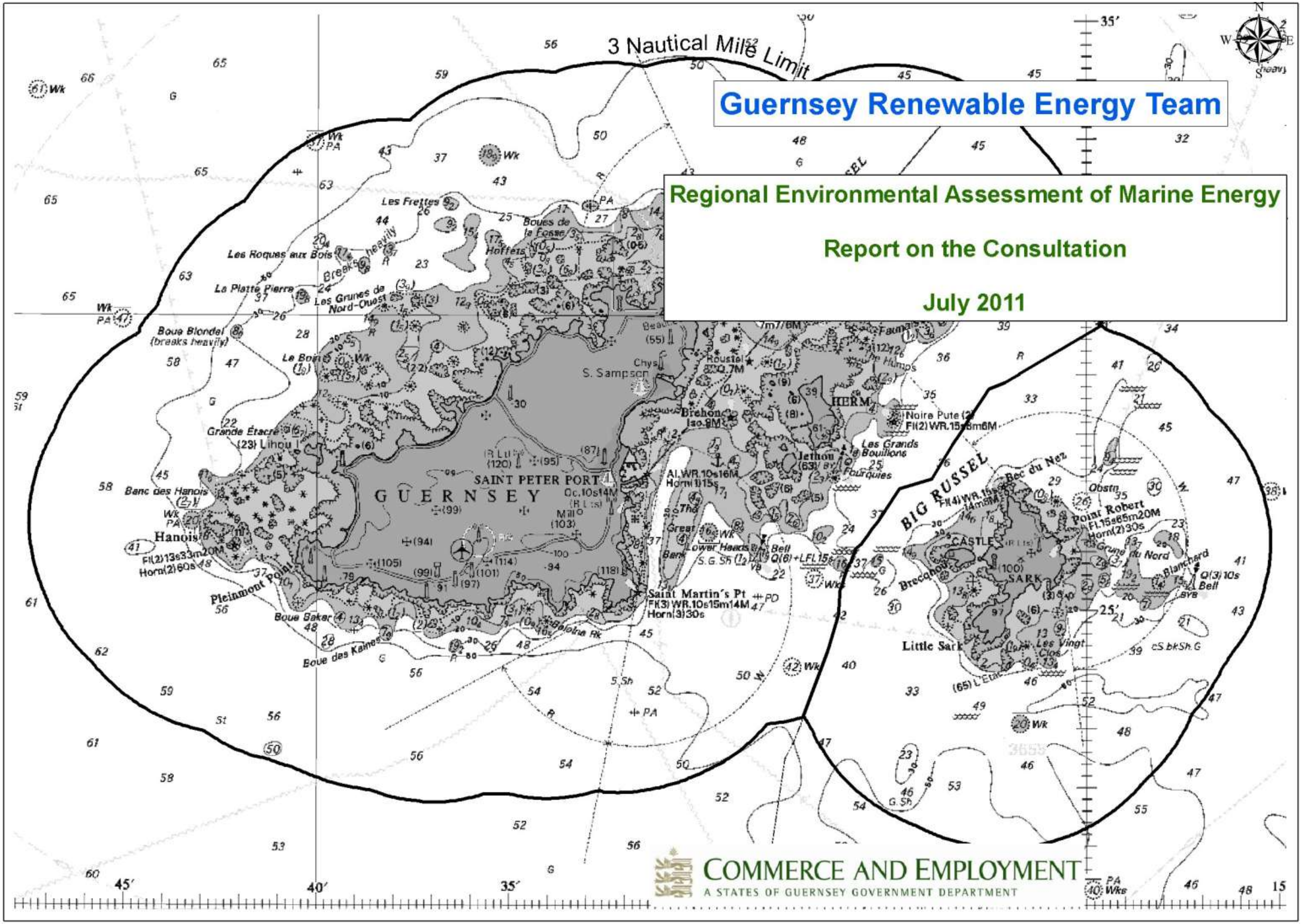
Guernsey Renewable Energy Team

Regional Environmental Assessment of Marine Energy

Report on the Consultation

July 2011



COMMERCE AND EMPLOYMENT
A STATES OF GUERNSEY GOVERNMENT DEPARTMENT

Guernsey Renewable Energy Commission

Regional Environmental Assessment of Marine Energy –
Report on the Consultation

July 2011

Contents Amendment Record

This report has been issued and amended as follows:

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Table of Contents

Guernsey Renewable Energy Team – An Announcement v

1 Introduction 1

1.1 Background 1

1.2 Overview of the Consultation Process 2

2. Responses 3

2.1 Overview of responses 3

2.2 List of Respondents 4

2.3 Summary of Responses 5

2.4 Integration of Responses into the REA and Scoping Report 27

2.4.1 Structure and Presentation of the REA 27

2.4.2 Methodology 28

2.4.3 Policy/Role of GREC 29

2.4.4 Devices 30

2.4.5 Geology 31

2.4.6 Pelagic Ecology 32

2.4.7 Birds 32

2.4.8 Marine Mammals 33

2.4.9 Commercial Fisheries & Mariculture 33

2.4.10 Electricity Grid 34

2.4.11 Shipping and Navigation 35

2.4.12 Tourism and Recreation 35

2.4.13 Noise 35

2.4.14 Landscape and Seascape Characteristics 36

2.4.15 Social Aspects and Economics 36

2.4.16 Environmental Impacts 37

2.4.17 Further Work 38

2.4.18 Conclusions 39

2.5 Accepted Actions from the Consultation 40

Appendix A – Comments Not Leading to a Specific Action 1
Appendix B – Summary of Responses 1

Guernsey Renewable Energy Team – An Announcement

The shadow Guernsey Renewable Energy Commission (GREC) was created in 2008 and was tasked with enabling marine renewable energy development within Guernsey and Herm waters. At the end of October 2010 the States of Guernsey approved the Renewable Energy (Guernsey) Law 2010 for submission to the Privy Council for Royal Assent. With the enabling legislation imminent shadow GREC has completed the first phase of putting together a regulatory environment and now the shadow GREC has been replaced by a Renewable Energy Team.

The Guernsey Renewable Energy Team (RET) is made up of the original members of GREC as well as two members of the Commerce and Employment Board. The reason for this change is twofold;

1. To help to create the right political and commercial environment to take the programme forward;

2. To discontinue the use of "shadow GREC" to avoid any potential confusion between the roles of shadow GREC (now RET) and the role of GREC as the regulatory body once it is formally constituted under the Renewable Energy Law.

As such, references to GREC throughout the REA documents fall into the following areas:-

- Work undertaken thus far by the "shadow GREC" (e.g. the REA) and work still to be undertaken prior to the formal establishment of GREC as the regulator (e.g. amendments to the REA and future surveys) which will henceforth be taken to be RET;

- Work to be undertaken following the formal establishment by the Renewable Energy Law of GREC as the regulator (e.g. Issuing of licences and leases) which is to remain as GREC.

For simplicity, all references to GREC in this document can be read as RET, although there may be some areas where the work streams will be carried forward into GREC once it is constituted.

For further information regarding RET, the change from shadow GREC to RET and the work that has and is being done please visit the Guernsey Renewable Energy website – www.guernseyrenewableenergy.com.

1 Introduction

1.1 Background

Guernsey has undertaken a Regional Environmental Assessment (REA) of Marine Energy of its coastal area out to 3nm. The REA is a strategic technical assessment of the potential environmental impacts (positive and negative) that could result from the development of tidal turbines and wave devices in Guernsey and Sark territorial waters. A Non Technical Summary was also produced which explains the purpose and results of the REA in an easy to read format for the general reader. With some of the strongest tidal currents in the world and facing the Atlantic Ocean, the Bailiwick of Guernsey is well positioned to be a major contributor to the emerging marine renewable energy market and meeting its own energy needs of the 21st century.

The States of Guernsey, through the Commerce and Employment department, set up a shadow Guernsey Renewable Energy Commission (GREC) to investigate the potential for, facilitate and, once established, consent the development of marine macro renewable energy projects. Within this project brief an important stage is the identification of any potential environmental and social impacts and as such, in order to follow European best practice and to highlight any issues, it was decided that a REA would be undertaken.

In parallel with the formation of GREC, a stakeholder group of local environmental specialists and interested parties was established, the Guernsey Renewable Energy Forum (GREF).The initial stage of the Environmental Assessment process was for GREC and GREF to prepare a Scoping Report, which outlined the area to be studied and looked at identifying how the full REA was to be undertaken. This was released in 2009 for public consultation and is available to download from the Guernsey Renewable Energy website. Upon completion of the scoping report work commenced on the full REA which outlines the various potential impacts that the different devices may have on the human and natural environments.

1.2 Overview of the Consultation Process

The REA was released for consultation to the public on Friday the 30th July 2010. Responses were invited from anyone who wished to comment on the REA, whether it was from a technical perspective, to highlight omissions or to record individual's personal opinions. The commencement of the consultation was publicised in the local paper, the Guernsey Press, as well as on the local radio stations, BBC Guernsey and Island FM. Instructions on how to obtain a copy of the report and the non-technical summary were also provided, with the documents available to download from the Guernsey Renewable Energy website, http://www.guernseyrenewableenergy.com. There were also a small number of paper copies held at the commerce and employment building at Raymond Falla House, St Martins, and at the States Government Office at Sir Charles Frossard House.

Invitations to comment on the REA were sent to everyone who replied to the Scoping consultation as well as developers of wave and tidal devices so that they could provide comments. Links to the REA downloads page on the website were also sent to members of GREC and GREF as well as the invitees and attendees of the pre-British Irish Council meeting held in Guernsey in June 2010, which focused on marine renewable energy. Local fishermen were advised of the consultation through their newsletter sent out by the Sea Fisheries Department and at a meeting with the Guernsey Fisheries Association (GFA).

Replies by email (enquiries@guernseyrenewableenergy.com), letter (Raymond Falla House) and telephone (234567) were received and recorded in an electronic register. Email information was stored directly to the register and letter correspondence was scanned in and saved to the register, with telephone correspondence being written down at the time of the call and the transferred to the register later.

This consultation report has been prepared to describe the responses received, outlining all of the issues that have been raised in response to the REA and highlight the major issues. It also indicates GREC's response to the comments and any actions that GREC will take. The report is to be made available to the public to download from the GREC website, and it will be circulated to all those who responded to the consultation.

2. Responses

2.1 Overview of responses

In response to the public consultation GREC received 18 items from a variety of consultees. The responses were varied and from people with a variety of backgrounds leading to a number of points of detail that are addressed in this document. The responses cover a range of subjects, from the perceived direction GREC should be taking to comments on the technical chapters in the REA. The responses are summarised in the following tables, which outline the respondents and all of the issues raised.

One general point that was noticeable from a number of the responses was that people perceived the non technical summary (NTS) as containing all the information. Unfortunately, as the NTS was a simplified and abbreviated version this is not the case. Where further information on a specific point is needed the reader should refer to the relevant chapter in the full REA, and this will be highlighted at the beginning of the NTS. A number of responses refer to the page number in the NTS and as such, some accepted items are actually already in the REA document and so no changes are necessary.

As planned, the REA and NTS are now due to be redrafted to take into account the issues raised by the consultation as described in section 2.4 of this report.

2.2 List of Respondents

Table 1: Respondents to consultation

Respondent	Reference
Jamie Hooper – Chapter Writer (Birds)	FULLREA001
Paul Hillion – Local Photographer	FULLREA002
Advocate Gordon Dawes	FULLREA003
John E Antill – ACRE	FULLREA004
John Cannon – Trinity House	FULLREA005
Andy Le Prevost – Seafresh	FULLREA006
Andrew Lee	FULLREA007
Stuart Trought – ARE/SRE/GRE/JMRE	FULLREA008
Kirsty Grant	FULLREA009
Jean-Francois Dhedin – EDF	FULLREA010
Paul Fletcher – E-Si Limited	FULLREA011
Alexander Downie – SEPA[1]	FULLREA012
Dave Cocksedge – Sark Sea Fisheries	FULLREA013
Conseiller Jan Guy, Conseiller Peter Cole - Sark Harbours & Pilotage Committee and Sark Shipping Committee	FULLREA014
Richard Keen – Fisherman	FULLREA015
Captain Saurabh Sachdeva – Chamber of Shipping	FULLREA016
Kevin Delaney – Sark Newsletter	FULLREA017
John Martel	FULLREA018

[1] Excluded from Table 2 as the response gave no comments on the REA

2.3 Summary of Responses

Table 2: Responses to consultation

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Chapter 9 – Birds	Jamie Hooper – Chapter Writer	• On the map of Important Seabird Areas (p192), please can you add the islets of Crevichon and Fauconnaire, north and south of Jethou respectively as red dots? They may already be marked but this is unclear. It would be good if they were as obvious as The Humps. • On the table on page 209, can you please add 'e.g. Installation of cameras' to read 'Monitoring of demonstration devices e.g. Installation of cameras'. Note, this is repeated twice in the table.	Highlight the Islets of Crevichon and Fauconnaire as Important Seabird Areas on the chart Insert “e.g. Installation of cameras” at two points in the limitations of current data table on page 209.	FULLREA001/1 FULLREA001/2
Chapter 9 – Birds	Paul Hillion	• All I would say purely from a design point of view is that some of the photos look a little lost when on their own on a sheet. • Also the Shag on the buoy image looks distorted	Avoid putting just 1 image on a page Replace the Shag image with a non distorted one	FULLREA002/1 FULLREA002/2

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Presentation of the Non Technical Summary	Advocate Gordon Dawes	• p23 read: "if construction and deployment work around colonies is unavoidable, then it should be " • p25 Not sure if you are worried by split infinitives, if yes then read: "to address strategically the risks of collision". • p26 Read "comprises 175 vessels and is currently". (It's either consists of or comprises but not comprises of, sorry, a bugbear of mine). • p27 Read: "A further measure would be to provide employment opportunities". • p30 Add space between Russel and bracket. • p33 Read: "There is the potential to generate energy that exceeds." • p35 Read: "These studies would lead on to." • p40 Read: "... compared with other jurisdictions". (Guernsey not being a nation.) • p43 Read: "the value that people place on their local coastal". • p45 Read: "without diminishing the need properly to examine". • p45 Read: " some further knowledge must be gained as to the cumulative effects." • p45 Read: "Guernsey and Sark can contribute to gaining a better scientific knowledge of their own waters." • p45 Read: "... between the States of Guernsey and Sark and prospective developers." • p46 Read: "... in order properly to establish ..." • p50 Read: "... which mostly comprises mackerel". • p50 Vazon Bay is referred to as being on the east of Guernsey.	Correct the mentioned typing errors.	FULLREA003/1

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
REA	John E Antill – ACRE	• The Commissioners feel that it is a comprehensive and useful document for establishing the baseline statement and identifying possible effects of any future marine RE development in Guernsey waters.	N/A	FULLREA004/1
Economics		• It would seem appropriate to make a few statements in the document on the economic and technical hurdles ahead for tidal/wave RE in relation to Guernsey's target for the installation of 100MW RE by 2020.	Include statements, or a chapter, on the economics of the installation and any technical issues to be considered	FULLREA004/2
Shipping and Navigation	John Cannon – Trinity House	• We consider that it captures the shipping and navigation issues that need to be addressed at this level and have no further observations to make at this stage	N/A	FULLREA005/1
		• Trinity House will be pleased to provide advice and comment on specific development proposals within the Guernsey, Sark and Herm Renewable Energy Zone, particularly in so far as they may impact on any aids to navigation provided by Trinity House in the interests of general navigation and more generally if invited to do so	Keep Trinity House apprised of the development process and invite to advise on impact on Navigation and aids once device specifications are known.	FULLREA005/2

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Commercial Fisheries and Mariculture	Andy Le Prevost – Fisherman and Fishmonger	• Fishing industry cannot withstand any changes which could be detrimental to: 1. either species' migratory or spawning routines or 2. Habitat, or 3. Restricting the industry's access to areas currently viable for commercial fishing. • Would like to see extreme close liaison between the fishing industry and the responsible government departments.	Ensure that any development does not interfere with: migration or spawning, Important habitats, Ensure current fishing grounds are not made no go zones Ensure that Government departments work closely with the fishing industry to avoid conflicts	FULLREA006/1 FULLREA006/2 FULLREA006/3 FULLREA006/4
Further Work		• Would like to see an extremely detailed fisheries Impact Assessment • Everything should be done to assess the true damage it (marine renewables) could cause	Perform a detailed EIA for Marine Renewable Energy Perform/stay appraised of research into the effects of marine energy	FULLREA006/5 FULLREA006/6
Environmental Impacts		• We are dealing with potentially disrupting an environment – something which any industry must treat with extreme caution.	Do not rush into a development without taking due care	FULLREA006/7

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Environmental impacts	Andrew Lee	• I am not in favour of this proposal because it stands a good chance of damaging the local ecosystem more than the production of 'clean' energy would offset it, i.e. the 'clean' energy produced would not be all that clean. • There was a lot of potential damage cited, some of it unknown, the mitigating measures proposed were either very general, weak, or theoretical and, in short, it did not fill me with confidence. • Should the environmental damage be very small I would probably be in favour but, right from the start, it has been my opinion that habitat would be damaged and electricity demand remain un-dented.	Do not develop where there could be damage to the established local ecosystem Include mitigation measures that are known to reduce potential impacts Unless environmental impacts are proven to be small do not develop, rather focus on electricity use reduction.	FULLREA007/1 FULLREA007/3 FULLREA007/6
Devices		• A lot of research and knowledge is contained in the documents but not many facts concerning what particular sea energy generation is proposed and it's particular effects (I apologise if I missed something). Under-sea turbines would definitely damage the environment. Other sea-surface methods I would be more in favour of, though I don't doubt they harness less energy.	Highlight the specific device types that may be used and the effects that they would cause and relate this to the energy that could be harnessed from the device types	FULLREA007/4
Social Aspects		• Whatever method (of generation) could be employed it will do nothing to decrease total energy usage, so the net result would probably be environmental loss.	Highlight ways to reduce electricity usage among the population.	FULLREA007/5 FULLREA007/7
Methodology		• I couldn't find many concrete facts about effects and proposals in the documentation other than general ideas (although it did profess to be 'strategic' in scope).	Include more specific facts about the effects of the devices and installation	FULLREA007/2

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Economics	Stuart Trought – ARE/SRE/GRE/ JMRE	• Although we accept that this document summarises the environmental impact, this will be academic if Guernsey, like the rest of the crown dependencies, does not qualify for UK ROCs or other incentives. We strongly suggest greater focus on this vital building block, rather than investing resources on environmental studies which may not be required.	Look into the economics of marine renewables and how they can be funded in the Bailiwick. Publish a document on the findings and prioritise this above all other issues.	FULLREA008/1
Conclusions		• We find the conclusion on the final page of the document that "commercial scale by 2015 at the earliest" unduly pessimistic and this does not indicate that Guernsey intends to prepare itself to take advantage of this date or earlier. Scotland indicates that small scale commercial arrays will be operational well before 2015.	Revise the "earliest" possibility of development in Guernsey, or better outline the reasons for the conclusions drawn.	FULLREA008/2
Methodology		• We have reservations on the scientific approach in certain areas of the report and do not believe that the information is presented in the most efficient way – e.g. The pelagic (chapter 8) and benthic (chapter 7) areas could be more closely linked with the fisheries sections. • Another reservation is in the final summary chapter (20) because it is not clear what the criteria chosen is based on.	Create better links between the Benthic and Pelagic Chapters with the Fisheries Chapter. Clarify the significance criteria	FULLREA008/3 FULLREA008/4

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Document Structure	Stuart Trought – ARE/SRE/GRE/ JMRE	• We strongly feel that the document lacks some detail within its areas of analysis and has left many questions unanswered. • The conclusion is too short and has identified many gaps but offers no solutions to filling these gaps. • The consultation document is not very user friendly because of its length and although a shortened version is available it still does not appear as a user friendly document. There does not appear to be a meaningful executive summary. • The REA is a comprehensive and detailed document with a breadth of analysis and it does serve as a document which covers the vast majority of the headings which will need to be considered.	Increase the level of detail within the document. Provide further answers to filling in gaps in knowledge. Create a “meaningful” executive summary N/A	FULLREA008/5 FULLREA008/6 FULLREA008/7 FULLREA008/8
Role of GREC		• The Role of GREC should be to facilitate and encourage a marine renewable energy industry at this early stage. We understand that it believes that the REA is part of this work, but we strongly encourage GREC to focus more on delivering a general environment (financial, legislation etc) which encourages the industry in general rather than showing the potential obstacles. • The REA is long on rhetoric but short on offering meaningful solutions which can put Guernsey at the forefront of the industry. Developers need to see a forward looking, fast moving GREC backed by a supportive States with a clear energy strategy and policy. Unfortunately this document does not seem to echo any of this and we feel that these positive sentiments and messages to the industry need to be sent in all outputs from GREC, including the REA.	GREC should focus on encouraging the industry to the Island and look at everything in balance, and so should produce documents outlining the benefit of developers coming to Guernsey. The REA should outline the other work the GREC is undertaking rather than focus on the environmental issues.	FULLREA008/9 FULLREA008/10

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Geology	Kirsty Grant	• Early on in the report there is something about the quality of beaches. Is there a possibility that sediment shift could alter beach deposits? This is something which could be monitored.	Set up baseline and ongoing monitoring of beach levels	FULLREA009/1
Pelagic Ecology		• Page 21 (NTS): Fish should have no problem detecting the devices; all species have lateral line sensory systems which are specialised for detecting and identifying rocks/obstacles from a distance. They can choose to avoid or explore, even in turbulent water.	Include information about fish biology in explaining likelihood of collision risk (Pelagic Ecology Chapter and NTS).	FULLREA009/2
		• Page 21 (NTS): Electric or electromagnetic fields. In this environment only sharks and some rays are sensitive to electric fields. Other fish in this marine environment do not have electroreceptors. Sensitivity to electromagnetic fields is less clear but there is a lot of research going on. Specific receptors are not known in fish but one wonders how fish can navigate when migrating over large distances. Both electric and electromagnetic fields decrease rapidly with distance from the source: "For a monopolar line, the magnetic fields fall off as the inverse of the distance from the line; those from a bipolar line fall off somewhat faster with distance (typically, as the square of the distance) because of the partial cancellation of fields from the two conductors that carry current in opposite directions." (from Foster and Repacholi, Dept. Bio-engineering, UPenn. **Environmental Impacts of Electromagnetic Fields From Major Electrical Technologies)**	Keep up to date with research in the area of Electromagnetic fields and identify specific species that are susceptible to electric fields.	FULLREA009/3
		• Page 21 (NTS): The devices may act as artificial reefs and may in fact attract fish. This might nevertheless alter existing ecology by changing the distribution of species. There are those that like to live in reefs, ship wrecks, around rocks etc, and there are those that prefer the open water.	Highlight that an increase in fish density or biodiversity can also result in loss of habitat for other species (Pelagic Ecology Chapter and NTS).	FULLREA009/4

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Birds	Kirsty Grant	• Page 23 (NTS): Birds. Even if the devices are wholly underwater there could still be an effect if they do indeed increase the fish population locally. Birds will dive where the fish are. However, I would not think they are likely to be minced by the turbines either.	Highlight that the potential link between devices and an increase in bird feeding activity if, as predicted elsewhere, the increased shelter provided by the devices increases fish populations in the vicinity.	FULLREA009/5
Noise		• Sound: can be measured emanating from test sites. There is a lot of research going on internationally e.g. Wave Hub site and also a lot of work in North America. • Ships probably produce much higher intensities but they also pass by. Turbines would more likely turn constantly. Needs to be explored. • Regarding active sonar etc, animals possess physiological brain mechanisms that enable them to distinguish their own-emitted sounds (and echo's) from those of extraneous origin and can also distinguish and choose between sensory inputs of different external origin - like, for instance, being attuned to English in a noisy multilingual environment, or hearing your own child cry amongst a group of others. Communication only breaks down where the level of background noise is very high. In general, where interfering signals are constant, what the brain can predict, it can also tune out; conversely where attention is actively directed towards a particular feature of the global sensory input, neural networks change the balance of excitation and inhibition to increase the contrast of this particular feature and make it stand out against the background noise.	Include in the sound chapter information about ongoing work into underwater sound monitoring. The differences between the effect of the constant, but lower intensity, devices noise and shipping noise should be investigated N/A	FULLREA009/6 FULLREA009/7 FULLREA009/8

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Marine Mammals	Kirsty Grant	• Seals follow the wake of potential prey, or other things, detecting the turbulence left behind up to 35 seconds after the item of interest has passed by. See, for instance, the work of Prof. Guido Denhardt. But seals are so intelligent they are unlikely to be sucked in by slow moving turbines.	Highlight that seals can detect wakes, but are unlikely to be affected by turbines	FULLREA009/9
Tourism		• Regarding tourism, see the work of Soeren Hermanson in Samsoe (Denmark) where over 10 years, he has got the community together to transfer to 100% renewable energy sources. On Samsoe they now have an 'Energy Academy' which draws in tourists as well as professional people wanting to learn more about renewable energy technologies.	Look at involving the Bailiwick public with renewable energy to create a renewable community which could have a benefit to tourism	FULLREA009/10
Landscape and Seascape Characteristics		• There are many different working technologies available now offering a choice to suit the environment and need for energy. • Regarding the suggestion (Sark Newsletter 27th August - http://www.sarknewsletter.com/pdf/TSN043-27AUG2010.pdf final page, see also FULLREA017) that machinery would be lit at night and would upset "Dark Skies": Why would it necessarily be lit at night, especially if on the sea bed? Possibly an extra navigation light marking the spot to be avoided by shipping would be useful though (like those requested up the NE coast of Sark?). • Above sea level structures polluting the view and interfering with navigation, like the one at Strangford Lough: this is not in fact very big. Generation 2 technology, now being deployed is a floating structure anchored to the sea bed.	Outline that there may not need to be a visual impact. Report the necessary markings for devices, both submerged and surface piercing. Point out that the structures that would occur above sea level would not be very big.	FULLREA009/11 FULLREA009/12 FULLREA009/13

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Policy	Kirsty Grant	• Concerning the "cluster of 40 or so tidal turbines" that, hypothetically, might be deployed in the Great Russel: apart from scare-mongering, this again is something for Sark to think about. Are we looking for something to provide only for the Island, in which case a single structure might well be more than enough (e.g. the Strangford Lough model has two 600kW turbines and the peak consumption of Sark is, up to now, around 450 to 500 kW only)?	Look at only developing small scale for Sark's need	FULLREA009/14
		• Should we just save up for a cable connexion to the continent and let the French and other Europeans bother about how to generate the power? Probably next generation nuclear will be the cleanest and cheapest anyway.	Look into the possibility of connecting to the continent rather than generating in the bailiwick	FULLREA009/16
Navigation		• Even if a larger implantation is envisaged, with connections to Guernsey/Jersey/France, would this necessarily be lit at night, apart from (intermittently flashing) navigation buoys?	Describe in detail the navigation aids required at night for marine renewables	FULLREA009/15
Devices		• Many devices are already working and producing beyond initial pilot studies.	Amend the document to state that devices are already at a commercial scale	FULLREA009/17
REA	Jean-Francois Dhedin – EDF	• The REA could certainly be used as a model for the development of the whole sector, helping project developers to understand their potential impacts and the related mitigation measures.	N/A	FULLREA010/1

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Renewable Energy Policy	Paul Fletcher – E-Si Limited	• There has been a lot of misinformation about the strategic direction that Guernsey must take regarding energy. At last the island is talking about putting an energy policy together, but I feel a clear lead is required to ensure understanding and sense of the issues.	Take a clear lead to ensure that the public understands the issues to do with renewable energy	FULLREA011/1
		• It is critical the States must find a way very quickly to allow the use of our waters to take advantage of tidal streams and wind energy around the island. There are many players out there, and on island licensing must be financially advantageous and allow fast implementation and trading between interested parties.	Ensure a licensing and application system is in place in the near term that encourages renewable energy companies to set up and invest in the islands, by creating a legal framework they can work comfortably in.	FULLREA011/2
		• It is critical that all States and non-States authorities, organisations and businesses understand what is ahead so they can properly deal with it. This will require different thinking, retraining and investment.	Ensure that all bodies and the public are educated in what renewable energy may mean to them.	FULLREA011/3
		• Some way of introducing private enterprise, investors, angels, VCs together to create a pool of investment platforms must be encouraged.	Look into setting-up/encouraging a consortium of local investors to provide for renewable energy to allow local ownership of any scheme.	FULLREA011/4

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Renewable Energy Policy	Paul Fletcher – E-Si Limited	• The market for the new energy technologies is worth billions over the next 20 years just in the Channel Islands alone and we have just 20 years to enable 100% carbon offset – without resorting to nuclear I might add. Ten years is too fast and thirty years is too slow. By the time the world offsets its carbon to present targets to prevent climate change catastrophes there will be no oil left to cause a problem. The economy, and our financial status, is far more under threat.	Look to move to fully renewable energy generation over the next 20 years.	FULLREA011/19
		• Guernsey is in a prime position with its finance centre and high quality work force to enable changes in our own small way. We would insulate ourselves from the changing world energy markets and become a centre of excellence for renewable energy.	Utilise Guernsey's affluent population to create a renewable energy centre of excellence.	FULLREA011/20

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Electricity Generation	Paul Fletcher – E-Si Limited	• In Guernsey we use oil and gas predominantly to produce electricity, provide transport and heat homes. There is a mix of coal, wood and nuclear in there as well. Renewable energies predominantly produce electricity, and solar and wood produce heat. That indicates that the future is predominantly electricity based. There is no getting away from this fact. Tidal turbines and solar photovoltaics (PV) are the best, quickest solution to enable fast uptake of carbon displacement. Solar PV is a mature, easy to implement technology. We have an abundance of tidal energy and commercial tidal technology is not far away, and Guernsey is in a prime position to be an early instigator, in fact an experimental tidal power station would be welcome – as long as we do not have to pay for it.	As the future is predominantly electricity based, and the best/quickest solutions are tidal and solar power for carbon displacement, Guernsey should be an early instigator – possibly with experimental sites – in tidal turbine technology, as long as it is free.	FULLREA011/5
		• Because electricity is the future we must focus our efforts on heating, transport and other uses of energy towards electricity.	Ensure that there is a focus on converting other uses of energy to electricity	FULLREA011/6
		• We should install the most energy efficient technologies available for heating and hot water purposes. The equipment that fits this bill is heat pumps. There are Ground Source, Air Source and Water Source heat pumps. They use 4 times less electricity than conventional heating systems and must be encouraged as the number one method of heating. Where it is not possible to install such a machine or where there are swimming pools then solar water heating is next on the list of importance.	Encourage people/businesses to install heat pumps and/or solar water heating.	FULLREA011/7
		• Micro-scale wind machine technology is slowly maturing and there are a lot of new products coming on the market, such that within 12 to18 months these will become more common. The huge difference between micro solar and micro wind generation is that every house and business on the island could install solar PV and be completely hidden. Whereas wind turbines are more visual and in the early days this will restrict take-up until the technology matures. The new styles of turbines are more acceptable visually and there is a lot of innovation going on in this market and more to come.	Encourage micro-generation uptake on the island, including micro-scale wind.	FULLREA011/8

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Electricity Generation	Paul Fletcher – E-Si Limited	• Because the future is electric, the use of electricity will rise, even with the uptake of the most efficient equipment. That means that Guernsey Electricity will need to invest in new generating plant and higher capacity cable link to France. • This also means that to displace their carbon and nuclear footprint an even greater uptake of renewables will be necessary. GE will become the powerhouse of Guernsey, ensuring our economic centre is stable driving more and more heating as well as lighting and appliances and eventually transport. • The downside of these moves is that the oil and gas utilities will not be happy. They should have got involved in renewables ages ago and if they get left behind eventually that's their problem. However in the time frame available to change their business model, and with rising oil and gas prices that will enable large profits, they will have time to reposition and remodel their businesses.	Allow Guernsey Electricity to freely invest in their network which includes oil generating plant and additional cable link capacity Large scale uptake of renewable energy in order to offset the increased use in electricity. N/A	FULLREA011/9 FULLREA011/10 FULLREA011/11

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Electricity Generation	Paul Fletcher – E-Si Limited	• It is of the utmost importance that in order to allow this very major change that the following must occur:		
		1. The electricity market must be deregulated to allow other players into it. These other players will be the investors in renewable energy from the private sector. These players could be households, individuals, businesses and global renewable energy companies and utilities form other jurisdictions.	Commercialise the electricity market to allow investment in renewable energy	FULLREA011/12
		2. GE must be allowed to raise electricity prices to invest in plant, ICT and metering so they can cope with the massive changes that are coming.	Take away constrictions on unit and standing order pricing so that GE can raise the money to invest by whichever means they feel is useful.	FULLREA011/13
		3. If GE is to be retained by the States they should sell their shares in the tidal energy business they invested in and reinvest in what they know and what they need to invest in.	Guernsey Electricity should sell their shares in MCT	FULLREA011/14
		4. GE should not be in the business of competing with retail units or electrical and plumbing installation companies, so they can focus on their core business and so encouraging competition in the energy efficiency and renewable energy markets.	Guernsey Electricity should focus solely on electricity production and efficiencies.	FULLREA011/15
		5. Data centres should be forced by law to invest in renewable energy to offset their huge energy consumption.	A law should be implemented to ensure investment in renewable energy from large energy consuming companies.	FULLREA011/16

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Electricity Generation	Paul Fletcher – E-Si Limited	• I have pinpointed information and communications technologies tied with electricity metering as a crucial development in dealing with the coming uptake of renewables. There are presently severe complications in metering at present with regard to heat pumps, and micro-generation tariffs. When tidal becomes available and dominant along with solar PV the price of electricity will be permanently in a state of flux and current methods and tariff technology is not adequate. The method of buying and selling electricity is going to change. Home automation and computer systems will be able to monitor how much solar energy is being produced by the home, what the price of tidal electricity is and switch on and off appliances in the home to maximise renewable energies and price. i.e. when there is an surplus of power, energy will be cheap, when its cloudy and the tide is not running, and GE's oil station is being used energy will be expensive. GE needs to ready itself for the changes.	Guernsey Electricity should create a renewable energy tariff structure for householders and businesses and look to implement real smart metering.	FULLREA011/17
Economics		• The question of whether the States should invest in technology such as tidal should not be a question. They should not. The States of Guernsey should not be asking how much money do we need to spend on reducing our carbon footprint, but how much money can we make out of this? Surely that's been the Island tradition since our forefathers enabled the growing, tourist and financial industries to flourish and contribute to our current high lifestyle and buoyant economy. Let's hope that money-making tradition has not faded with the advent of socialist intervention.	Look into the areas that Guernsey can exploit to generate money from renewable energy.	FULLREA011/18

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Birds	Dave Cocksedge – Sark Sea Fisheries	• Mr. Rountree published a book on birds that have been sighted around Sark. It gets updated by Sark Soc. – this may be a source of information. (Frank Roundtree's **Birds of Sark**. Full citation: - Rountree, FRG. 1974. Birds of Sark. Guernsey, The Guernsey Press Company Limited for La Société Serquaise, Sark. Roundtree, FGR. 1991. **Supplement to Birds of Sark.** Sark: The Sark Ornithological Committee, La Société Serquaise)	Use information from additionally identified source in the Birds section of the REA.	FULLREA013/1
Further Work		• Andy Leaman is a useful source on all aspects of diving in the area (wrecks – habitats – tides and scallop beds). He would also be the man with the boat to do tests around the island.	Utilise Andy Leaman's experience for information on wrecks, habitats, tides and scallop beds around Sark.	FULLREA013/2
		• I would like to see site tests to see the effects of sediment fallout on spider crabs and scallop beds.	Research the effects of sediment fallout on local fisheries	FULLREA013/3
Commercial Fisheries and Mariculture		• It would be useful to know early where structures would be placed. The No Take Zones will put pressure on other fishing grounds. (noted that areas can become productive but displaced boats will move in on other areas. We have a Consultation Document looking at fishing activity in our area at the present.)	Nominated sites need to be well publicised so their impact on fishing activity can be considered.	FULLREA013/4
Electricity (Sark)		• From the report Sark's electrical infrastructure could not cope with a line being laid.	Outline information on how the Sark Infrastructure would be updated to account for an increase in electricity to the grid.	FULLREA013/5
		• Who pays for the update?	Identify where the funds would come from	FULLREA013/6
		• Where does the cable come ashore? – Permission would be needed from landowners.	Outline the procedure for getting the cable ashore and land procurement	FULLREA013/7

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Methodology	Dave Cocksedge – Sark Sea Fisheries	• Maybe a wind turbine placed at the Mill could be the answer for cheaper electric for Sark. The sails could be disguised as mill sails.	Consider other options for electricity generation such as wind turbine or smaller scale tidal.	FULLREA013/8
Further Work		• The report is very comprehensive, but a lot of data has come from desk top models. I would like to see many more tests in the waters of Sark.	Conduct research locally into identifying potential changes that may occur.	FULLREA013/9
Geology		• When Guernsey built the new harbour, the tides shifted and caused the sands to move in Herm.	Perform research into potential changes in sediment dynamics.	FULLREA013/10
Navigation	Conseiller Jan Guy, Conseiller Peter Cole - Sark Harbours & Pilotage Committee and Sark Shipping Committee	• 'In the strategic study it has not been possible to consider each channel individually.' When we reach project specific investigations it must be stressed that IOSS, SARS and others use a wide range of routes between Sark and Guernsey as appropriate to tidal conditions and wind directions. All options should be left open to them. • Pinch points and critical areas – There is a pinch point NE of Sark from Maseline Harbour to The Bec. If this area were used to harvest tidal energy and there were an exclusion zone around it this would involve considerable re routing for most traffic coming in to Sark from the north or west. Most traffic, commercial and otherwise, passes through this area from Guernsey and the area has considerable navigational challenges	There should not be any development that would restrict navigation access at any place where there is currently traffic. Highlight that there is a constraint with regards to navigation NE of Sark (Maseline Harbour to The Bec)	FULLREA014/1 FULLREA014/2
Fishing	Richard Keen – Fisherman	• Asked for clarification as to why we were disputing the compensation for fishermen point in the REA Scoping Consultation Report, but then saying it would be needed in the fisheries chapter.	Explain further about the role of GREC and the developers in any potential compensation	FULLREA015/1

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Navigation	Captain Saurabh Sachdeva – Chamber of Shipping	• I have reviewed the chapter related to Shipping and Navigation in the Scoping opinion report and would like to comment that the issues listed are quite comprehensive and would require detailed investigation prior to the publication of the EIA. Furthermore, being an island nation with significant reliance on the maritime trade to and from the ports, including tourism (ferries) due care would be taken in the development of the Navigation Risk Assessment.	Ensure that there is in depth consideration of navigation in the pre development EIA and develop an Navigation Risk Assessment	FULLREA016/1
Methodology	Kevin Delaney – Sark Newsletter	• On 24th August this public notice appeared on Sark's government website. It notifies islanders that we have 17 days in which to inform ourselves about this immensely complex issue and let the authorities know how we feel about them. The report which this notice refers to states that the public consultation period was to last six weeks from 30th July. Why has it taken the GP&A over three weeks to put this notice out?	Increase the amount of time that the consultation period runs for.	FULLREA017/1
Role of GREC		• Which authorities are we supposed to respond to? The GP&A, issuers of the public notice? No, the Guernsey Renewable Energy Commission, who works under the umbrella of Guernsey's Commerce and Employment Department. Have our own politicians washed their hands of this issue and left control over what happens in our waters to their Guernsey counterparts?	Explain the reason for the study being performed by GREC and why Guernsey has jurisdiction in this matter.	FULLREA017/2

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Landscape and Seascape Characteristics	Kevin Delaney – Sark Newsletter	• The report aims to take into consideration all those aspects on island life on which the "harvesting" of marine energy would have an effect - from bird life and fisheries to air quality and navigational hazards. Clearly, deploying a cluster of 40 or so tidal turbines in the Great Russel, which is an area mentioned, would have an enormous impact and it is not all about fishing and wildlife. For example, the machinery would be lit at night. How about our dark skies - why haven't the Société Sercquaise protested?	Explain how the development would affect Sark's dark skies.	FULLREA017/3
Structure and Presentation of the REA		• Guernsey Renewable Energy Commission's 58- page document is well worth reading, go to www.guernseyrenewableenergy.com to download it.	N/A	FULLREA017/4
Environmental Impacts	John Martel	• I would be interested to know if the places where tidal power has been installed and up and running for some considerable time has had any detrimental effect on the surrounding environment e.g. fish stocks etc. • Although the benefits of tidal power could be enormous it really should not be pursued to the detriment of the environment	Outline any known impacts from existing installed devices Only look to develop tidal power if there are no detrimental environmental effects.	FULLREA018/1 FULLREA018/2
Economics		Monetary gain should also hopefully be the main reason for considering the use of this form of power.	Outline what financial gains there are to developing renewable energy	FULLREA018/3
Conclusions		• If, after thorough investigation, it was found to be a safe alternative to oil it could prove to be of great benefit to the island.	N/A	FULLREA018/4

2.4 Integration of Responses into the REA and Scoping Report

The following section reflects GRECs comments on the responses to the consultation, taken from section 2.3. The comments are grouped by subject rather than response which allow similar responses to be grouped together. The response specific references taken quoted in the previous table are used in this section for speed in locating specific comments.

The comments are organised in the same way as to the REA, with structure, methodology and background information covered first, then the chapters in order are covered and finally further work and conclusions are reviewed.

2.4.1 Structure and Presentation of the REA

FULLREA003/1	The typing and grammatical errors Identified in the non-technical summary will be corrected.
FULLREA008/5	This is a strategic study, and it would not be appropriate to investigate such a broad range of subjects in any further detail at this stage. Developers will be expected to provide more detailed analysis that will be specific to their intended development sites and their specific devices, when making applications for consents to deploy.
FULLREA008/6	Suggested actions to filling in data gaps are covered on a chapter by chapter basis, as well as summarised in the Regional Monitoring (RMP) and Environmental Action (EAP) plans in the appendices K and L. The action plans will be highlighted in the summary chapter in section 20.3. The suggestions for future surveys and monitoring are also covered in Table 20.2 in section 20.6.
FULLREA008/7	A short Executive summary will be made available at the beginning of the REA to allow interested parties to have a brief overview rather than having to read the extensive document or NTS.

2.4.2 Methodology

FULLREA007/2 Unfortunately due to the early stage the industry is at and the numbers of different types of devices it is not possible to include more specific device effect information. At this time it is not known the mechanisms of the devices that would be installed in Bailiwick waters. It is for this reason that the report generalises. Additionally, there is still much research underway into the effects the devices have on the environment, and as more information becomes available the document can be updated.

FULLREA008/3 The links between the Benthic Ecology, Pelagic Ecology and Commercial Fisheries Chapters will be made consistent.

FULLREA008/4 The significance criteria (20.2) will be expanded to offer better explanation of the origin of the significance criteria.

FULLREA013/8 GREC was tasked with looking at commercial scale development of wave and tidal technologies in the Bailiwick. Sark may choose to look into smaller scale devices to meet their needs, or onshore wind, however both of these targets fall outside the initial remit of GREC to look into the feasibility of electricity generation from wave and tidal devices for the Bailiwick.

FULLREA017/1 The period of 6 weeks for the consultation was deemed to be a suitable timeframe to allow interested parties to respond, even if that meant them talking to us to get a better understanding. GREC regrets that Sark was not better informed of the process and will look to rectify this in the future.

It is important that everyone is aware that this is not the last time that people will be able to discuss this matter as GREC is keen to get the public further involved. This includes Sark and GREC values everybody's views. GREC understands this is a complex issue, which is why they are always contactable by email, phone or post should people wish to discuss this document or any other issue relating to GRECs work further.

2.4.3 Policy/Role of GREC

FULLREA008/9
FULLREA008/10
FULLREA011/2

GREC has been set up to look into the feasibility of marine renewable energy in the waters within Guernsey's territorial limit. Within this GREC was tasked with:

- Preparing an environmental assessment
- Developing a consenting regime
- Developing policy

With all of the above points GREC has been working closely with the States, and specifically the Commerce and Employment department. The delivery of the REA is very much part of GRECs Work. The REA is a document looking at the environmental impacts of potential development and is not a vehicle for showing the other work that GREC is undertaking.

GREC is, as stated above, working with the states to get legislation and policy in place. While the States' are supportive of GRECs work, policy and legislation remain ultimately States decisions. Documentation on GRECS other work streams will be available for release to the public when they are completed.

With regards to attracting developers, GREC has met with numerous developers and maintains contact with interested parties, keeping them updated of developments in Guernsey.

FULLREA009/14 The reason a "cluster of 40 or so tidal turbines" has been mentioned is that Guernsey, working closely with Sark, is looking at generating a significant proportion of its electricity from renewable energy. While it may be decided that Sark only wants small scale turbines, possibly off the southeast coast, for their own need, Guernsey has a far higher electricity demand. The REA is looking at generating for Guernsey, Herm and Sark, and so larger scale development is being considered in the document.

FULLREA009/16 Further electrical connectivity to Europe is a potential option for the Bailiwick, and has the potential to provide electricity that could be certified nuclear or hydro electric. However a consideration would be that this would reduce the security of supply as well as leaving the Bailiwick open to increasing prices. It makes sense to consider this option alongside other generation methods. GREC has been set up to look into the feasibility of generating electricity from renewable sources in the Bailiwick, not the feasibility of connecting cables to the continent. This can then be used to inform the States of Guernsey (and Sark GP&A) as part of their long term energy strategy.

FULLREA011/1
FULLREA011/3

GREC wants the public to be well educated about renewable energy and the release of the REA is the first step in the process. GREC is also working with the States, through Commerce and Employment, and is happy to advise when asked. However, energy policy is something that GREC can only advise on and cannot take an active lead in.

FULLREA011/4
FULLREA011/20

GREC as a body has not been set up to organise investors for renewable energy, simply to look into the feasibility of the project.

FULLREA011/19

One of GRECs objectives is to set up a consenting regime so that when the industry is ready for commercial development Guernsey is ready to receive applications. However, any targets for the amount of generation from renewable energy are to be decided by the States, not GREC.

FULLREA017/2

GREC has undertaken the REA of marine energy in the Bailiwick at the request of the States of Guernsey and Sark GP&A. GREC has been working closely with Sark representatives over the course of the process so that Sark waters can be included in the study. The REA is only a first step in looking at wave and tidal energy and does not leave Guernsey with any control over Sark waters. Rather, co-operation between the islands make economic and practical sense, to avoid potential repetition of the same investigations.

Regarding control of what happens in Sark waters, that remains Sark's own responsibility. Guernsey has no jurisdiction over the water in Sark's territorial seas. As such, any development within Sark waters would require Sark consent.

2.4.4 Devices

FULLREA007/4

The REA is looking at wave and tidal devices, with tidal devices operational sections being fully submerged and the majority currently being horizontal axis turbines. Wave devices are more diverse, with some devices being submerged and others located on the surface. Both wave and tidal devices are at the early stages of development and so it is not known which devices would be deployed in the Bailiwick, and so device specific information is not possible at this time. This will be clarified in the REA.

FULLREA009/17 While there are a large number of companies involved in marine renewables (as outlined in the scoping report), there are very few producing electricity and none dong this at a truly commercial scale where the value of the electricity produced can be expected to meet the cost of installation and operation.

MCT are well developed in tidal development, having generated electricity for over two years in Strangford Lough. Other companies such as Open Hydro are still at the early testing phase, with their device in Nova Scotia being surfaced due to damage after a number of months. Other scaled prototypes have tested for periods of time, but most are purely proof of concept devices. Additionally there are no arrays of tidal devices anywhere in the world.

Wave devices are being tested globally and there are possibly even more designs of wave devices than tidal. However, while there are numerous tests ongoing, the devices are still being modified to survive in high energy environments.

2.4.5 Geology

FULLREA009/1
FULLREA013/10 The recommendation to set up baseline and monitor ongoing sedimentation patterns on beaches around Guernsey Herm and Sark will be incorporated into the recommendations for further work in the Non Technical Summary. In the Geology chapter there is already a recommendation to establish sediment patterns around Herm, and this will be expanded. There is the possibility that there could be a change in sediment dynamics and beach deposits from installation of devices in the Big Russel. Beach surveys have been identified in the Regional Monitoring Plan (Appendix L) to be conducted by GREC and then handed to the developer once development begins.

However, previous studies on sedimentation would also be needed to assess causality. Any links between the changing sands on Herm and the construction of the Longue Hougue development are purely anecdotal, as no causality has ever been established.

2.4.6 Pelagic Ecology

FULLREA009/2 The biology of fish will be better explained in the Pelagic Ecology and NTS to inform the likelihood of fish collisions with rotating turbines.

FULLREA009/3 The NTS only gives a simplified overview of the Pelagic Ecology Chapter and does not contain the specific species that may be affected by electric and electromagnetic fields. However, the Pelagic Ecology Chapter does go into a greater level of detail and outlines that

"*Elasmobranchs, salmonids, eels and plaice are sensitive to both electric and magnetic fields, whilst cod and lampreys may be sensitive to electrical fields. The effects of EMFs are however still unclear"*.

The REA will aim to keep up to date with all research and will be reassessed periodically.

FULLREA009/4 The REA will reflect that changing an environment resulting in increased habitat for some species may still have a negative impact on species already present.

2.4.7 Birds

FULLREA001/1 The Islets of Crevichon and Fauconnaire were not highlighted in the document as they had not previously been identified. As they have now been identified they will be Highlighted on figures 9.2.1 in the Birds Chapter, figure 20.1 in the summary and figure 5.1 in the NTS

FULLREA001/2 We will insert "e.g. Installation of cameras" after "monitoring of demonstration devices" in the table on page 209. We will also number the tables in the Birds Chapter

FULLREA002/1 We will attempt to ensure that there are no pages consisting of a lone photo
FULLREA002/2 where this is possible while maintaining the overall structure of the document. The image of the shag was distorted, the original image has now been received and will be inserted to replace figure 9.4.1.

FULLREA009/5 The Birds Chapter in the REA covers the potential collision risks while feeding. As outlined in both the Birds chapter in the REA and the NTS it is unknown how bird feeding will be impacted by development due to insufficient research into this area.

FULLREA013/1 The Birds Chapter will be updated to take into account the Birds on Sark book and its supplemental issue.

2.4.8 Marine Mammals

FULLREA009/9 In the Marine Mammals Chapter in 10.2.1.1 (overview of seal ecology) the suspected hunting mechanisms of seals are outlined, including their ability to detect hydrodynamic vibrations, including fish wakes. The new research highlighted shall be incorporated into the marine mammals chapter.

2.4.9 Commercial Fisheries & Mariculture

FULLREA006/1 The REA has looked at identifying areas that are of specific importance to
FULLREA006/2 Fisheries, including migration, spawning, important habitats and current fishing
FULLREA006/3 grounds. The fishing grounds within the 3nm limit are illustrated in figures 11.2.4 – 11.2.12, and we are happy to work with the fishing industry to keep these up to date. On the constraints map we have tried to identify the key areas within the fishing industry that should not be affected, specifically relating to key fishing grounds and spawning, and again we are happy to work with the industry further with these. The Fisheries chapter outlines that while it is known that there are migratory species using the bailiwick waters, precise migratory routes are not known. However, general migratory timings are known, although whether development times would avoid migration times would be decided as a result of a detailed Environmental Assessment (EIA) by the developers.

While it is important that fishermen are considered, stating that no current fishing grounds would be made no go zones would prevent any development as, seen from figures 11.2.4 – 11.2.12, most, if not all, of the 3nm limit is used by fishing of one form or other. This does not mean that there will be development without further consultation or consideration of the fishing industry. Rather, we would like to work with the fishing industry in the long term to avoid significant disruption to fishing. There may even be opportunities to exploit fishing around any no go zones placed around the devices, which could have a positive impact on local fishing.

FULLREA006/4 GREC is very keen for there to be input from the fishing industry, as well as any other interested body, as renewable energy is taken forward. GREC is happy to talk to fishermen either on a one-to-one basis or at group meetings. Fishermen have also been invited to comment on the REA through the fisheries news letter.

FULLREA013/4 GREC has in the REA advised of the likely areas of development due to the potential resource areas in Chapter 5 (Figures 5.2.1 and 5.2.5). GREC also plans that in the future there will be further consultation with all industries and interested parties; GREC very much values the input.

FULLREA015/1 GREC will not be delivering or discussing any compensation with any party and cannot advise either way on compensation. This will be an issue for the developer to consider as part of their application.

2.4.10 Electricity Grid

FULLREA011/5 It is unlikely that adopting any technology would be free for the island. Energy policy regarding the uptake of new technologies is not in GRECs remit, nor is instigating changing technology to displace carbon. These are issues that the States of Guernsey Policy Council and Guernsey Electricity will have to address.

FULLREA011/6 Advising people and policy to alter energy to electricity is not part of GRECs remit.
FULLREA011/7 The Energy Policy Group would be required to discuss the potential to implement
FULLREA011/8 measures to encourage changes to energy use, and it would also need to be passed by the States.

FULLREA011/9 Guernsey Electricity is a private company whose issued share capital is wholly
FULLREA011/10 owned by the States of Guernsey Treasury and Resources (T&R) department.
FULLREA011/12 Provision is in place for the States to give Guidance to T&R on the policies it wishes
FULLREA011/13 to be pursued. GREC is not in a position to give instruction to the States, GREC is only
FULLREA011/14 in a position to offer advice to the States through the Commerce & Employment
FULLREA011/15 Department (C&E). As such GREC cannot effect any of the changes asked for
FULLREA011/16 regarding Guernsey Electricity, and does not have any influence over Guernsey
FULLREA011/17 Electricity.

FULLREA013/5 The Sark Grid currently has a total capacity of over 1.5MW and, as outlined in
FULLREA013/6 Chapter 14, Sark would likely need a cable connection to Guernsey to take advantage of energy generated using tidal devices as this would allow Guernsey to process the electricity into a useable form. This would also allow Sark to take advantage of Guernsey's other generation capacity at times when renewables are not available (such as at slack tide).

The funding of improved infrastructure will need to be debated by the States of Guernsey, Sark GP&A, Guernsey Electricity and Sark Electricity as it is not an issue for GREC.

FULLREA013/7 A site for cabling to come ashore in Sark has not been formally identified yet, although Guernsey Electricity have looked at the best places and have identified potential landing sites on the West coast. Permission would be needed from the landowners, whoever they may be, to land a cable. This would be an issue for Sark Electricity and GP&A to consider as it falls outside GRECs remit and Guernsey's Governmental control.

2.4.11 Shipping and Navigation

FULLREA005/2 We will keep Trinity House informed of the development process and invite them to comment further as we progress.

FULLREA009/15 The Shipping and Navigation chapter, section 15.7, outlines that there are guidelines to be followed for the marking of wave and tidal energy devices available from the IALA and Trinity House. These will be followed in the Bailiwick.

FULLREA014/1 Navigation is being carefully considered and safety at sea is an important issue. Any development would involve consultation with the relevant harbour offices and other interested parties, such as Trinity House. GREC is not currently identifying deployment sites. However, from the constraints and resource mapping it is clear that there is overlap between shipping and resource. It is not felt that this will prohibit development, however safety measures will need to be considered when undertaking mitigation at project specific levels.

FULLREA014/2 The area north east of Sark, running from Maseline Harbour to the Bec, will be highlighted on the constraints map.

FULLREA016/1 Potential developers will be required to submit a project specific EIA as part of their application, and part of this will be a consideration of shipping issues.

2.4.12 Tourism and Recreation

FULLREA009/10 GREC would like to involve the Guernsey, Herm and Sark residents as much as possible. To this end GREC has conducted public consultation of the REA that it has produced and future reports will also be available to the public with further public engagement.

2.4.13 Noise

FULLREA009/6 Research from Wave Hub, North America and any other location, when available, will be incorporated into the Noise chapter.

FULLREA009/7 Studies of noise from devices were identified as a recommendation for future study at the end of the Noise Chapter. It is also referred to in the regional monitoring plan (Appendix L) and is identified there as something that will need to be done by the developer of devices prior to deployment.

2.4.14 Landscape and Seascape Characteristics

FULLREA009/11
FULLREA009/13

While there are a number of technologies in various stages of development for both wave and tidal devices, those that are currently generating electricity to the grid are surface piercing or floating. The REA considers that this may continue to be the trend. Even if this does not continue to be the case navigational buoys and lighting may be required for marine safety reasons. It is therefore likely that there will be some level of visual impact, although it may be small.

FULLREA009/12
FULLREA017/3

There may be increased lighting during the construction phase of development, but it is unlikely that the devices would have to be fully lit during operation, unless there was maintenance work underway on a device. There would have to be navigational lights on devices that pierced the surface, as well as navigational buoys marking the area of submerged devices. It should also be noted that any development would be notified to charting organisations such as UKHO.

2.4.15 Social Aspects and Economics

FULLREA004/2

A Chapter which considered the economic factors, along with other social factors, of wave and tidal power was originally considered for inclusion in the REA. However, it was decided by GREC that at this time it was not relevant to include within the document, rather it would require discussions at a political level with regards to the economic impacts. In addition to this, any information presented would only be very vague at this point in time for 2 reasons relating to the relative early stage that the industry is at. Firstly the costs of installation are currently high as there have been very few installations of commercial scale devices. These costs would be expected to fall as more devices are installed, but precise figures are unknown. Secondly, the device designs that will be the eventual “winners” are not known, and the different types of devices could have different economic and social impacts.

FULLREA007/5
FULLREA007/7

Highlighting ways of reducing electricity consumption does not fall within GRECs remit. Currently the utility companies offer advice on reducing power consumption, but any further steps would need to be taken by the States Policy Council’s Energy Policy Group.

FULLREA008/1 GREC has been looking, and continues to look, into the economics of marine renewables including the mechanisms that would be required for funding of a development. At this time there are politician level discussions with the UK aiming to definitively answer whether the Crown Dependencies are eligible for incentives of any type. As talks are ongoing the production of a document outlining the economic situation would be premature.

It is also unlikely that, given the potential rises in oil and gas prices, that the economics would prevent development long-term. However, if there is not a sufficient resource to commercially exploit, or if there could be unacceptable environmental damage then it could prevent development. As such the REA was the prioritised work stream.

FULLREA011/18 FULLREA018/3 GREC is looking at the feasibility of developing offshore renewable technology in the Bailiwick. Part of this involves looking at the economics of renewable energy. Currently renewable energy everywhere globally is subsidised, therefore it is safe to assume that utilising renewable energy on a macro generation scale in the short to medium term would cost Guernsey money. It is unlikely that, given the potential rises in oil and gas prices, that the economics would be a preventative issue on development. However, for the reasons outlined above, the REA is not including the socioeconomic issues raised.

2.4.16 Environmental Impacts

FULLREA006/7 FULLREA007/6 It is vitally important that no industry proceeds without considering the environmental implications of its intended activity. This is why GREC has started by conducting the REA, to highlight the potential environmental impacts at a strategic level and identify further work that is needed. The further work that is identified will either be carried out by GREC if funds are available or by the developers as part of the application process. This application process will also require the production of an EIA which will consider all the environmental impacts in detail.

A combination of the REA, further work undertaken by GREC and the EIA from the developer(s) will be used to identify areas that are and are not suitable for development. This would include the potential results of any device and development specific mitigation measures. However, there will inevitably be some impact, as with any industrial work, It is important that this is minimised.

FULLREA007/1
FULLREA018/2

GREC is trying to obtain a full understanding of the current ecosystem in specific areas around Guernsey, both through the REA and through further studies, such as the towed camera survey of the Big Russel. While it is important that what exists is known and understood, it is also likely that there will be changes to the area through any development. Understanding the changes that may take place and preserving and increasing biodiversity are important factors. However, any change could be seen as detrimental and so ruling out developing where there could be any detrimental effect would, realistically, completely prevent development.

FULLREA007/3

While the exact devices to be installed and device characteristics are unknown, the effects that are listed are general and so only have general mitigation measures. As part of the application process development companies will be required to submit a detailed EIA outlining the specific effects of their devices and their device specific mitigation measures. Also, at present there are studies ongoing into the impacts that specific devices have on the environment, once these are completed there will be a better understanding of the mitigation measures that will work.

FULLREA018/1

There are only limited sites where there has been any form of extended testing of tidal devices. Information from environmental reports from MCT and EMEC are included in the relevant chapters in the REA. GREC intends to stay up to date with further research into potential impacts of devices. At EMEC for example they are performing wildlife observations to see how installation of devices affects mammal and bird numbers. Pulse Tidal are undertaking an Environmental Impact Assessment of planned installation of their devices in Kyle Rhea, Scotland, looking for installation by 2012.

2.4.17 Further Work

FULLREA006/5

A more detailed EIA will be required by any developer as part of the application process. This will be device specific and will consider in great detail the potential environmental impacts of the life cycle of their device along with any specific mitigation measures.

FULLREA006/6
FULLREA013/3

It is GRECs intention to stay fully apprised of future progress made in research regarding the potential environmental impacts that marine renewables could cause. In addition GREC will undertake some studies, as funds are available, to ascertain in greater detail the environment that exists in the Bailiwick. Knowing what already exists will help in identifying potential impacts in the future. As well as this, a full EIA will be required as part of a developers application.

FULLREA013/2
FULLREA013/9

For future studies around the Bailiwick GREC will consider Andy Leaman, and GREC has already been in contact with him and other fishermen regarding studies in the Bailiwick. GREC is keen to involve local people and interested parties wherever possible.

GREC is committed to conducting further studies in areas of interest in the Bailiwick to further our understanding of all issues. To this end GREC has already undertaken a towed camera survey of the seabed and is looking at getting empirical data for tidal speeds.

2.4.18 Conclusions

FULLREA008/2

The conclusion that a technically viable commercial scale deployment could be achieved in the Bailiwick of Guernsey "by 2015 at the earliest" was reached taking into account:

- The current state of the industry (no arrays installed anywhere in the world, just a small number of individual devices),
- The requirement of infrastructure to be deployed (an approximate 3 year lead in time to get cables laid) and
- The need for a detailed Environmental Impact Assessment to be completed as part of the application process (which would require survey work, amongst other activities)

However, if circumstances were to change, it may become possible to develop in a shorter timeframe. The points outlined above and the potential for a shorter time frame will be made clearer in the conclusions section of the REA.

General point – it is not possible to cover everything in detail in the NTS. If something appears to lack detail in the NTS then the reader should refer to the appropriate chapter in the Full REA.

2.5 Accepted Actions from the Consultation

The following is a list of actions that are accepted and to be inserted into the REA and NTS as suggested from Table 2. They do not require detailed discussion as the comments will be fully taken into the REA and NTS.

Table 3: Accepted changes to the REA

FULLREA001/1	The Islets of Crevichon and Fauconnaire will be highlighted on the Important Seabird areas chart and the Constraints Map.
FULLREA001/2	The text "e.g. Installation of cameras" will be inserted into the relevant places in the Birds Chapter.
FULLREA002/2	The image of the Shag will be replaced with a non distorted image.
FULLREA003/1	The typing errors identified in the NTS will be corrected.
FULLREA005/2	Trinity House will be kept informed of the development process in the future.
FULLREA008/3	The links between the Benthic Ecology, Pelagic Ecology and Commercial Fisheries Chapters will be made consistent.
FULLREA008/4	The significance criteria (20.2) will be expanded to offer better explanation of the origin of the criteria.
FULLREA008/7	A short Executive summary will be made available at the beginning of the REA to allow interested parties to have a brief overview rather than having to read the extensive document or NTS.
FULLREA009/2	The biology of fish will be better explained in the Pelagic Ecology and NTS to inform the likelihood of fish collisions with rotating turbines.
FULLREA009/4	The REA will reflect that changing an environment resulting in increased habitat for some species may still have a negative impact on species already present.
FULLREA009/6	Research from Wave Hub, North America and any other location, when available, will be incorporated into the Noise chapter.
FULLREA013/1	The Birds Chapter will be updated to take into account the Birds on Sark book and its supplemental issue.
FULLREA014/2	The area north east of Sark, running from Maseline Harbour to the Bec, will be highlighted on the constraints map.

Appendix A

Comments Not Leading to a Specific Action

Consultation Report on the Regional Environmental Assessment of Marine Energy

Appendix A – Comments Not Leading to a Specific Action

Table 4 below illustrates the issues not covered in section 2.4 and 2.5. For comments with N/A listed in the suggested action column there was no suggested action from the consultee and these are listed

Table 4 – Identifying comments not addressed in section 2.4 and 2.5

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
REA	John E Antill – ACRE	• The Commissioners feel that it is a comprehensive and useful document for establishing the baseline statement and identifying possible effects of any future marine RE development in Guernsey waters.	N/A	FULLREA004/1
Navigation	John Cannon – Trinity House	• We consider that it captures the shipping and navigation issues that need to be addressed at this level and have no further observations to make at this stage	N/A	FULLREA005/1
Document Structure	Stuart Trought – ARE/SRE/GRE/JMRE	• The REA is a comprehensive and detailed document with a breadth of analysis and it does serve as a document which covers the vast majority of the headings which will need to be considered.	N/A	FULLREA008/8

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference
Noise	Kirsty Grant	• Regarding active sonar etc, animals possess physiological brain mechanisms that enable them to distinguish their own-emitted sounds (and echo's) from those of extraneous origin and can also distinguish and choose between sensory inputs of different external origin - like, for instance, being attuned to English in a noisy multilingual environment, or hearing your own child cry amongst a group of others. Communication only breaks down where the level of background noise is very high. In general, where interfering signals are constant, what the brain can predict, it can also tune out; conversely where attention is actively directed towards a particular feature of the global sensory input, neural networks change the balance of excitation and inhibition to increase the contrast of this particular feature and make it stand out against the background noise.	N/A	FULLREA009/8
REA	Jean-Francois Dhedin – EDF	• The REA could certainly be used as a model for the development of the whole sector, helping project developers to understand their potential impacts and the related mitigation measures.	N/A	FULLREA010/1
Electricity Generation	Paul Fletcher – E-Si Limited	• The downside of these moves is that the oil and gas utilities will not be happy. They should have got involved in renewables ages ago and if they get left behind eventually that's their problem. However in the time frame available to change their business model, and with rising oil and gas prices that will enable large profits, they will have time to reposition and remodel their businesses.	N/A	FULLREA011/11
Structure and Presentation of the REA	Kevin Delaney – Sark Newsletter	• Guernsey Renewable Energy Commission's 58- page document is well worth reading, go to www.guernseyrenewableenergy.com to download it.	N/A	FULLREA017/4

Appendix B

Summary of Responses

Consultation Report on the Regional Environmental Assessment of Marine Energy

Appendix B – Summary of Responses

Table 5 below outlines all of the comments along with the decision whether to accept the action, and therefore incorporate it into the REA or REA process, or whether to reject the action. The page reference column indicates where in the document a detailed reasoning for either accepting or rejecting the action can be found. A number of rejected actions simply fall outside of GREC's remit, and would be better being taken forward within the relevant section within the States of Guernsey. Additionally some accepted actions are already included in the REA, as explained in Section 2.4.

Table 5 – Index of Accepted and Disputed actions

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Chapter 9 – Birds	Jamie Hooper – Chapter Writer	• On the map of Important Seabird Areas (p192), please can you add the islets of Crevichon and Fauconnaire, north and south of Jethou respectively as red dots? They may already be marked but this is unclear. It would be good if they were as obvious as The Humps.	Highlight the Islets of Crevichon and Fauconnaire as Important Seabird Areas on the chart	FULLREA001/1	Accept	32
		• On the table on page 209, can you please add 'e.g. Installation of cameras' to read 'Monitoring of demonstration devices e.g. Installation of cameras'. Note, this is repeated twice in the table.	Insert "e.g. Installation of cameras" at two points in the limitations of current data table on page 209.	FULLREA001/2	Accept	32
Chapter 9 – Birds	Paul Hillion	• All I would say purely from a design point of view is that some of the photos look a little lost when on their own on a sheet.	Avoid putting just 1 image on a page	FULLREA002/1	Accept	32
		• Also the Shag on the buoy image looks distorted	Replace the Shag image with a non distorted one	FULLREA002/2	Accept	32

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Presentation of the Non Technical Summary	Advocate Gordon Dawes	• p23 read: "if construction and deployment work around colonies is unavoidable, then it should be " • p25 Not sure if you are worried by split infinitives, if yes then read: "to address strategically the risks of collision". • p26 Read "comprises 175 vessels and is currently". (It's either consists of or comprises but not comprises of, sorry, a bugbear of mine). • p27 Read: "A further measure would be to provide employment opportunities". • p30 Add space between Russel and bracket. • p33 Read: "There is the potential to generate energy that exceeds." • p35 Read: "These studies would lead on to." • p40 Read: "... compared with other jurisdictions". (Guernsey not being a nation.) • p43 Read: "the value that people place on their local coastal". • p45 Read: "without diminishing the need properly to examine". • p45 Read: " some further knowledge must be gained as to the cumulative effects." • p45 Read: "Guernsey and Sark can contribute to gaining a better scientific knowledge of their own waters." • p45 Read: "... between the States of Guernsey and Sark and prospective developers." • p46 Read: "... in order properly to establish ..." • p50 Read: "... which mostly comprises mackerel". • p50 Vazon Bay is referred to as being on the east of Guernsey.	Correct the mentioned typing errors.	FULLREA003/1	Accept	27

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
REA	John E Antill – ACRE	• The Commissioners feel that it is a comprehensive and useful document for establishing the baseline statement and identifying possible effects of any future marine RE development in Guernsey waters.	N/A	FULLREA004/1		
Economics		• It would seem appropriate to make a few statements in the document on the economic and technical hurdles ahead for tidal/wave RE in relation to Guernsey's target for the installation of 100MW RE by 2020.	Include statements, or a chapter, on the economics of the installation and any technical issues to be considered	FULLREA004/2	Reject	36
Shipping and Navigation	John Cannon – Trinity House	• We consider that it captures the shipping and navigation issues that need to be addressed at this level and have no further observations to make at this stage	N/A	FULLREA005/1		
		• Trinity House will be pleased to provide advice and comment on specific development proposals within the Guernsey, Sark and Herm Renewable Energy Zone, particularly in so far as they may impact on any aids to navigation provided by Trinity House in the interests of general navigation and more generally if invited to do so	Keep Trinity House apprised of the development process and invite to advise on impact on Navigation and aids once device specifications are known.	FULLREA005/2	Accept	35

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Commercial Fisheries and Mariculture	Andy Le Prevost – Fisherman and Fishmonger	• Fishing industry cannot withstand any changes which could be detrimental to: 1. either species' migratory or spawning routines or 2. Habitat, or 3. Restricting the industry's access to areas currently viable for commercial fishing.	Ensure that any development does not interfere with: migration or spawning, Important habitats, Ensure current fishing grounds are not made no go zones	 FULLREA006/1 FULLREA006/2 FULLREA006/3	 Accept Accept Reject	 33 33 33
		• Would like to see extreme close liaison between the fishing industry and the responsible government departments.	Ensure that Government departments work closely with the fishing industry to avoid conflicts	FULLREA006/4	Accept	33
Further Work		• Would like to see an extremely detailed fisheries Impact Assessment	Perform a detailed EIA for Marine Renewable Energy	FULLREA006/5	Reject	38
		• Everything should be done to assess the true damage it (marine renewables) could cause	Perform/stay appraised of research into the effects of marine energy	FULLREA006/6	Accept	38
Environmental Impacts		• We are dealing with potentially disrupting an environment – something which any industry must treat with extreme caution.	Do not rush into a development without taking due care	FULLREA006/7	Accept	37

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Environmental impacts	Andrew Lee	• I am not in favour of this proposal because it stands a good chance of damaging the local ecosystem more than the production of 'clean' energy would offset it, i.e. the 'clean' energy produced would not be all that clean.	Do not develop where there could be damage to the established local ecosystem	FULLREA007/1	Reject	38
		• There was a lot of potential damage cited, some of it unknown, the mitigating measures proposed were either very general, weak, or theoretical and, in short, it did not fill me with confidence.	Include mitigation measures that are known to reduce potential impacts	FULLREA007/3	Reject	38
		• Should the environmental damage be very small I would probably be in favour but, right from the start, it has been my opinion that habitat would be damaged.	Unless environmental impacts are proven to be small do not develop.	FULLREA007/6	Accept	37
Devices		• A lot of research and knowledge is contained in the documents but not many facts concerning what particular sea energy generation is proposed and it's particular effects (I apologise if I missed something). Under-sea turbines would definitely damage the environment. Other sea-surface methods I would be more in favour of, though I don't doubt they harness less energy.	Highlight the specific device types that may be used and the effects that they would cause and relate this to the energy that could be harnessed from the device types	FULLREA007/4	Reject	30
Social Aspects		• Whatever method (of generation) could be employed it will do nothing to decrease total energy usage, so the net result would probably be environmental loss.	Highlight ways to reduce electricity usage among the population.	FULLREA007/5	Reject	36
		• Right from the start, it has been my opinion that habitat would be damaged and electricity demands remain un-dented.	Focus on electricity use reduction.	FULLREA007/7	Reject	36
Methodology		• I couldn't find many concrete facts about effects and proposals in the documentation other than general ideas (although it did profess to be 'strategic' in scope).	Include more specific facts about the effects of the devices and installation	FULLREA007/2	Reject	28

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Economics	Stuart Trought – ARE/SRE/GRE/ JMRE	• Although we accept that this document summarises the environmental impact, this will be academic if Guernsey, like the rest of the crown dependencies, does not qualify for UK ROCs or other incentives. We strongly suggest greater focus on this vital building block, rather than investing resources on environmental studies which may not be required.	Look into the economics of marine renewables and how they can be funded in the Bailiwick. Publish a document on the findings and prioritise this above all other issues.	FULLREA008/1	Reject	37
Conclusions		• We find the conclusion on the final page of the document that "commercial scale by 2015 at the earliest" unduly pessimistic and this does not indicate that Guernsey intends to prepare itself to take advantage of this date or earlier. Scotland indicates that small scale commercial arrays will be operational well before 2015.	Revise the "earliest" possibility of development in Guernsey, or better outline the reasons for the conclusions drawn.	FULLREA008/2	Accept	39
Methodology		• We have reservations on the scientific approach in certain areas of the report and do not believe that the information is presented in the most efficient way – e.g. The pelagic (chapter 8) and benthic (chapter 7) areas could be more closely linked with the fisheries sections.	Create better links between the Benthic and Pelagic Chapters with the Fisheries Chapter.	FULLREA008/3	Accept	28
		• Another reservation is in the final summary chapter (20) because it is not clear what the criteria chosen is based on.	Clarify the significance criteria	FULLREA008/4	Accept	28

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Document Structure	Stuart Trought – ARE/SRE/GRE/ JMRE	• We strongly feel that the document lacks some detail within its areas of analysis and has left many questions unanswered.	Increase the level of detail within the document.	FULLREA008/5	Reject	27
		• The conclusion is too short and has identified many gaps but offers no solutions to filling these gaps.	Provide further answers to filling in gaps in knowledge.	FULLREA008/6	Reject	27
		• The consultation document is not very user friendly because of its length and although a shortened version is available it still does not appear as a user friendly document. There does not appear to be a meaningful executive summary.	Create a "meaningful" executive summary	FULLREA008/7	Accept	27
		• The REA is a comprehensive and detailed document with a breadth of analysis and it does serve as a document which covers the vast majority of the headings which will need to be considered.	N/A	FULLREA008/8		
Role of GREC		• The Role of GREC should be to facilitate and encourage a marine renewable energy industry at this early stage. We understand that it believes that the REA is part of this work, but we strongly encourage GREC to focus more on delivering a general environment (financial, legislation etc) which encourages the industry in general rather than showing the potential obstacles.	GREC should focus on encouraging the industry to the Island, and so should produce documents outlining the benefit of developers coming to Guernsey.	FULLREA008/9	Reject	29
		• The REA is long on rhetoric but short on offering meaningful solutions which can put Guernsey at the forefront of the industry. Developers need to see a forward looking, fast moving GREC backed by a supportive States with a clear energy strategy and policy. Unfortunately this document does not seem to echo any of this and we feel that these positive sentiments and messages to the industry need to be sent in all outputs from GREC, including the REA.	The REA should outline the other work the GREC is undertaking rather than focus on the environmental issues.	FULLREA008/10	Reject	29

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Geology	Kirsty Grant	• Early on in the report there is something about the quality of beaches. Is there a possibility that sediment shift could alter beach deposits? This is something which could be monitored.	Set up baseline and ongoing monitoring of beach levels	FULLREA009/1	Accept	31
Pelagic Ecology		• Page 21 (NTS): Fish should have no problem detecting the devices; all species have lateral line sensory systems which are specialised for detecting and identifying rocks/obstacles from a distance. They can choose to avoid or explore, even in turbulent water.	Include information about fish biology in explaining likelihood of collision risk (Pelagic Ecology Chapter and NTS).	FULLREA009/2	Accept	32
		• Page 21 (NTS): Electric or electromagnetic fields. In this environment only sharks and some rays are sensitive to electric fields. Other fish in this marine environment do not have electroreceptors. Sensitivity to electromagnetic fields is less clear but there is a lot of research going on. Specific receptors are not known in fish but one wonders how fish can navigate when migrating over large distances. Both electric and electromagnetic fields decrease rapidly with distance from the source: "For a monopolar line, the magnetic fields fall off as the inverse of the distance from the line; those from a bipolar line fall off somewhat faster with distance (typically, as the square of the distance) because of the partial cancellation of fields from the two conductors that carry current in opposite directions." (from Foster and Repacholi, Dept. Bio-engineering, UPenn. **Environmental Impacts of Electromagnetic Fields From Major Electrical Technologies)**	Keep up to date with research in the area of Electromagnetic fields and identify specific species that are susceptible to electric fields in the NTS.	FULLREA009/3	Accept	32
		• Page 21 (NTS): The devices may act as artificial reefs and may in fact attract fish. This might nevertheless alter existing ecology by changing the distribution of species. There are those that like to live in reefs, ship wrecks, around rocks etc, and there are those that prefer the open water.	Highlight that an increase in fish density or biodiversity can also result in loss of habitat for other species (Pelagic Ecology Chapter and NTS).	FULLREA009/4	Accept	32

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Birds	Kirsty Grant	• Page 23 (NTS): Birds. Even if the devices are wholly underwater there could still be an effect if they do indeed increase the fish population locally. Birds will dive where the fish are. However, I would not think they are likely to be minced by the turbines either.	Highlight that the potential link between devices and an increase in bird feeding activity if, as predicted elsewhere, the increased shelter provided by the devices increases fish populations in the vicinity.	FULLREA009/5	Accept	32
Noise		• Sound: can be measured emanating from test sites. There is a lot of research going on internationally e.g. Wave Hub site and also a lot of work in North America.	Include in the sound chapter information about ongoing work into underwater sound monitoring.	FULLREA009/6	Accept	35
		• Ships probably produce much higher intensities but they also pass by. Turbines would more likely turn constantly. Needs to be explored.	The differences between the effect of the constant, but lower intensity, devices noise and shipping noise should be investigated	FULLREA009/7	Accept	35
		• Regarding active sonar etc, animals possess physiological brain mechanisms that enable them to distinguish their own-emitted sounds (and echos) from those of extraneous origin and can also distinguish and choose between sensory inputs of different external origin - like, for instance, being attuned to English in a noisy multilingual environment, or hearing your own child cry amongst a group of others. Communication only breaks down where the level of background noise is very high. In general, where interfering signals are constant, what the brain can predict, it can also tune out; conversely where attention is actively directed towards a particular feature of the global sensory input, neural networks change the balance of excitation and inhibition to increase the contrast of this particular feature and make it stand out against the background noise.	N/A	FULLREA009/8		

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Marine Mammals	Kirsty Grant	• Seals follow the wake of potential prey, or other things, detecting the turbulence left behind up to 35 seconds after the item of interest has passed by. See, for instance, the work of Prof. Guido Denhardt. But seals are so intelligent they are unlikely to be sucked in by slow moving turbines.	Highlight that seals can detect wakes, but are unlikely to be affected by turbines	FULLREA009/9	Accept (already included)	33
Tourism and Recreation		• Regarding tourism, see the work of Soeren Hermanson in Samsoe (Denmark) where over 10 years, he has got the community together to transfer to 100% renewable energy sources. On Samsoe they now have an 'Energy Academy' which draws in tourists as well as professional people wanting to learn more about renewable energy technologies.	Look at involving the Bailiwick public with renewable energy to create a renewable community which could have a benefit to tourism	FULLREA009/10	Accept	35
Landscape and Seascape Characteristics		• There are many different working technologies available now offering a choice to suit the environment and need for energy.	Outline that there may not need to be a visual impact.	FULLREA009/11	Reject	36
		• Regarding the suggestion (Sark Newsletter 27th August - http://www.sarknewsletter.com/pdf/TSN043-27AUG2010.pdf final page, see also FULLREA017) that machinery would be lit at night and would upset "Dark Skies": Why would it necessarily be lit at night, especially if on the sea bed? Possibly an extra navigation light marking the spot to be avoided by shipping would be useful though (like those requested up the NE coast of Sark?).	Report the necessary markings for devices, both submerged and surface piercing.	FULLREA009/12	Accept	36
		• Above sea level structures polluting the view and interfering with navigation, like the one at Strangford Lough: this is not in fact very big. Generation 2 technology, now being deployed is a floating structure anchored to the sea bed.	Point out that the structures that would occur above sea level would not be very big.	FULLREA009/13	Accept	36

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Policy	Kirsty Grant	• Concerning the "cluster of 40 or so tidal turbines" that, hypothetically, might be deployed in the Great Russel: apart from scare-mongering, this again is something for Sark to think about. Are we looking for something to provide only for the Island, in which case a single structure might well be more than enough (e.g. the Strangford Lough model has two 600kW turbines and the peak consumption of Sark is, up to now, around 450 to 500 kW only)?	Look at only developing small scale for Sark's need	FULLREA009/14	Reject	29
		• Should we just save up for a cable connexion to the continent and let the French and other Europeans bother about how to generate the power? Probably next generation nuclear will be the cleanest and cheapest anyway.	Look into the possibility of connecting to the continent rather than generating in the bailiwick	FULLREA009/16	Reject	29
Navigation		• Even if a larger implantation is envisaged, with connections to Guernsey/Jersey/France, would this necessarily be lit at night, apart from (intermittently flashing) navigation buoys?	Describe in detail the navigation aids required at night for marine renewables	FULLREA009/15	Reject	35
Devices		• Many devices are already working and producing beyond initial pilot studies.	Amend the document to state that devices are already at a commercial scale	FULLREA009/17	Reject	31
REA	Jean-Francois Dhedin – EDF	• The REA could certainly be used as a model for the development of the whole sector, helping project developers to understand their potential impacts and the related mitigation measures.	N/A	FULLREA010/1		

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Renewable Energy Policy	Paul Fletcher – E-Si Limited	• There has been a lot of misinformation about the strategic direction that Guernsey must take regarding energy. At last the island is talking about putting an energy policy together, but I feel a clear lead is required to ensure understanding and sense of the issues.	Take a clear lead to ensure that the public understands the issues to do with renewable energy	FULLREA011/1	Accept	30
		• It is critical the States must find a way very quickly to allow the use of our waters to take advantage of tidal streams and wind energy around the island. There are many players out there, and on island licensing must be financially advantageous and allow fast implementation and trading between interested parties.	Ensure a licensing and application system is in place in the near term that encourages renewable energy companies to set up and invest in the islands, by creating a legal framework they can work comfortably in.	FULLREA011/2	Accept	29
		• It is critical that all States and non-States authorities, organisations and businesses understand what is ahead so they can properly deal with it. This will require different thinking, retraining and investment.	Ensure that all bodies and the public are educated in what renewable energy may mean to them.	FULLREA011/3	Reject	30
		• Some way of introducing private enterprise, investors, angels, VCs together to create a pool of investment platforms must be encouraged.	Look into setting-up/encouraging a consortium of local investors to provide for renewable energy to allow local ownership of any scheme.	FULLREA011/4	Reject	30

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Renewable Energy Policy	Paul Fletcher – E-Si Limited	• The market for the new energy technologies is worth billions over the next 20 years just in the Channel Islands alone and we have just 20 years to enable 100% carbon offset – without resorting to nuclear I might add. Ten years is too fast and thirty years is too slow. By the time the world offsets its carbon to present targets to prevent climate change catastrophes there will be no oil left to cause a problem. The economy, and our financial status, is far more under threat.	Look to move to fully renewable energy generation over the next 20 years.	FULLREA011/19	Reject	30
		• Guernsey is in a prime position with its finance centre and high quality work force to enable changes in our own small way. We would insulate ourselves from the changing world energy markets and become a centre of excellence for renewable energy.	Utilise Guernsey's affluent population to create a renewable energy centre of excellence.	FULLREA011/20	Reject	30

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Electricity Generation	Paul Fletcher – E-Si Limited	• In Guernsey we use oil and gas predominantly to produce electricity, provide transport and heat homes. There is a mix of coal, wood and nuclear in there as well. Renewable energies predominantly produce electricity, and solar and wood produce heat. That indicates that the future is predominantly electricity based. There is no getting away from this fact. Tidal turbines and solar photovoltaics (PV) are the best, quickest solution to enable fast uptake of carbon displacement. Solar PV is a mature, easy to implement technology. We have an abundance of tidal energy and commercial tidal technology is not far away, and Guernsey is in a prime position to be an early instigator, in fact an experimental tidal power station would be welcome – as long as we do not have to pay for it.	As the future is predominantly electricity based, and the best/quickest solutions are tidal and solar power for carbon displacement, Guernsey should be an early instigator – possibly with experimental sites – in tidal turbine technology, as long as it is free.	FULLREA011/5	Reject	34
		• Because electricity is the future we must focus our efforts on heating, transport and other uses of energy towards electricity.	Ensure that there is a focus on converting other uses of energy to electricity	FULLREA011/6	Reject	34
		• We should install the most energy efficient technologies available for heating and hot water purposes. The equipment that fits this bill is heat pumps. There are Ground Source, Air Source and Water Source heat pumps. They use 4 times less electricity than conventional heating systems and must be encouraged as the number one method of heating. Where it is not possible to install such a machine or where there are swimming pools then solar water heating is next on the list of importance.	Encourage people/businesses to install heat pumps and/or solar water heating.	FULLREA011/7	Reject	34
		• Micro-scale wind machine technology is slowly maturing and there are a lot of new products coming on the market, such that within 12 to18 months these will become more common. The huge difference between micro solar and micro wind generation is that every house and business on the island could install solar PV and be completely hidden. Whereas wind turbines are more visual and in the early days this will restrict take-up until the technology matures. The new styles of turbines are more acceptable visually and there is a lot of innovation going on in this market and more to come.	Encourage micro-generation uptake on the island, including micro-scale wind.	FULLREA011/8	Reject	34

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Electricity Generation	Paul Fletcher – E-Si Limited	• Because the future is electric, the use of electricity will rise, even with the uptake of the most efficient equipment. That means that Guernsey Electricity will need to invest in new generating plant and higher capacity cable link to France.	Allow Guernsey Electricity to freely invest in their network which includes oil generating plant and additional cable link capacity	FULLREA011/9	Reject	34
		• This also means that to displace their carbon and nuclear footprint an even greater uptake of renewables will be necessary. GE will become the powerhouse of Guernsey, ensuring our economic centre is stable driving more and more heating as well as lighting and appliances and eventually transport.	Large scale uptake of renewable energy in order to offset the increased use in electricity.	FULLREA011/10	Reject	34
		• The downside of these moves is that the oil and gas utilities will not be happy. They should have got involved in renewables ages ago and if they get left behind eventually that's their problem. However in the time frame available to change their business model, and with rising oil and gas prices that will enable large profits, they will have time to reposition and remodel their businesses.	N/A	FULLREA011/11		

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Electricity Generation	Paul Fletcher – E-Si Limited	• It is of the utmost importance that in order to allow this very major change that the following must occur:				
		6. The electricity market must be deregulated to allow other players into it. These other players will be the investors in renewable energy from the private sector. These players could be households, individuals, businesses and global renewable energy companies and utilities form other jurisdictions.	Commercialise the electricity market to allow investment in renewable energy	FULLREA011/12	Reject	34
		7. GE must be allowed to raise electricity prices to invest in plant, ICT and metering so they can cope with the massive changes that are coming.	Take away constrictions on unit and standing order pricing so that GE can raise the money to invest by whichever means they feel is useful.	FULLREA011/13	Reject	34
		8. If GE is to be retained by the States they should sell their shares in the tidal energy business they invested in and reinvest in what they know and what they need to invest in.	Guernsey Electricity should sell their shares in MCT	FULLREA011/14	Reject	34
		9. GE should not be in the business of competing with retail units or electrical and plumbing installation companies, so they can focus on their core business and so encouraging competition in the energy efficiency and renewable energy markets.	Guernsey Electricity should focus solely on electricity production and efficiencies.	FULLREA011/15	Reject	34
		10. Data centres should be forced by law to invest in renewable energy to offset their huge energy consumption.	A law should be implemented to ensure investment in renewable energy from large energy consuming companies.	FULLREA011/16	Reject	34

Subject/Area	Organisation	Comment	Suggested Action	Comment Reference	Accept/ Reject	Page Ref.
Electricity Generation	Paul Fletcher – E-Si Limited	• I have pinpointed information and communications technologies tied with electricity metering as a crucial development in dealing with the coming uptake of renewables. There are presently severe complications in metering at present with regard to heat pumps, and micro-generation tariffs. When tidal becomes available and dominant along with solar PV the price of electricity will be permanently in a state of flux and current methods and tariff technology is not adequate. The method of buying and selling electricity is going to change. Home automation and computer systems will be able to monitor how much solar energy is being produced by the home, what the price of tidal electricity is and switch on and off appliances in the home to maximise renewable energies and price. i.e. when there is an surplus of power, energy will be cheap, when its cloudy and the tide is not running, and GE's oil station is being used energy will be expensive. GE needs to ready itself for the changes.	Guernsey Electricity should create a renewable energy tariff structure for householders and businesses and look to implement real smart metering.	FULLREA011/17	Reject	34
Economics		• The question of whether the States should invest in technology such as tidal should not be a question. They should not. The States of Guernsey should not be asking how much money do we need to spend on reducing our carbon footprint, but how much money can we make out of this? Surely that's been the Island tradition since our forefathers enabled the growing, tourist and financial industries to flourish and contribute to our current high lifestyle and buoyant economy. Let's hope that money-making tradition has not faded with the advent of socialist intervention.	Look into the areas that Guernsey can exploit to generate money from renewable energy.	FULLREA011/18	Accept	37

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Birds	Dave Cocksedge – Sark Sea Fisheries	• Mr. Rountree published a book on birds that have been sighted around Sark. It gets updated by Sark Soc. – this may be a source of information. (Frank Roundtree's **Birds of Sark**. Full citation: - Rountree, FRG. 1974. Birds of Sark. Guernsey, The Guernsey Press Company Limited for La Societe Serquaise, Sark. Roundtree, FGR. 1991. **Supplement to Birds of Sark.** Sark: The Sark Ornithological Committee, La Societe Serquaise)	Use information from additionally identified source in the Birds section of the REA.	FULLREA013/1	Accept	32
Further Work		• Andy Leaman is a useful source on all aspects of diving in the area (wrecks – habitats – tides and scallop beds). He would also be the man with the boat to do tests around the island.	Utilise Andy Leaman's experience for information on wrecks, habitats, tides and scallop beds around Sark.	FULLREA013/2	Accept	39
		• I would like to see site tests to see the effects of sediment fallout on spider crabs and scallop beds.	Research the effects of sediment fallout on local fisheries	FULLREA013/3	Accept	38
Commercial Fisheries and Mariculture		• It would be useful to know early where structures would be placed. The No Take Zones will put pressure on other fishing grounds. (noted that areas can become productive but displaced boats will move in on other areas. We have a Consultation Document looking at fishing activity in our area at the present.)	Nominated sites need to be well publicised so their impact on fishing activity can be considered.	FULLREA013/4	Accept	33
Electricity (Sark)		• From the report Sark's electrical infrastructure could not cope with a line being laid.	Outline information on how the Sark Infrastructure would be updated to account for an increase in electricity to the grid.	FULLREA013/5	Accept	34
		• Who pays for the update?	Identify where the funds would come from	FULLREA013/6	Reject	34
		• Where does the cable come ashore? – Permission would be needed from landowners.	Outline the procedure for getting the cable ashore and land procurement	FULLREA013/7	Reject	34

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Methodology	Dave Cocksedge – Sark Sea Fisheries	• Maybe a wind turbine placed at the Mill could be the answer for cheaper electric for Sark. The sails could be disguised as mill sails.	Consider other options for electricity generation such as wind turbine or smaller scale tidal.	FULLREA013/8	Reject	28
Further Work		• The report is very comprehensive, but a lot of data has come from desk top models. I would like to see many more tests in the waters of Sark.	Conduct research locally into identifying potential changes that may occur.	FULLREA013/9	Accept	39
Geology		• When Guernsey built the new harbour, the tides shifted and caused the sands to move in Herm.	Perform research into potential changes in sediment dynamics.	FULLREA013/10	Accept	31
Navigation	Conseiller Jan Guy, Conseiller Peter Cole - Sark Harbours & Pilotage Committee and Sark Shipping Committee	• 'In the strategic study it has not been possible to consider each channel individually.' When we reach project specific investigations it must be stressed that IOSS, SARS and others use a wide range of routes between Sark and Guernsey as appropriate to tidal conditions and wind directions. All options should be left open to them.	There should not be any development that would restrict navigation access at any place where there is currently traffic.	FULLREA014/1	Reject	35
		• Pinch points and critical areas – There is a pinch point NE of Sark from Maseline Harbour to The Bec. If this area were used to harvest tidal energy and there were an exclusion zone around it this would involve considerable re routing for most traffic coming in to Sark from the north or west. Most traffic, commercial and otherwise, passes through this area from Guernsey and the area has considerable navigational challenges	Highlight that there is a constraint with regards to navigation NE of Sark (Maseline Harbour to The Bec)	FULLREA014/2	Accept	35
Commercial Fisheries and Mariculture	Richard Keen – Fisherman	• Asked for clarification as to why we were disputing the compensation for fishermen point in the REA Scoping Consultation Report, but then saying it would be needed in the fisheries chapter.	Explain further about the role of GREC and the developers in any potential compensation	FULLREA015/1	Accept	34

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Navigation	Captain Saurabh Sachdeva – Chamber of Shipping	• I have reviewed the chapter related to Shipping and Navigation in the Scoping opinion report and would like to comment that the issues listed are quite comprehensive and would require detailed investigation prior to the publication of the EIA. Furthermore, being an island nation with significant reliance on the maritime trade to and from the ports, including tourism (ferries) due care would be taken in the development of the Navigation Risk Assessment.	Ensure that there is in depth consideration of navigation in the pre development EIA and develop an Navigation Risk Assessment	FULLREA016/1	Accept	35
Methodology	Kevin Delaney – Sark Newsletter	• On 24th August this public notice appeared on Sark's government website. It notifies islanders that we have 17 days in which to inform ourselves about this immensely complex issue and let the authorities know how we feel about them. The report which this notice refers to states that the public consultation period was to last six weeks from 30th July. Why has it taken the GP&A over three weeks to put this notice out?	Increase the amount of time that the consultation period runs for.	FULLREA017/1	Reject	28
Role of GREC		• Which authorities are we supposed to respond to? The GP&A, issuers of the public notice? No, the Guernsey Renewable Energy Commission, who works under the umbrella of Guernsey's Commerce and Employment Department. Have our own politicians washed their hands of this issue and left control over what happens in our waters to their Guernsey counterparts?	Explain the reason for the study being performed by GREC and why Guernsey has jurisdiction in this matter.	FULLREA017/2	Accept	30

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Landscape and Seascape Characteristics	Kevin Delaney – Sark Newsletter	• The report aims to take into consideration all those aspects on island life on which the "harvesting" of marine energy would have an effect - from bird life and fisheries to air quality and navigational hazards. Clearly, deploying a cluster of 40 or so tidal turbines in the Great Russel, which is an area mentioned, would have an enormous impact and it is not all about fishing and wildlife. For example, the machinery would be lit at night. How about our dark skies - why haven't the Societe Sercquaise protested?	Explain how the development would affect Sark's dark skies.	FULLREA017/3	Accept	36
Structure and Presentation of the REA		• Guernsey Renewable Energy Commission's 58- page document is well worth reading, go to www.guernseyrenewableenergy.com to download it.	N/A	FULLREA017/4		
Environmental Impacts	John Martel	• I would be interested to know if the places where tidal power has been installed and up and running for some considerable time has had any detrimental effect on the surrounding environment e.g fish stocks etc. • Although the benefits of tidal power could be enormous it really should not be pursued to the detriment of the environment	Outline any known impacts from existing installed devices Only look to develop tidal power if there are no detrimental environmental effects.	FULLREA018/1 FULLREA018/2	Accept Reject	38 38
Economics		• Monetary gain should also hopefully be the main reason for considering the use of this form of power.	Outline what financial gains there are to developing renewable energy	FULLREA018/3	Accept	37
Conclusions		• If, after thorough investigation, it was found to be a safe alternative to oil it could prove to be of great benefit to the island.	N/A	FULLREA018/4		