Scottish Marine Recreational Resources: Awareness from a Surfers Perspective

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Contents

Foreword

The sport of surfing[1] is one of the many Marine Recreational Activities that takes place around Scotland's coastline. Although the sport has been in existence within Scotland for almost half a century recent years have seen an exponential increase in the sport's popularity. It is not only however the sport of surfing that has expanded over Scotland's shores, the demand for the use of the coastal waters around Scotland have never been so great and ambitious plans lay ahead for Scotland's seas to support oil and gas, fishing and the new renewable energy sectors.

It is recognized that as each of the sectors grow and compete for use of Scotland's seas there may be conflicting demands between recreation, wildlife, tourism, heritage and industrial growth.

The plans for Scotland's Seas are developing quickly and changing rapidly as is the legislation which will manage potential conflicting demands. As of January 2013 there are commercial development plans in place which may have a direct impact at some of the following surfing sites:

- Fraserburgh Beach,
- Aberdeen Beach
- Nigg Bay,
- Sandford Bay,
- Spey Bay,
- Carnoustie,
- Burghead,
- Gills Bay,
- Farr Bay.

Broader plans also exist that could affect the sport of surfing along all of Scotland's main surfing coastlines:

- Lothian,
- Fife,
- Aberdeenshire,
- Moray Firth,
- Highland,
- Orkney,
- Shetland,
- Inner and Outer Hebrides,
- Tiree, Islay and the Macrahanish peninsula.

This paper forms part of series relating to the Scottish Surfing Federations Marine Recreational Resource Collection:

1) Assessment of the Sport Of Surfing Within Scottish Waters – capturing in essence the shape and form of Scottish Surfing today to act as a feed for the National and Regional Marine Plans.
2) Scottish Marine Developments, an Awareness from a Surfers Perspective – Dedicated to potential future marine developers giving an awareness of the surf environment and how it may be impacted by new developments.
3) Surfing and the Future of Scotland's Seas – Primarily aimed at Scottish surfers adding perspective on the potential developments that lay ahead and what the future may hold.

The information captured is simply a snapshot in time taken as of January 2013. It is hoped that raising awareness will allow any potential conflicts of demand to be identified and rectified early in the planning phase for future developments offering harmony between recreational and commercial development across Scotland's Seas.

[1] The sport of surfing referred to within this document specifically relates to waveriding in the nearshore environment and excludes kitesurfing and windsurfing.

1) Understanding from a Surfers Perspective

A common slogan used in the surfing industry which many surfers can relate to is:

"Only a Surfer Knows the Feeling"

The phrase in essence captures why people choose to surf – they do so because of the enjoyment obtained through the direct interaction of the human senses with the shore and nearshore environments.

Whilst taking part in the sport participants are situated within the shoreline if not partially submerged in the coastal waters making them very apparent of any acute changes (sight, hearing, touch, smell and taste) to their surrounding surf environment.

Through passion for the sport many surfers develop an affinity with the sea as well as a desire for the protection of the surfing environment to safeguard natural conditions for other beach users.

To a non-surfer it may seem strange as to why surfers may seem overly passionate about protecting the surf environment at specific beaches and reefs. After all Scotland boasts 10246 miles of coastline – if one beach/ reef was left inaccessible because of development surely the surfers could go somewhere else?

In short a very small portion of the beaches/ reefs are suitable for surfing and the surf conditions are especially prone to the prevailing weather at the time. The areas that are deemed suitable for surfing each have their own individual characteristics making them unique and offering different levels of surfing ranging from beginner level through to world class surfing breaks.

1.1) What makes a 'surfing site' beach/ reef good for surfing?

The sport of wave surfing basically involves riding breaking waves within the near shore environment. Each surfing site has a unique set of characteristics and these are defined by the interaction of the following parameters at a specific site:

Firstly the **offshore swell window** - the open sea/ ocean where the waves are first created and then travel over to reach their destination. Any physical object within the swell window which can affect the elements could have the potential to affect the surfing conditions at a given surfing site.

The **physical nearshore conditions** of a specific surfing site can be categorized into two broad areas: Static and Dynamic. The interaction of these two conditions will dictate the quality of the surfing conditions on a given day.

- The **Static physical nearshore conditions** relates to the seafloor topography (beach and reef type) in the nearshore as well as any physical infrastructure which can influence the surfing conditions at a given site.
- The **Dynamic physical nearshore conditions** relates to the weather (wind/gust speed and direction) and sea conditions (tide, water quality, wave/ swell direction, height and period) which can influence the surfing conditions at a given site.

The **Direct Human** surfing conditions of a specific break are dictated by the number of beach users and surfers in the water at a given time.

The **In-Direct Human** influence relates to the additional human influence which can impact both the **offshore swell window** and the **physical nearshore conditions** - typically through marine developments. Examples may be sewage/ effluent from nearby industry/ ports/ towns or marine developments (both offshore and nearshore) during the planning, construct, operation and deconstruct phases of a given project.

1.2) Isn't there waves hitting the shore every minute?

As waves travel across the open sea/ ocean and develop into swell they combine and establish formation into 'sets' of waves. This means when they reach the nearshore a 'set' of waves tend to be larger and better defined than the rest of the random waves/ swell coming through. These 'sets' are those which are suitable for wave riding. As such there are typically between 2 and 5 waves in each set. Under most surfing conditions a set of waves hits the shore between 3 and 15 minutes. This can result in typically between 8 and 100 'surfable' waves in an hour.

As the number of surfers in the water at any one time increases this leaves less 'surfable' waves per person (an affect of the **Direct Human** factors). Very quickly a threshold of surfable waves/ number of surfers is reached and as a result surf spots can quickly become overcrowded blemishing the overall surf experience of a given area.

1.3) Surely if only one surfing sites is affected it won't have that big an influence?

Each different stretch of coastline within Scotland (area) has a handful of surfing sites - The jewels that make up the crown. As every surfing site has its unique characteristics this offers variety of choice to individuals where the quality of the surf sites range from 'Beginner' level through to 'Expert'/ 'World Class' level. The different types and quality ranges of these surfing areas make up the regions that collectively produce the 'Scottish Surfing Experience'.

As an example - Take a surfer based in Fraserburgh on a typical day where there is "good surf" they would probably look to assess the surfing conditions over a 50 mile stretch of coastline from their hometown. Within this area there may be over a dozen 'surfing sites' but fundamentally not all these surfing sites break on the same weather conditions.

For a given sea state, wind and tide the number of appropriate 'surfing sites' is whittled down to normally 10-30% of the 'surfing sites' in the area. This could leave at the disposal of the surfer only one or two 'surfing sites' to choose from.

If one of these surfing sites were unavailable through **In-Direct Human** influences this would put additional strain on the remaining surf sites where overcrowding quickly becomes an issue reducing the overall surfing potential of a given area.

1.4) Are surf sites finite resources?

The primary factor dictating how waves break when they reach the nearshore is the **static nearshore conditions** of a given surf site.

With no human intervention the physical conditions of reef breaks seldom change.

Natural sand movements can affect the quality of surfing conditions at beaches seasonally but generally this has limited impact. Beaches where there has been human intervention however have had a longterm effect on the surfing conditions at a given site.

In the short-term context of geological time new 'surfing sites' are not created naturally hence surfing sites may be considered a finite resource. The existing surfing sites at present form part of Scotland's Surfing Heritage and the best way to protect them is to minimize development in that area.

To address problems of overcrowding and recognizing the economic and community benefits the

sport brings to certain areas local governments in Australia, England and America have invested in building artificial reefs or sand traps to physically alter the nearshore topography hence making areas that were once unsuitable for surfing new surfing sites. The main focus to date worldwide has been on the development of new sites (that were otherwise deemed unsurfable) as opposed to modification of existing surf sites under the principle "If it isn't broke –don't fix it." Such projects have yielded positive returns through increased tourism.

1.5) Why has Scotland suddenly gained popularity in the Surfing World?

Surfing as a sport began to blossom worldwide from the late 1950s through the 1960s. Certain areas worldwide began to stand out and became known within the surfing world as outstanding 'surf sites' due to the **offshore swell window** they were exposed to and the **physical nearshore conditions** at the given sites – Banzia Pipeline in Hawaii, Kierra Point in Australia, Hossegor in France to name a few.

Surfing in Scotland began in the late 1960s and as surfers from warmer climates started to travel it became apparent that some of the 'surfing sites' present within Scotland were of World Class standard.

The number of surfers across the world has exponentially increased in the last 6 decades. In areas such as Australia, Brazil and California it is not uncommon for there to be several hundred surfers present in the water at any one time, this results in people catching less waves, can lead to frustration and detracts from the overall surfing experience.

To put the situation in context to a non-surfer a similarity may be drawn with snowsports. As skiing/ snowboarding developed this lead to overcrowding of ski resorts. Waiting periods in long lift queues and excessively populated ski runs not only induced frustration dampening the Skiing Experience but has also led to dangerous situations arising resulting in personal injury and in extreme cases death. In a search for uncrowded, untouched, fresh snow, many enthusiasts have ventured into new territory either by hiking or with the use of Helicopters. The concept of '*enduring some form of hardship to reach the sports Nirvana*' has the idolized by many snowsport enthusiasts and heavily promoted through snowsport media.

Figure 1 Overcrowded Ski Resort in US[i]

Figure 2 Off Piste Skiing in Tignes, France[ii]

A very similar parallel may be drawn with the surfing world. As many of warm water surf locations became exploited, pioneers have began to travel to different areas to find uncrowded waves. This couldn't be more true than in Scotland's case. In a similar way to snowsports the surf media have idolized and promoted the Scottish Surfing wilderness as a surfing mecca. In recent years wetsuit advances as well as internet surf forecasting refinement have increased the accessibility of the sport which has resulted in an vast increase in the number of surf tourists across Scotland.

Figure 3 Overcrowded Surf Noosa Heads, Australia[iii]

Figure 4 Local Scottish Surfer (Scott Main) at a Scottish Surf Site.[iv]

1.6) Are more surfers a good thing or a bad thing?

The increased number of surfers at given spots can be a double edged sword and forms a delicate balance in managing the sports development. On the one hand additional surfers in many respects support tourism and help bolster income to local communities in particular to out of reach areas. In other areas this has resulted in overcrowding of surf spots tarnishing the quality of the surfing experience.

The SSF recognizes the delicate balance the situation presents and supports the local surf community of each area to develop the sport as they best see it. A vote held by the local Caithness surf community in April 2012 voted in favor of supporting further national/ international competitions recognizing at the time the economic benefits within the region on the condition that contest sponsors were willing to assist the local community develop the sport within that area.

1.7) How cold does it get?

Altough certain locations on the West Coast of Scotland sporting palm trees Scotland as a whole is'nt exacty known for its tropical climate. Despite this however surfers venture into the waters of Scotland all year round with the most favorable conditions present during the winter months.

The West Coast of Scotland round the North Coast still partially benefits from the North Atlantic Stream with the sea temperatures being a few degrees warmer during the winter months than East Coast.

Below is a range of the sea temperatures, typically expected within Scotland:

Location	Minimum	Approx Min Date	Peak	Approx Peak Date
Pease Bay	4 to 8°C (39 to 46°F)	28th February	13 to 16°C (55 to 61°F)	13th August
Aberdeen	5 to 8°C (41 to 46°F)	28th February	12 to 16°C (54 to 61°F)	10th August
Fraserburgh	5 to 8°C (41 to 46°F)	8th March	12 to 16°C (54 to 61°F)	10th August
Thurso	5 to 8°C (41 to 46°F)	28th February	12 to 15°C (54 to 59°F)	13th August
Isle Of Lewis	7 to 9°C (45 to 48°F)	25th February	12 to 15°C (54 to 59°F)	10th August

Figure 5 Average Sea Temperatures around Scotland

The previous figures are purely average sea temperatures and closer to shore can vary by several degrees compared with these open water averages. This is especially true in Scotland close to river mouths after there has been heavy rain. It is not uncommon in the winter months for rivers to freeze and for ice floats to meander out into the surf line-up – a hazard that's not frequently experienced by the rest of the surfing world. Strong offshore winds can also play their part (causing colder deep water to replace surface water that has been warmed by the sun).

Scotland certainly seems a long distant cry from the likes of Hawaii where the sea temperatures range from 23°C to 28°C (73 to 82°F). On paper it may seem that Scotland isn't that much colder than Newquay with lows in the range 9 to 10°C (48 to 50°F) and peaks in the range 15 to 18°C (59 to 64°F). However given that heat loss from skin when submerged in cold water can be 70 times greater than air of equal temperature subtle changes in water temperature can have a dramatic effect.

The surface air temperature does also play a significant roll on the parts of the body that are not submerged in the water. During a Scottish Winter large waves often come hand in hand with strong wind and it is not uncommon in Scotland for temperatures to be slightly above freezing but the wind chill factor making it feel significantly colder. Clear, still days in the Scottish Winter are typically associated with high pressure systems which in turn means clear skies and a lack of cloud insulation at nights – this can cause the surface temperature to frequently plummet to well below freezing.

In actual fact the temperature conditions in Scotland are colder than the South Coast of New Zealand and Chile and comparable to those at British Columbia, Nova Scotia and Alaska. Fortunately the wetsuit technology has come on significant leaps and bounds to meet the growing demands of the booming surf world within colder climates.

In the heat of the summer the weather conditions in Scotland are ideally suited to a 4/3mm wetsuit + 3mm boots, although a 5/3mm wetsuit is preferable by many in particular for cold, windy days. During the winter months a flexible 6/5/4mm wetsuit or a well fitting 5/4mm wetsuit with hood, gloves and 5mm neoprene boots are essential.

"There's no such thing as bad weather just bad preparation"

1.8) How good are the surfing conditions in Scotland?

When considered collectively for the variety of wave choice Scotland has featured within the top 10 surfing destinations of the world by several worldwide surfing polls. [v] One particular 'surfing site' in the North of Scotland has became world renowned for the quality of its break and frequently features within Surfing Media as being considered one of the best surfing waves in the world.[vi] This single surfing site alone has generated considerable revenue to the local area over the years.

1.9) Has surfing sites came under threat from Marine Development before?

Yes! Near Shore Developments have in some cases eliminated 'surfing sites' that were once present. 'Jardin De Mar' in Maderia was once considered a world class wave before a seawall was built which altered the physical conditions of the spot and as a result had a significant socio-economical impact on the area. Mundaka in the North of spain, a world class surf spot which generated $4 million US per annum and supported 95 jobs in a town with a population of 2000 stopped breaking when dredging altered the sand bars in the nearshore environment. [vii & viii] On a more local basis an example may be taken from the Fraserburgh region where a surfing site known as 'Phingask' no longer exists as the installation of a pipeline permanetly altered the course of the sand deposits at the site. 'Phingask' was once a frequently visited surfing site however the pipeline installation has since left it unsurfable.

1.10) Combining Marine Renewable with Recreational Developments?

Given the level of investment that is anticipated, the majority of which in out of reach areas there may be consideration for Marine Renewable and Recreational sectors to work closely together.

Such a model takes its principle from a lot of Scandanvian designs whereas as opposed to leaving zones out of bounds a small additional capital expenditure allows for hazards such as high voltage cabling to be adequately secured allowing projects to become tourist attractions and integrate recreational activities.

Hybrid Renewable/ Recreational projects have the potential not only to meet Scotland's renewable self sufficiency power targets but also leave sustainable recreational developments supporting tourism activities which will leave lasting local community benefits after the initial development boom that is set to come.

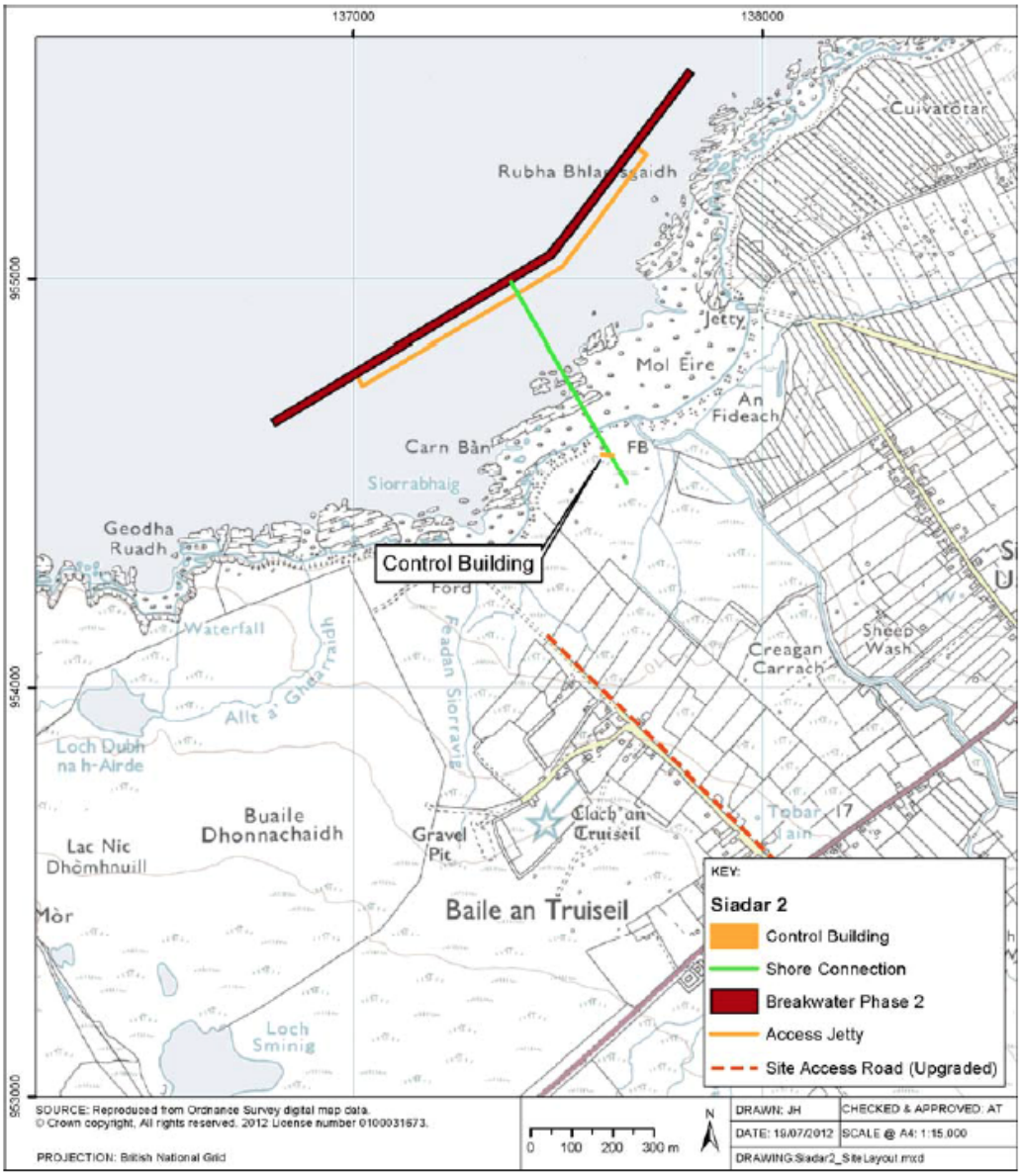

Figure 6 Breakwater plan for Wave Energy Site on Isle of Lewis[ix]

Take for example the proposed wave development at 'Siadar' on the Isle of Lewis, which will involve building a Breakwater initially 250 m long with the potential of extending to 1176 m long, such a breakwater situated in a conflicting nearshore environment could have a severe detrimental affect to the surfing experience within that region and would be met with opposition through the planning and construction. Fortunately in the case of the 'Siadar' project the developers proactively engaged with the local surfing community and optimized placement to ensure minimal potential conflict.

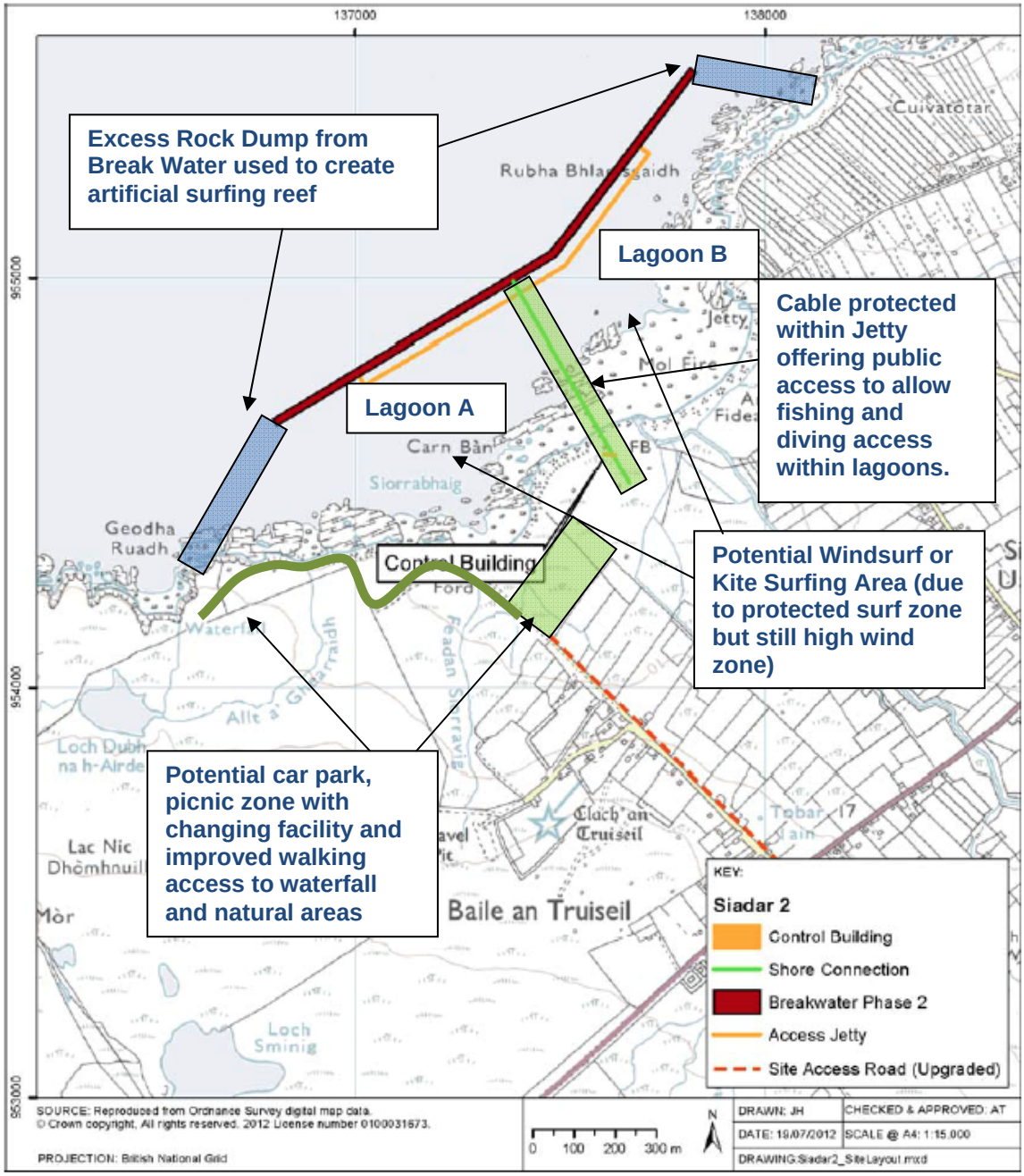

Figure 7 Example how Recreational Plans may be integrated to Renewable Plans

By no means a planned development, simply an illustration, the previous diagram shows how consideration may be given to integrating Renewable and Recreational activities resulting in a harmonized 'sustainable seas for all' hybrid design.

2) Implications of Marine Developments on Marine Recreational Activities

The prospect of new marine developments as far as Recreational Marine Users are concerned is both exciting yet potentially worrying.

The Surfrider Foundation was launched in 1984 due to Marine developments impacting the surf environment in California with the aim of protecting oceans, waves and beaches. Surfers against Sewage (SAS) also launched the 'Protect Our Waves' campaign within the UK over the last couple of years and have a formal petition which they are looking to issue to parliament - www.protectourwaves.org.uk.

Specifically in the case of the new Renewable sector such developments offer opportunities for a lot of coastal towns and villages around Scotland which have a declining fishing fleet to benefit from such a green developing industry.

Surfers with their close affinity of the sea have also developed an understanding of the seas interaction with the coast over different weather conditions and such a subset of skills may make them uniquely positioned to prosper in such a new industry where there is an evident gap with available workforce.

The main concerns at present centre's around the fact that there is an element of unknown as to how the mass development of wave and tidal farms may impact the sport of surfing in particular the 'surf sites' around Scotland's coasts.

It is unclear if the installation process of offshore wind farms on such large scale may also have everlasting damaging repercussions to Scotland's 'surf sites'.

Given each type of wave and tidal machine is different in design and mechanism they each need to be considered individually at their chosen site taking into account all phases of the project from installation, through operation to final decommissioning.

In general terms as has been identified with other offshore construction projects the further out at sea projects tend to be located the less likelihood they have on the nearshore environment. That said it is important to diligently verify through modeling this is the case for each project.

The closer a project is situated to a surfing environment the greater the likelihood that it will have an effect on the Marine Recreational environment.

As far as the nearshore environment is concerned many of the surf sites are close to road access with grid electricity supply, similar attributes which may be considered attractive to marine renewable landfall sites. This is the greatest cause of concern where surf sites may be lost or left out of bounds during specific phases of a new development.

At this stage it is important each technology and project is assessed on its individual merits and characteristics to ascertain whether or not there may have a detrimental impact to other users of the marine environment.

APPENDIX 1 – Scottish Surfing Temperatures

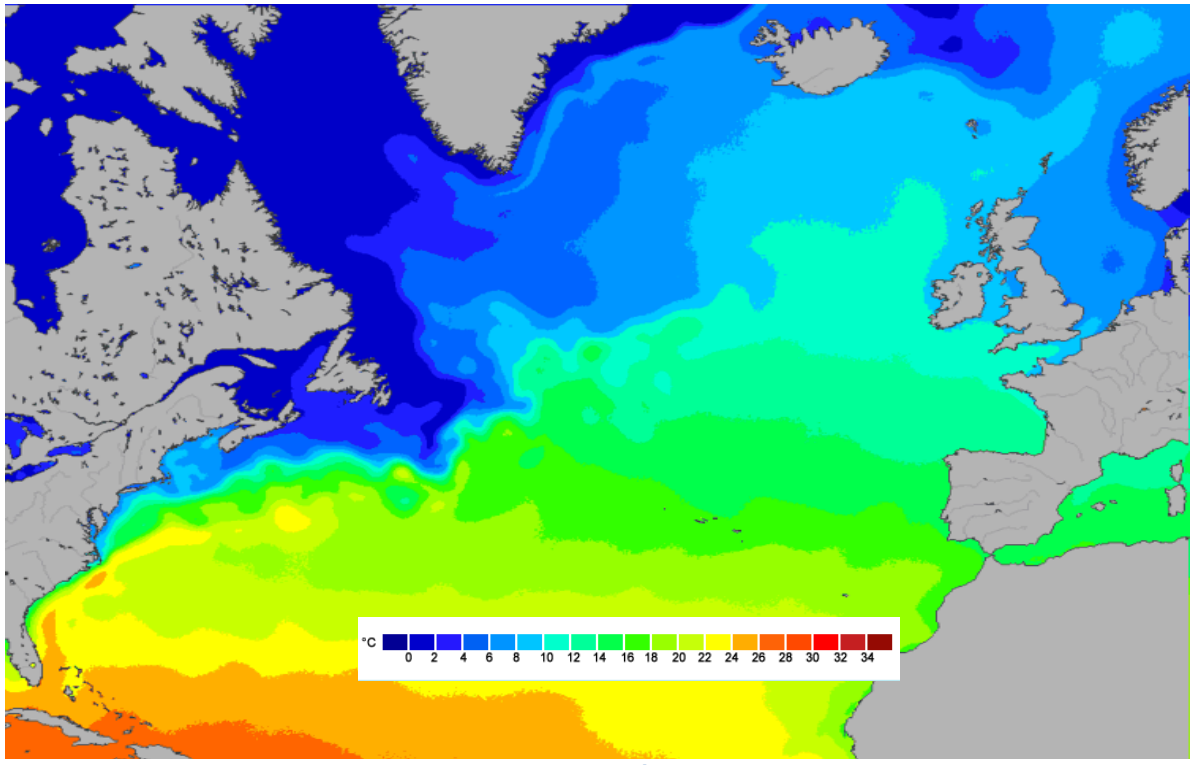

Figure 8 Average Sea Temperature -North Atlantic (Jan 19th 2013)

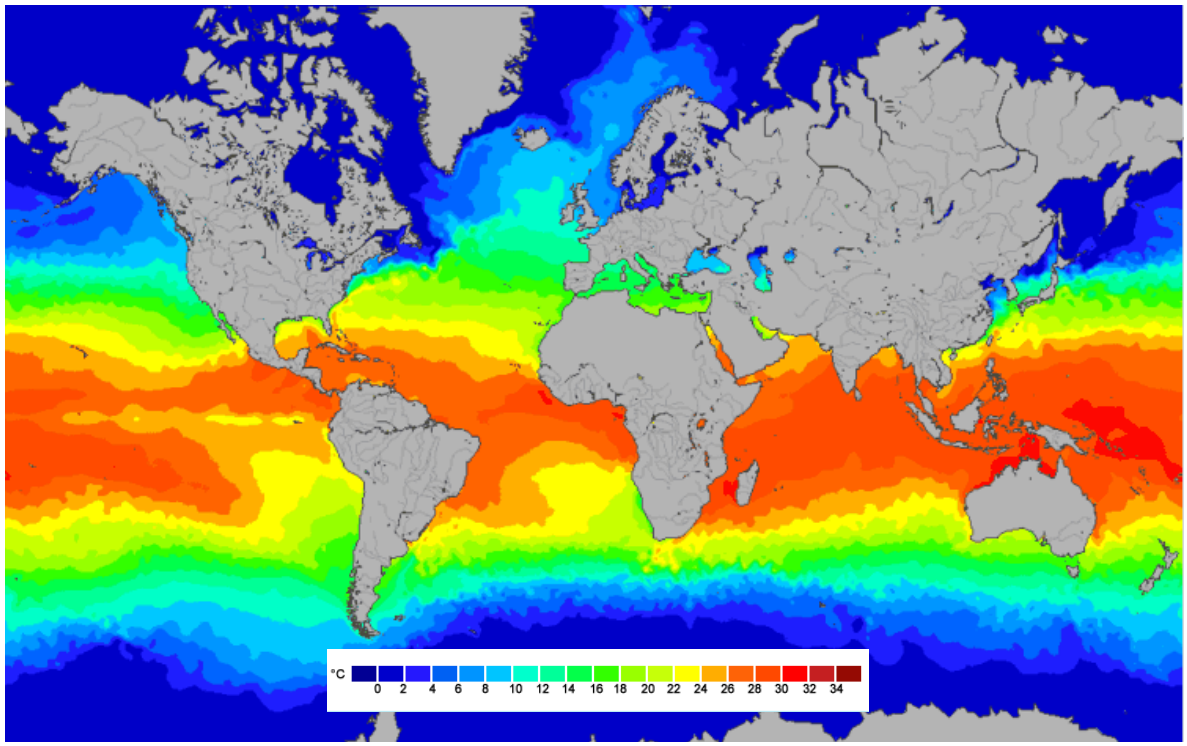

Figure 9 Average Sea Temperature - World (Jan 19th 2013)

APPENDIX 2 - Sea Temperature Range at Scottish Surf Sites

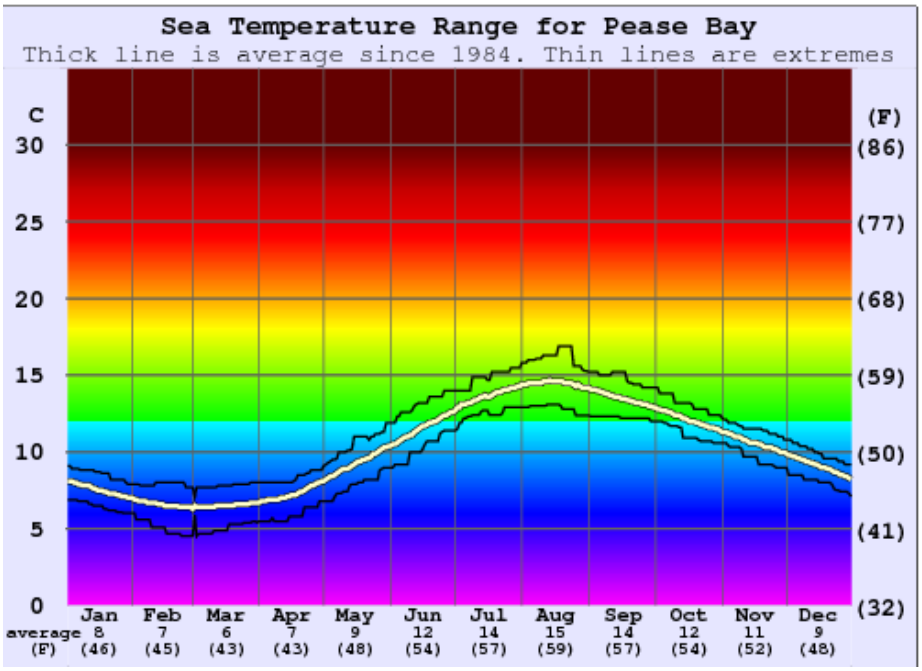

Figure 10 Average Season Sea Temperature - Pease Bay

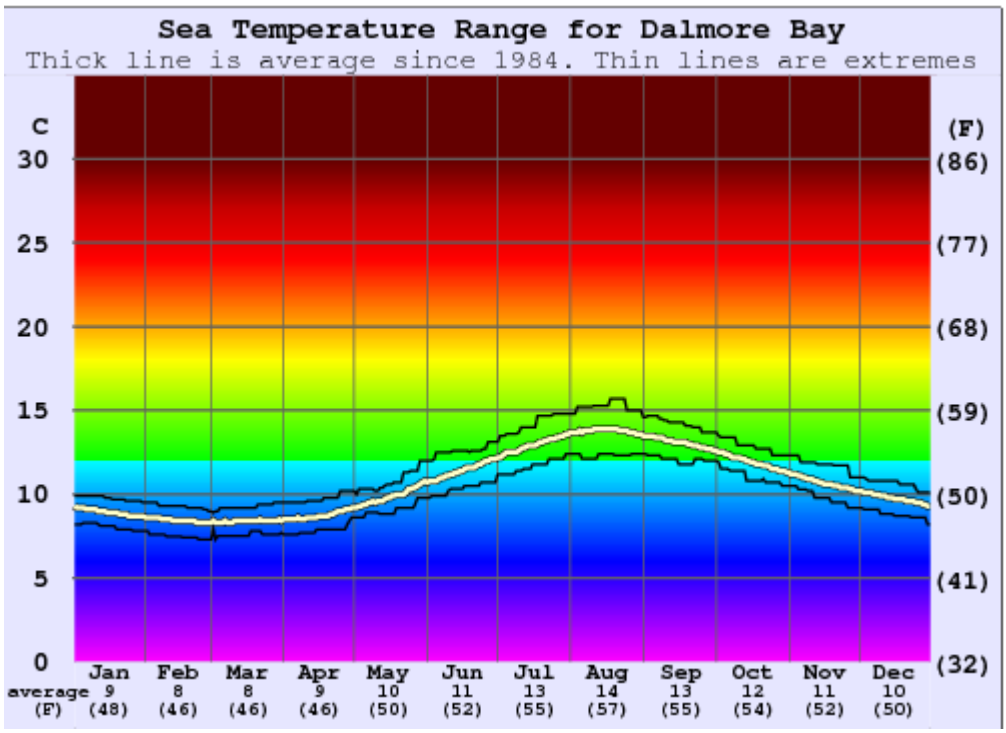

Figure 11 Average Seasonal Sea Temperature - Isle of Lewis

APPENDIX 3 - Wetsuit Technology

Figure 12 Surfer House Wetsuits, SURF Magazine Aug/ Sep 1976

Figure 13 Xcel 6/5/4 mm 2012 Winter Wetsuit

Figure 14 Testing of Ripcurls H-Bomb Heated wetsuit within the Arctic Circlex

APPENDIX 4 - List of References

[i] 'Still more ideas for improving queuing' article http://customerfaithful.com/still-more-ideas-for-improving-queuing/
[ii] 'The Dream - high standard off-piste skiing at Tignes" Ski Safaris http://www.skisafaris.co.uk/off-piste.php
[iii] Article 'Sparks Fly on the Water' *Sunday, 7 January 2007,* Pacific Longboarder Magazine.
[iv] Scotland Visions Collection, Martina Cross, http://scotlandvisions.blogspot.co.uk.
[v] "Surfing 10 Best Places in the world" The Telegraph http://www.telegraph.co.uk/sport/othersports/surfing/6486949/Surfing-10-best-places-in-the-world.html,
[vi] "The 100 Best Waves - A ranking of the worlds best surf spots" SURFER Magazine, July 2011.
[vii] The WAR Report: Waves Are Resoures. Surfers Against Sewage August 2010.
[viii] Guidance on environmental impact assessment of offshore renewable energy development on surfing resources and recreation. Surfers Against Sewage, June 2009.
[ix] Siadar Wave Energy Project, Siadar 2 Scoping Report, Voith Hydro Wavegen, August 2012
[x] Rip curl Testing H Bomb Wetsuit - http://www.gizmag.com/ripcurl-testing-h-bomb-wetsuit/8878/