largest projects are assumed to have the greatest need to vary the project parameters over time. A MRE test site is also discussed. The details of the use of the Rochdale Envelope were extracted from the relevant EIA documents and are reproduced in the corresponding tables below. Where relevant, responses from the regulator, or other pertinent comments, are also detailed.

3.1. Offshore wind

The wind energy industry has long settled on the ubiquitous three-blade turbine as the standard technology for large-scale wind energy projects. Nonetheless, the technology continues to evolve. RenewableUK (2011) notes that, while the 2MW turbine with an 80m rotor diameter was industry standard less than a decade ago, this has since been displaced by 3.6MW/107m turbines. 5MW/125m turbines are now being deployed in UK waters, and 7MW turbines will soon enter the market. Offshore wind also faces new uncertainties and developments as it moves further offshore and into deeper waters, particularly with regards to support structures and installation methods.

The offshore wind industry has made use of the Rochdale Envelope principle in order to cope with these uncertainties and move projects forward in the absence of a finalised design. Indeed, many offshore wind developers sought guidance from the IPC on the degree of flexibility that would be considered appropriate under the Rochdale Envelope, resulting in the IPC’s guidance note.

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4Drawn from the list of projects provided by Ernst & Young (2013).
Table 2: summary of offshore wind EIAs

<table>
<thead>
<tr>
<th>Project</th>
<th>Developer</th>
<th>Size (MW)</th>
<th>Parameters of Rochdale Envelope</th>
<th>Notes</th>
</tr>
</thead>
</table>
| London Array⁵      | DONG Energy                | 630       | • Defines envelope of up to 232km², within a 245km² lease area  
• Area subsequently narrowed to 198km² in consent application so as exclude regions known to support relatively high bird populations  
• Two viable options for an initial build phase were then developed |                                                                      |
| Greater Gabbard⁶   | SSE Renewables             | 504       | • Up to 140 turbines  
• Turbine capacity of 3-7MW  
• Maximum tip height of turbines of 170m  
• Minimum turbine separation distance of 650 metres  
• Three options for foundations presented | Notes that the EIS follows case law, but also the “custom and practice which has evolved”, though this is not described |
| Walney⁷            | Dong Energy and SSE        | 367       | • Capacity of 450-600MW  
• Three different park layouts described  
• Four alternative turbine configurations described  
• Turbine capacity of 2.3-9MW  
• Three options for foundations presented  
• Two cables, with three alternative routes assessed for each |                                                                      |
| Sheringham Shoal⁸  | Scira Offshore             | 317       | • Five alternative turbine configurations described  
• Turbine capacity of 3-7MW  
• Up to 108 turbines | Notes that worst-case scenario was used for bird mortality and wreck disturbance |

⁵ London Array Offshore Wind Farm Phase 2: Report to Inform Appropriate Assessment. 2012.  
⁸ Sheringham Shoal wind farm Environmental Statement. 2006.
3.2. Marine renewable energy

The MRE industry is evolving rapidly and improvements are constantly being made to MRE technologies, as well as to supporting technologies, infrastructure and installation techniques. In addition to technological evolutions, MRE is also subject to rapidly evolving understanding of the receiving environment and potential environmental interactions.

The Rochdale Envelope was the subject of a dedicated workshop discussing key issues (The Crown Estate 2012). The Scottish Government has committed to developing a guidance document on application of the approach (Marine Scotland; Scottish Government 2012) and has endorsed use of the Rochdale Envelope in a letter to heads of planning (Davidson 2007).

Given the early stage of the MRE industry, projects are not yet as advanced as offshore wind projects, with a range of consenting processes currently ongoing. As will be seen below, the practice in Scotland is for proponents to develop a scoping document, setting out the basic proposition of the project and considerations that the developer will take into account. Marine Scotland then responds with a scoping opinion, assessing the extent to which the developer has covered material issues and providing the developer with guidance as to it its expectations. These responses are providing development of the Rochdale Envelope approach and some indication of future directions.

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9 “Work is underway, in consultation with the marine offshore renewables industry and other stakeholders, to produce Scottish Government licensing policy guidance on the application of the ‘Rochdale Envelope’ approach.” This had not yet been completed at the time of writing.
### Table 3: summary of MRE EIAs

<table>
<thead>
<tr>
<th>Project</th>
<th>Report</th>
<th>Size (MW)</th>
<th>Parameters of Rochdale Envelope</th>
<th>Comments/Regulator response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wave</strong></td>
<td></td>
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</table>
| **Brough Head**  | Scoping| 200       | • BHWF plans to use the Rochdale Envelope approach  
• Sets out parameters in scoping report  
• Following site selection BHWF will adjust the extents and magnitudes defined in its scoping document accordingly | Marine Scotland (MS) notes:11  
• Purpose of scoping report is to broadly identify/assess the most important issues;  
• Rochdale envelope “is not a substitute for accurate project details and in this instance appears to undermine the purpose of the scoping phase since so little is actually known about the project”;  
• “downgrading of the scoping phase could result in information overload when the EIA is finally submitted which is time consuming for the developer and the regulatory process”; and  
• Rochdale Envelope is “usually applied to unknowns such as exact device dimensions and numbers”. |
| **Costa Head**   | Scoping| 200       | SSE states that it plans to use the Rochdale Envelope approach during the EIA process. | MS notes that the eventual EIS must:12  
• Contain a rationale for requiring such flexibility;  
• Define ranges (size, shape, tonnages etc.) or alternatives (e.g. for cable routes);  
• Contain justification of what constitutes the ‘worst-case’; and  
• Discuss how the worst-case impacts different receptors. |

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10 Brough Head Wave Farm Limited. Brough Head Wave Farm Scoping Report 2011.  
**Tidal**

| Inner Sound | Scoping | 400 | - | Project still in the early stages of design  
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| Westray South | Scoping | 200 | - | Developer has not yet chosen a technology, substantial uncertainty as to environmental interactions  
|``````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````````` |

**MS, in its response:**

- Notes interaction of Rochdale Envelope with EU Habitats Directive (proposal can only be consented “if it can be ascertained beyond reasonable scientific doubt that it will not adversely affect the integrity of a Natura site”);  
- States that the Rochdale Envelope must apply to both offshore and onshore elements together: “i.e. what is the maximum extent of onshore/associated development that is required to support the maximum number of tidal turbines”; and  
- Recommends use of the Rochdale Envelope for turbine siting,

**Westray South**

- Developer has not yet chosen a technology, substantial uncertainty as to environmental interactions  
- The scoping document narrows the choice to non-surface piercing horizontal axis turbines with aotor diameter of up to 20m and a generating capacity of at least 1MW.  
- Up to 200 devices may be deployed; limit of 45 in first phase of deployment.

**Test site**

| FabTest | Description of proposed facility | - | Description of the range and extent of potential devices and mooring systems to be tested. | FabTest is a preconsented testing site intended to be used by a range of devices.

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11 MeyGen Phase 1 EIA Scoping Document. 2011.  
3.3. Use of the Rochdale Envelope: analysis

It is clear from the brief analysis above that use of the Rochdale Envelope approach is widespread in the offshore energy industry, with all studied projects using the approach in its EIA process, or expressing intent to do so. A number of interesting points emerge from the table above. In particular, MS’s responses to the relatively speculative uses of the Rochdale Envelope by MRE proponents provide some illuminating insights.

There are some clear differences between the offshore wind and MRE industries. The former, being more established, has been more able to specify the ranges within which the various aspects of a project can be defined. By contrast, the MRE industry has largely expressed an intention to use the Rochdale Envelope approach with progressive specificity, with most scoping documents setting out parameters in very broad terms. Indeed, these differences show the extent of the flexibility of the Rochdale Envelope, in that it is a useful tool for numerous kinds of project and at various stages.

The projects above show that the Rochdale Envelope can be used in relation to seemingly any aspect of a project where the need for flexibility is justified. This includes turbine size, capacity, distance from sea level, technology type, foundation type, as well as many other elements. It is noted, however, that the approach usually only applies where a range or series of alternative options can be enumerated and assessed. Indeed, MS has explicitly recommended the use of the Rochdale Envelope for developing turbine-siting options.

Given the focus on providing flexibility in the face of uncertainty, there is a reluctance to accept the use of the Rochdale Envelope approach in relation to the onshore components of an offshore energy project. This is because the onshore technology is well established and the environmental impacts understood, meaning that there is no need to avoid specificity in the application. Nonetheless, the definition of the envelope itself must cover both offshore and onshore elements together, e.g. the maximum total environmental impacts required to develop the project.

The examples above demonstrate that the ‘worst-case’ scenario refers to the impacts on individual environmental receptors, rather than the elements of the project itself. This can be seen, for example, in the case of Sheringham Shoal. Different layouts comprising varying numbers and capacities of turbine were considered, with the high density, low capacity options being considered the worst-case scenario for birds. By contrast, different considerations applied for determining the worst-case impacts on wrecks from installation methods.

There is a clear expectation that project design will become narrower over time, eventually being fixed before construction commences. This allows proponents to progress with consenting while technology development and assessment takes place. The need for the requested level of flexibility request must be justified in each case, and the onus is on the proponent to determine which later changes are material to the EIA process. Failure to do
so carries the risk that they will have to recommence the entire consenting process. MS has shown that it is willing to place a condition on the consent given to ensure that these considerations are met.

In relation to speculative uses of the Rochdale Envelope, or expressions of intent to use the approach in later EIA documents, MS has noted the importance of not attempting to avoid a thorough scoping process by simply specifying a broad Rochdale Envelope. This would undermine the scoping process and indeed the Rochdale Envelop approach, which is to be applied to the more narrowly identified unknowns later in the design process.

Finally, the FabTest example represents perhaps the most extensive use of the Rochdale Envelope of any consent, in that it allows for the most diverse range of final projects. However, each test deployment will have to undergo an EIA process of its own and, as no devices have yet been deployed, there remains some uncertainty as to how effective the approach will be once regulators are faced with the task of consenting individual deployments. It may be that such an extensive Rochdale Envelope is unproblematic in this case because the deployments will only be individual and impermanent devices. The devices also dump all electricity generated, therefore removing onshore considerations. It is therefore likely that any full-scale project would need a considerably narrower envelope in order to be consented.

4. Issues and challenges

The foregoing discussion shows that the Rochdale Envelope approach is being used extensively in the UK, and that regulators have generally accepted the use of the principle. However, there are some emerging issues that are likely to challenge both proponents and regulators in the near future. To ensure that the Rochdale Envelope approach continues to be useful, these challenges must be identified and explored, and solutions must be found.

4.1. Flexibility

The major point of concern is that acceptance of the Rochdale Envelope approach by regulators has been based on an implicit assumption that the level of flexibility is small and that only minor variations will occur between consenting and construction of the final project (Walker 2012). On the other hand, it is clear that developers are likely to find the approach most useful where it gives them a wide range of possible options for potential future developments of their technologies and projects.

This reflects a broader tension between precaution and risk in planning processes for offshore energy. On the one hand, the Rochdale Envelope is most useful to developers when it provides the greatest amount of flexibility, while on the other hand, regulators will be most satisfied where the flexibility is constrained and the project, and resultant environmental interactions, can be precisely defined. If a developer is required to submit a
rigid project description, this could result sub-optimal projects being developed, or delays in construction. There is therefore an open question as too how big an envelope is acceptable.

4.2. Defining a suitable envelope

With this tension in mind, there are a number of potential pitfalls that developers may fall into. An EIS based on a Rochdale Envelope approach may fail to cover all material effects, or the requested envelope may be too large. The Rochdale cases suggest that the larger the amount of information given, the easier to ensure that regulations are adhered to (Shearer 2013), yet more information also means more time and cost, and potentially less flexibility.

On the other hand, if a proponent introduces a wide envelope, this will likely result in the identification of more potential environmental impacts, making it more difficult for a regulator to consent the project and more difficult for the proponent to produce an appropriate EIS.

There are some solutions to these issues. Regulators could, for example, choose to consent a project within a smaller envelop than initially sought from the developer (May 2012), though again this raises issues as to regulator flexibility, there being a risk that the envelopes are reduced so far as to be meaningless. Guidance from government or regulatory bodies themselves on how the Rochdale Envelope will be applied would be a useful addition to the regulatory landscape and could help balance the precaution of regulators with flexibility.

There may also be an opportunity for the Rochdale Envelope, and similar regulatory innovations, to develop as a form of collaborative governance between the developers and the regulator. This is certainly occurring in Scotland, with MS being very keen in its scoping opinions to offer assistance to proponents and discuss their approach. Ultimately, however, the overarching tension between flexibility and certainty is likely to persist to some extent, regardless of how the approach develops.

4.3. Cumulative impacts

A major issue, not apparent from the analysis above, is the interaction between the Rochdale Envelope and cumulative impact assessment. Where a number of project developers each submit an EIS based on the worst-case scenario, the theoretical cumulative impacts of those projects may exceed regulatory thresholds for certain environmental receptors. This could cause the regulator to refuse consent, thereby precluding any further consideration of other aspects of the project.

This has already happened in the UK, where Centrica’s Docking Shoal project, a proposed 540MW offshore wind farm in the North Sea, failed to obtain consent. Two other projects were already under development in the same region, with two more advanced in the consenting process. Docking Shoal was rejected due to the potential effects on the Sandwich Tern population. An ‘appropriate assessment’ was conducted under section 36 of
the Electricity Act 1989 and a population viability analysis was commissioned. Modelling showed that the combined worst-case scenarios of the projects could significantly impact the population of birds, if all the proposed projects were in operation simultaneously.

It has been argued that these issues may be ameliorated with further technological development. Shearer (2013) states: “it is generally accepted that fewer turbines cause less collisions” and that “as technology progresses, fewer turbines are installed to reach the developments rated capacity.” While this is true, there is some reason to doubt that this will ameliorate the cumulative impacts problem. Firstly, in the Docking Shoal case, “configurations of larger and fewer turbines reduce predicted population impacts, but not to any significant degree”. Secondly, it is doubtful that reaching a pre-determined capacity for a project in a given space is the sole or even primary driver for project development. In reality there is likely to be a ‘rebound effect’ whereby developers seek to leverage the efficiencies gained from the development and deployment of larger turbines to develop larger projects with higher densities and higher capacities, particularly as relative costs decrease over time.

Developers are motivated by commercial interests, renewable energy targets, the push for ‘blue growth’, and a range of other factors that, taken together, suggest that projects are only likely to become larger, denser, closer together, and with greater potential cumulative impacts.

One way to combat this is to ensure that developers submit an EIS based on a realistic worst-case scenario. This would clearly need to be done on a principled basis. Another option is that the regulator could, rather than rejecting the latest project, reduce the capacities of all projects to a level that would be compliant with the limits of the environmental receptor in question. In some cases this may ensure fairness between developers, but be sub-optimal in terms of capacity. Again, a principled basis for decision-making would be needed.

Alternatively, the regulator could choose to limit the capacity of each project initial stage(s) of proposed projects by imposing conditions on the consents, under the assumption that not all projects will subsequently progress to further stages. However this will also be difficult as each developer intends, at the outset, to develop their project to full capacity. Where all developers in fact do continue with later phases of a project, the same issue will arise. At the very least this approach would ameliorate some cases, and delay others, allowing for further compromises to be developed and further studies to be conducted in the meantime.

4.4. Stakeholder engagement

One potential problem with the Rochdale Envelope approach is that it can make it complicated for stakeholders, especially those with limited resources, to engage with the planning process.
Indeed, some stakeholders have already commented on this. In responding to the Costa Head wave farm scoping document, the Whale and Dolphin Conservation Society stated that it understood the need for the Rochdale envelope approach, but “without understanding the detailed design of the wave farm it is very difficult for us to comment to a great level of detail”\(^\text{17}\). Likewise, responding to a proposed extension to the Walney project, the Maritime and Coastguard Agency (MCA) “accepted” use of the Rochdale Envelope but did not “support” it as “the vast number of variables suggest that an accurate Worst Case Scenario cannot be developed” (2013). The MCA position was therefore to agree in principal to the development, but to require further consultation once a detailed final agreement on layout was reached.

A further issue, related to flexibility, is public/stakeholder perception of how the approach functions. While academic discourse has moved beyond ‘nimbyism’, it nonetheless remains likely that perceptions of unfettered flexibility are likely to cause opposition. The success of the Rochdale Envelope, and other approaches to planning flexibility, may therefore depend to some extent on how effectively it can be communicated to stakeholders that environmental effects of the eventual project are fully assessed during the consenting process.

### 5. The future of the Rochdale Envelope

As new innovative industries emerge, project developers are likely to press for a more risk-based approach to planning to enable them to advance their projects. At the same time, regulators may become more reluctant to take risks, stifling development of important innovations. This is particularly stark in relation to renewable energy, where there is a clear environmental driver, as well as risks.

The Rochdale Envelope is one regulatory option for allowing developers to assuage the concerns of regulators, in the absence of full certainty as to ultimate impact. However, this flexibility is often limited: the ‘worst-case scenario’ already places the perceived potential risks at the extreme end of the scale; the level of flexibility is assumed to be low and there may be limited opportunity to alter the project outside the envelope; the definition of a suitable envelope may be challenging; and, as the seas become more crowded, overlapping worst-case scenarios may increase the likelihood of projects being refused due to an unrealistic cumulative impacts scenario.

Thus while it is clear that the Rochdale Envelope approach has its advantages, it is equally clear that it needs to be improved and supported by other innovations in planning processes in order to remain effective. This paper aimed to provide an introduction to the Rochdale Envelope and a framework for further discussion and research. In this regard, there are a number of interesting directions for future research that are apparent.

\(^{17}\) Marine Scotland. Costa Head Wave Farm Orkney, Scoping Opinion. 2012.
Firstly, there is a clear need for research into how developers have used this approach, what best practices have emerged, and how it can be improved. In particular it would be helpful to identify and analyse cases where a project was refused planning permission based on an erroneous or overly broad use of the Rochdale Envelope, to the extent that such cases exist and that the documentation is publicly available. A more comprehensive review of use of the Rochdale Envelope would be illuminating, in that it could determine whether descriptions of design parameters are uniform and allow for standardisation. A comparative study with similar approaches in other jurisdictions would be of great interest, if such approaches exist elsewhere.

Secondly, the creation of a standardised ‘template’ for developers, based on the further research suggested above, may also be useful. This could simply consist of a proforma table for developers to fill in or consider when developing EIS. Clear guidance and an agreed approach to the Rochdale Envelope would likely result in more thorough EIS, more clearly defined envelopes, and more consistent consent applications, all of which would be of benefit to both proponents and regulators.

Thirdly, there is an urgent need to better understand how to assess cumulative impacts based on realistic scenarios. A principled basis for introducing an element of risk to the existing precautionary approach is needed, though this will not be easy. Any such approach must ensure that projects are facilitated, without compromising the process, the environment, or even the perception of the effectiveness of the process.

Finally, the relationship between the Rochdale Envelope and other aspects of planning policy should be explored with the aim of setting out a more comprehensive framework for the balancing of the various interests within EIA processes. The Rochdale Envelope, as a relatively simple and narrowly applicable concept, can serve only the limited purpose for which it was intended; it is not enough, alone, to ensure that regulators and policymakers are making principled, risk-based decisions in EIA processes.

6. Conclusion

This paper evidences the fact that the Rochdale Envelope has quickly become a core aspect of EIA in relation to offshore energy projects, despite its limited origins in onshore planning case law. The original cases nonetheless provided a sufficient base for the development of some key principles, further guidance and endorsement by Government. The popularity of the approach stems from the increased flexibility it provides and the concessions it makes for innovative technologies.

However, there are some inherent tensions that are increasing as the offshore energy industry develops and the marine environment becomes more crowded. In particular there are issues regarding the level of flexibility allowed in the Rochdale Envelope, the necessary
level of detail, public perception of EIA, and the problem of defining an unrealistic worst-case scenario.

It is suggested that a range of research directions and guidance tools be pursued in order to further the development of the Rochdale Envelope approach and cement its role in a balanced planning system. Further research is needed into use of the approach and how to account for cumulative impacts on a more principled basis, along with consideration of the place and role of the Rochdale Envelope in the broader planning context. On a practical level, regulators are advised to create clear guidance and a template for including a Rochdale Envelope within an EIS.

There will, no doubt, be further challenges to the legitimacy and parameters of the Rochdale Envelope as the offshore energy industry develops, though it is likely to retain its place as a crucial part of the UK’s planning framework. With further research and development, the Rochdale Envelope could indeed become a significant part of efforts in all jurisdictions to better balance caution and risk, and sustainability and innovation.
References


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