

# 1 Using public comments to gauge social licence to operate for finfish 2 aquaculture

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6 **Recommended citation:** Billing, S-L. (2018) Using public comments to gauge social licence to  
7 operate for finfish aquaculture. Aquaspace (H2020 project 6333476), Laurence Mee Centre for  
8 Society and the Sea, Working Paper. pp38. SAMS, Oban, Scotland.

## 9 Abstract

10 Research and development in the aquaculture industry, both academic and sectoral, tends to focus on  
11 environmental and economic outcomes. However, with increasing use of marine space, competition  
12 between different industries and priorities for coastal communities is a social issue that is coming to the  
13 fore. Public perception and local social acceptability have been identified by the industry as key factors  
14 in the sustainable growth of finfish aquaculture. With the EU, and the UK and Scottish Governments  
15 targeting Blue Growth sectors for development, the drivers of social acceptability issues with finfish  
16 aquaculture require attention. Social Licence to Operate (SLO) is a theory which has proved useful in  
17 describing the relationship between industry and local communities (Gunningham et al., 2004). This  
18 study thematically analyses public comments made on planning applications for new finfish farms in  
19 Scotland, in order to gauge SLO. It reveals the complexities of SLO, including areas of concern for  
20 engaged members of the public. The analysis shows that there are key actors which shape and drive  
21 engagement with the debate around whether new finfish farms are acceptable. It finds that information  
22 used by the public to make decisions around aquaculture is often compiled and distributed by the key  
23 actors. This brings into question how much influence communities of location have in SLO  
24 negotiations. Finally, it reflects that further thought and dialogue within and between the research  
25 community, regulators, industry and communities is needed to create a more equitable approach to  
26 negotiating SLO for finfish aquaculture.

27 **Keywords;** Social licence to operate; sustainable development; planning policy; public comments;  
28 communities; aquaculture

## 29 1. Introduction

30 Social licence to operate (SLO) is an industry-coined term (Gehman et al., 2017) and has become a  
31 popular theory in trying to understand and better the relationships that host communities have with  
32 aquaculture (FAO, 2016; Hughes & Black, 2016; Leith et al., 2014; Marine Scotland, 2014). The theory

33 was first conceptualised in literature about the heavy industry such as paper manufacturing  
34 (Gunningham et al., 2004), and mining (Boutilier and Thomson, 2011), but has since been adopted and  
35 adapted to other activities which have a social cost (Moffat and Zhang, 2014). SLO is described as an  
36 on-going negotiation between a host community and an organisation (industry, NGO, business) which  
37 has environmental and social implications associated with its activities, where the organisation is held  
38 to certain standards set by the community, in exchange for the trust and support of the community  
39 (Rooney et al. 2014). Despite the increasing popularity of the term SLO and the use of either the  
40 pyramid model (Boutilier and Thomson, 2011) or ‘three strand model’ of the works of Gunningham et  
41 al., (2004) in numerous articles, both research and otherwise (Gehman et al., 2017), there is still a very  
42 limited amount of literature exploring SLO in relation to the development of aquaculture. Given the  
43 spatial and environmental implications of the marine aquaculture industry, and the proximity to the  
44 communities which host and sometimes work within it, the SLO in its most basic form, could provide  
45 a good framework for building understanding about these interactions.

46 Leith et al., (2014) discuss why SLO is important for aquaculture, emphasising that in areas where there  
47 are different users and often opposing views on what constitutes acceptable ‘uses of the marine  
48 environment, it is important to strike a balance between these users’ perspectives and the aquaculture  
49 operators. However, it has been noted that SLO, within the context of aquaculture, has only been  
50 recognised as a legitimate theory after the industry has suffered losses or set-backs due to conflict and/  
51 or lawsuits (Williams et al., 2012). Krause et al., (2015) highlight that there is a ‘people – policy’ gap  
52 in current aquaculture management, where aquaculture is failing to meet its potential because of a lack  
53 of integration of knowledge relating to social, ecological and economic issues. In their review of SLO  
54 research, Gehman et al., (2017) argue that although there is an increase in discussions around SLO from  
55 the perspective of industry, politicians and policy-makers are slow to recognise the emotive aspects of  
56 managing natural resources and choose instead, to focus on the economic and technological features of  
57 these discussions.

58 This disconnect is especially evident where marine space is being vied for by several users with different  
59 world-views, wealth, and access to power. Decisions around propriety of use then becomes highly  
60 politicized and often contentious (Leith et al., 2014). The specific location of marine industries, (i.e. not  
61 simply the consumption of ‘space’) has a bearing on the social acceptability of different uses of the  
62 marine environment (Hofherr et al., 2015; Scientific Technical and Economic Committee for Fisheries  
63 & Aquaculture (STECFA), 2014). This is increasingly becoming the case in Scotland, where there the  
64 aquaculture industry has quite regularly been in the Scottish press for negative reasons, including  
65 environmentally damaging chemical treatments (Edwards, 2017; Scottish Environment Protection  
66 Agency, 2017), and fish escapes (McLeod, 2017), but also for announcements relating to expansion and  
67 increased effort, supported by the Scottish Government (BBC News Scotland, 2016).

68 Historically, aquaculture research on Atlantic salmon was focused on improving biological processes,  
69 disease management and limiting environmental degradation by progressing good farming practices  
70 (Black, 2008; Pelletier et al., 2009). As a result of the resources and effort that has been put into research  
71 and development (through both public and private funding), farming salmon has become a very  
72 lucrative industry (STECFA, 2014). As such, the Scottish Government identified the expansion of the  
73 aquaculture industry as an economic growth strategy (Marine Scotland, 2009). It set targets for  
74 increasing Scottish salmon production to 210,000 tonnes by 2020 and 300,000-400,000 tonnes by 2030  
75 from the current rate of production of 179,022 tonnes (2014 figures). Despite these targets and support  
76 from the Scottish Government, the volume of salmon produced in Scotland is not increasing at a high  
77 enough rate to reach these production goals (Bostock et al., 2016). This pattern of stagnating or  
78 projected stagnation in growth of the industry is found across most of the EU member states (FAO,  
79 2016; STECF, 2014).

80 The aim of the EU Horizon 2020 research project *AquaSpace*, was to increase and optimise the space  
81 available for aquaculture in EU countries based on the Ecosystem Approach principals of integrating  
82 social, economic, and ecological understandings as the basis for sustainable production (Costa-Pierce,  
83 2010), with a particular focus on stakeholder engagement<sup>1</sup>. SLO provides a framework for engagement  
84 at a local level, but its potential to contribute to the Ecosystem Approach and the sustainable  
85 development of the finfish farming industry is not yet known. This research was a part of the Scottish  
86 case study, one of the 16 EU case studies explored in detail by the project.

## 87 **2. Policy and governance context**

88 In order to understand how SLO is negotiated and the ramifications of non-compliance, compliance or  
89 beyond-compliance measures by the aquaculture industry, it is important to consider the legal context  
90 in which social licence is being negotiated. This is because the terms and conditions of an SLO  
91 negotiation can vary depending on the planning structure of a country or region (Gunningham et al.,  
92 2004).

93 This manuscript explores local scale social issues which are derived from policies set at supranational,  
94 national, and regional scales. The relevant policies from the European Union are the Blue Growth  
95 Agenda (BGA), the Maritime Spatial Planning Framework Directive (MSPFD) and the Marine Strategy  
96 Framework Directive (MSFD). The BGA sets out a strategy to, '*support sustainable growth in the  
97 marine and maritime sectors as a whole*' (European Commission, 2012). This includes aquaculture and  
98 tourism, both of which are part of Scotland's Economic Strategy because they are particularly important  
99 to the rural Scottish economy and the Scottish economy as a whole (The Scottish Government, 2014a,  
100 2011). The MSPFD aims to reduce conflict between maritime sectors which compete for space whilst

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<sup>1</sup> See <http://www.aquaspace-h2020.eu/> for more details on the project.

101 protecting the marine environment and encouraging investment through *'establishing a framework for*  
102 *maritime spatial planning'* (The European Parliament, 2014). The scope of maritime spatial planning  
103 within the MSPFD is more limited in scope than the definition provided by Ehler (2014), which states  
104 that maritime spatial planning is *'a public process of analysing and allocating the spatial and temporal*  
105 *distribution of human activities in marine areas to achieve ecological, social and economic objectives*  
106 *that are usually specifies through a political process.'*

107 As part of the MSPFD and in line with the MSFD, the Scottish Government created a National Marine  
108 Plan (NMP) which envisions, *'Clean, healthy, safe, productive and diverse seas; managed to meet the*  
109 *long term needs of nature and people.'* (Marine Scotland, 2015). The NMP refers to Scottish Planning  
110 Policies and Local Development Plans for planning for both aquaculture, tourism, and community and  
111 public engagement (Marine Scotland, 2015). The NMP sets the broad remit for maritime spatial  
112 planning in Scotland with Regional Marine Plans currently being developed to address planning at a  
113 more granular scale. Despite this, the current planning mechanism for aquaculture in Scotland is  
114 terrestrial and through the Town and Country Planning (Scotland) Act (1997), which gives Local  
115 Authorities (county-level councils) the power to grant or reject planning permission. Local  
116 Development Plans are statutory documents which provide guidance for planning officials in Local  
117 Authorities. They are written in consultation with local communities and stakeholders every five years,  
118 must comply with Scottish Planning Policy, and are approved by Scottish Government ministers. The  
119 licencing regime in mainland Scotland is managed by four different agencies; Marine Scotland  
120 Licencing Operations Team<sup>2</sup>, Marine Scotland Science Fish Health Inspectorate<sup>3</sup>, the Scottish  
121 Environment Protection Agency<sup>4</sup>, and the Crown Estate Scotland<sup>5</sup> (The Scottish Government, 2016a).  
122 Scottish Natural Heritage are not a licencing agency, but are a statutory consultee in the planning  
123 process (SEPA et al., 2010).

124 Scottish Planning Policy (SPP) upholds the rights of communities and stakeholders to be consulted on  
125 planning applications within their local areas (The Scottish Government, 2014b). In real terms this  
126 means that individuals, groups, and/or representatives of groups can register with the Local Authority  
127 and comment on the planning application. There are three choices of comment; object, support, or  
128 neutral and commenters have the opportunity to explain their reasoning for commenting on the  
129 application. If there are enough objection comments on a planning application, the elected members of  
130 the Local Authority (the Councillors), have a public hearing to discuss the issues, after which they come

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<sup>2</sup> MS-LOT is in charge of granting/ rejecting Marine Licences under the Marine Scotland Act 2010

<sup>3</sup> MSS – FHI authorises a licence for Aquaculture Production Business under the Aquatic Animal Health (Scotland) Regulations 2009

<sup>4</sup> SEPA authorises Controlled Activity Regulations licences under the Water Environment (Controlled Activities) (Scotland) Regulations 2011

<sup>5</sup> Crown Estate Scotland controls Seabed Leases, currently under the Crown Estate Scotland (Interim Measurement) Order 2017, which will eventually result in full devolution of ownership to the Scottish Government under the Scotland Bill 2016

131 to an agreement on an outcome; either acceptance of the application (this can be with terms and  
132 conditions), or rejection. In addition to the statutory consultations carried out by Local Authorities, SPP  
133 advocates the use of the pre-planning consultations by those who are submitting planning applications,  
134 in the case of this manuscript, aquaculture operators. The aim is to gauge or encourage community buy-  
135 in and address issues raised by communities before planning applications are submitted to the planning  
136 authority (The Scottish Government, 2014b).

137 Appealing the outcome of a decision made on a planning application can be made through two avenues.  
138 The first is a Local Review, where the application and outcome is appraised by three or more elected  
139 members of the council. The second is an appeal to Scottish Ministers (national level) when where the  
140 applicant can appeal a rejection if the Local  
141 Authority hasn't made a decision, or where an  
142 individual or organisation has been served a  
143 notice<sup>6</sup>.

### 144 3. Background

145 In January 2016, a stakeholder workshop was  
146 held at the Scottish Association for Marine  
147 Science, with 25 attendees representing  
148 shellfish and finfish companies, shellfish and  
149 finfish industry organisations, governing  
150 agencies, fisheries organisations, and scientific  
151 researchers. Its aim was to capture the issues  
152 facing the industry in the county of Argyll and  
153 Bute. Public perception was one of the six issues discussed in detail by the stakeholders, who expressed  
154 concern about misinformation linked with accountability, poor public perception, and lack of Social  
155 Licence to Operate. With peer-reviewed literature pointing at social research gaps, and stakeholders  
156 expressing concern about social issues, this manuscript aims to add to current knowledge regarding  
157 local social interactions with the aquaculture industry, specifically the drivers of public perception, good  
158 or bad. It asks the questions; What are the perceptions of the people who object to or support aquaculture  
159 development; What is or who are the drivers of these perceptions; How do these findings relate to social  
160 licence to operate?



Figure 1. Location of Argyll and Bute County in Scotland. The Shetland Islands have not been included in this map for space purposes. Source: QGIS Open Source.

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<sup>6</sup> Normally an enforcement notice to do with planning consent conditions. More information on appeals can be found at <http://www.gov.scot/Topics/Built-Environment/planning/Appeals/whatwedo/planningandrelatedappeals/planningappeals>

161 **4. Methods**

162 The methods for this study relied on public comments lodged with the Argyll and Bute and Highlands  
 163 Planning Offices pertaining to planning applications for the formation of new finfish farms. As part of  
 164 Scottish Planning Policy (The Scottish Government, 2014b), and the Town & Country Planning  
 165 (Scotland) Act 1997, applicants for planning permission are advised to undertake pre-planning  
 166 consultation with stakeholders, which can be submitted with the application. Local Authorities are  
 167 required to then open a 21-day consultation where the public can submit their views on the application.

168 The comments were made by email, hand-written letter, or via the online planning website. All public  
 169 comments on planning applications are scanned and uploaded to the Argyll and Bute and/or the  
 170 Highland Council planning websites in PDF format, available for anyone to view. The comments on  
 171 applications analysed in this study covered a timeframe of 2012-2016. This time period was chosen  
 172 because it is recent, and covered enough different applications with associated public comments. The  
 173 analysis also included one application for the extension of a fish farm (2016) which received planning  
 174 approval in 2013, in order to explore what temporal effects there were within the public comments.

175 The comments were qualitatively coded and the codes categorised into themes, following the methods  
 176 laid out by (Saldana, 2009). The JPEG format of the downloaded comments meant the analysis was  
 177 conducted manually using MS Excel. The themes from the comments were not separated between  
 178 groups and individuals as each comment is given the same weighting when being considered by the  
 179 planning departments (The Scottish Government, 2014b). Where there were groups (environmental  
 180 NGOs (eNGO) or interest groups) that put in objections to more than one application, the name of the  
 181 group was recorded for exploration in the discussion. The content was also analysed for; type of  
 182 comment (objection/ support/ neutral), the information cited in the comments, and the home address of  
 183 the commenter where possible.

**Table 1. Number of public comments that were analysed**

Planning case <sup>1</sup>	Date	Type of comment		Total number of comments
		Objection	Support	
Loch Striven	2012	12	35	48
Loch Etive	2013	589	218	812

<b>Loch Etive</b>	2016	225	183	408
<b>Isle of Shuna</b>	2014	29	17	49
<b>Loch Slapin (pilot study)</b>	2014	69	2	71
<b>Total</b>		924	455	1388

<sup>1</sup>The name of the sea loch in which the proposed farm is located – appendix A contains full planning references

184 A pilot study was conducted to ensure that these methods were appropriate for answering the research  
185 questions. It is reported in the results section because it shows that some of the issues relating to  
186 aquaculture development are not location-specific. It included analysis of 71 public comments on a  
187 planning application for a new salmon farm submitted by Hjaltland Ltd (now Greig Seafood Ltd) in  
188 2014.

189 The full study included analysis of 1388 public comments on five out of 11 planning applications , 10  
190 which were submitted to Argyll and Bute Council and one which was submitted to the Highland Council  
191 (the pilot study). A table of these can be found in appendix A. The other six applications made to Argyll  
192 and Bute Council were not assessed because they had 10 or less public comments. Of the 11  
193 applications, nine were for the formation of new marine finfish farms, one was for an expansion to a  
194 marine finfish farm and one was a retrospective application for a shellfish site, with no public  
195 comments. The finfish farm applications included both trout and salmon. The companies that put in the  
196 applications were Dawnfresh Ltd (trout), Hjaltland Ltd (salmon), Kames Fish Farming Ltd (trout),  
197 Marine Harvest Ltd (salmon), and Scottish Salmon Company Ltd (salmon). Table 1 summarises the  
198 numbers of comments analysed according to the planning case.

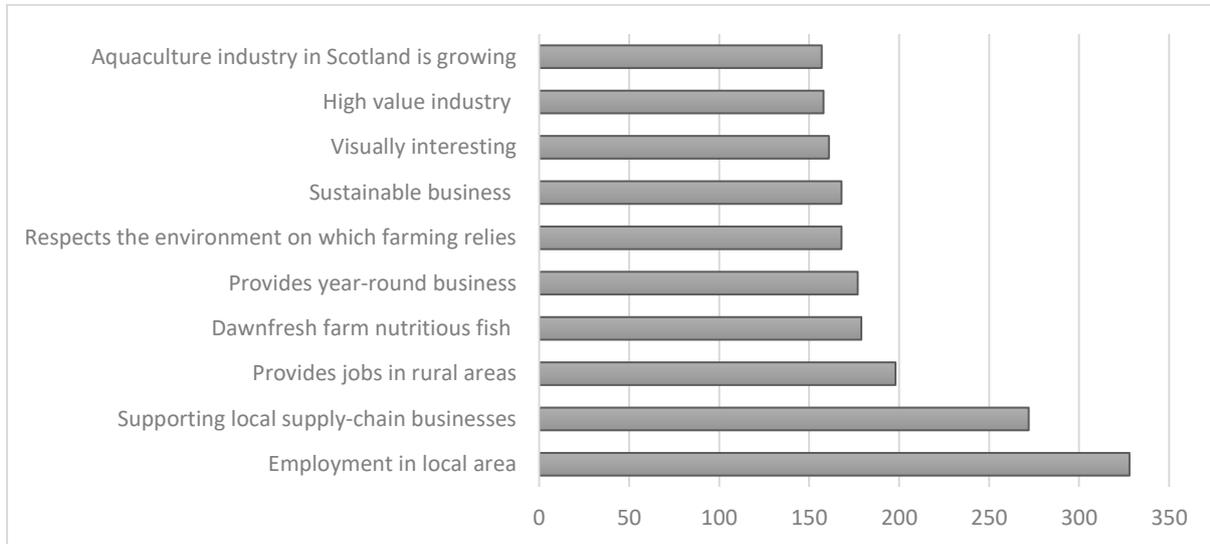
## 199 5. Results

200 All of the 9 applications submitted for *new* marine shellfish and finfish sites between 2012 and 2016 in  
201 Argyll and Bute were given planning permission. Of these 9 cases only three had more than 10 public  
202 comments. The application in 2016, for an extension to a site that Dawnfresh Ltd was granted planning  
203 permission for in 2013, was refused. These four applications received more objections (67%) than  
204 support comments (33%). The pilot case, from the Highlands Council area was refused planning  
205 permission and received more objections (97%) than support comments (3%). The location of the  
206 commenters was recorded for both of the Loch Etive applications (2013 and 2016) and the Loch Striven  
207 2013 case. No locations were recorded for the Loch Slapin or Isle of Shuna cases as they were not  
208 available in the public documentation.

### 209 5.1 Support comments

210 There were between 5 and 18 codes for each planning application. The ten most prominent codes, i.e.  
211 the subjects which were mentioned the most, can be seen in Figure 1. It is clear that employment and  
212 associated activities such as supporting local supply-chain businesses were important to the supporting

213 commenters. The other six topics were very popular, but were based on a generic email which was  
214 copied word-for-word by the commenters (appendix A).



215

216 *Figure 1. Bar chart showing the ten most popular subjects for support commenters.*

217 The codes were categorised into six emergent themes; *'social and economic'*, *'environmental and*  
218 *social'*, *'regulation and company standards'*, *'Scottish aquaculture'*, *'shared marine space'*, and  
219 *'visual'*. The codes are listed under their relevant thematic headings in appendix C.

220 Within the **social and economic** theme, the codes which people identified as reasons to support the  
221 planning applications were related to the jobs that the site would either provide or support, and the wider  
222 societal effects of those jobs. In terms of weighting, jobs and supply-chain jobs were mentioned the  
223 most times. Codes relating to the social aspects of jobs included *'keep populations in the area'*, and  
224 *'training for young people and students'*. These codes can be linked with some of characteristics of  
225 Argyll and Bute that have been seen as adverse to long-term viability, such as an ageing demographic  
226 and a high depopulation rate (Argyll and Bute Council, 2016).

227 The **environmental and social** theme covers topics ranging from food security, such as *'sustainable*  
228 *source of fish protein'*, to the sustainability of the business of fish farming *'environmentally sustainable*  
229 *business'*. Many of the codes suggest that the support commenters were not worried about the  
230 environmental impacts of the proposed activities. In both of the Loch Etive cases it was mentioned that  
231 aquaculture is a more sustainable way of producing fish than capture fisheries.

232 The **regulation and company standards** theme includes codes that refer either to the regulating  
233 agencies and their behaviour, or the industry's own policies, standards and behaviour. In three out of  
234 the five applications analysed, the code *'well regulated industry'* arose, where support was given  
235 because the commenters felt that regulating agencies were doing a good job of ensuring compliance  
236 from companies. In the Loch Striven case, there were three times the number of support comments as

237 objection comments (35 and 12 respectively). Many of the codes referred to the behaviour of the  
 238 applicant, The Scottish Salmon Company Ltd. (SSC) and consequently the trust that the commenters  
 239 had in them. Codes included ‘SSC has a good record of compliance’ and ‘trust in SSC systems of  
 240 operation’. There were less comments about trust in Dawnfresh and its company policies, despite the  
 241 number of supporting comments reaching into the hundreds.

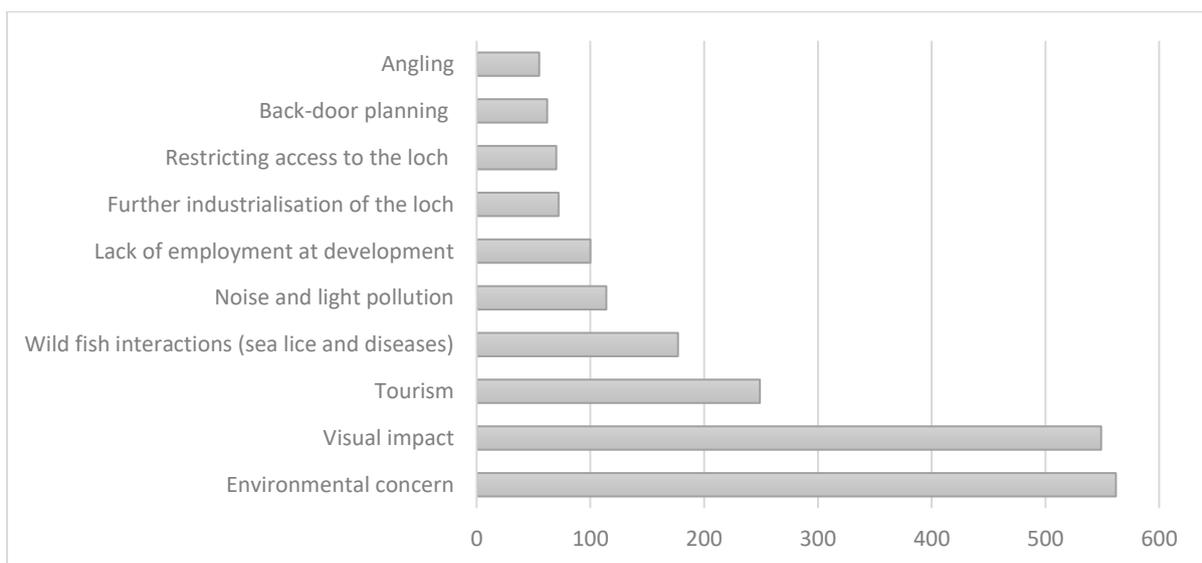
242 **Scottish aquaculture** as a whole was mentioned in all of the cases, with commenters noting that it is a  
 243 high value industry, and that Scottish salmon in particular, is a globally recognised product. Codes  
 244 included ‘Scottish Salmon is world-renowned for quality’ and ‘Scotland is a world leader in  
 245 aquaculture’. The content within these codes was often referred to in sequence with economic  
 246 parameters, such as providing jobs in rural areas, however, it was also mentioned as a stand-alone topic.

247 In a similar fashion to the **regulation and company standards** theme, the codes from the **shared**  
 248 **marine space** theme were very case-specific. In one case the SSC was praised for its standards, and  
 249 Dawnfresh in another. SSC received more positive remarks than Dawnfresh. The codes for Isle of Shuna  
 250 application by SSC referred to sailing, porpoise monitoring and other marine uses. The codes for the  
 251 2013 Loch Etive application referred to navigation, which includes sailing, kayaking, and marine craft.

252 The **visual** theme included codes relating to the fish farming activities being visually interesting,  
 253 unobtrusive, and low impact. There was also one code, ‘normal part of the countryside’ which came up  
 254 in the Isle of Shuna case.

255 **5.2 Objection comments**

256 There were between 12 and 19 codes for objecting comments on each planning application. The ten  
 257 codes which were most prominent can be seen in Figure 2. Environmental concern and visual impact  
 258 were the areas which were of most concern for those objecting to fish farm development in Argyll.



259

260

Figure 2. Chart showing the subjects mentioned the most times in objection comments.

261 The codes were categorised into six emergent themes; *'regulation and company standards'*,  
262 *'environmental and social'*, *'shared marine space'*, *'social and economic'*, *'visual'*, *'infrastructure'*,  
263 and *'cultural'*. The codes are listed under their relevant thematic headings in appendix D.

264 The **regulation and company standards** theme includes codes that refer either to the regulating  
265 agencies and their behaviour, or the industry's own policies, standards and behaviour. The objecting  
266 commenters listed issues such as *'discrepancies between policy and application'*, *'lack of regulation/*  
267 *accountability'*, and *'back-door planning'*. The back-door planning code refers to the 2016 Loch Etive  
268 proposal, where Dawnfresh applied for an extension to their 10 cages of 80 diameter site which was  
269 granted permission in 2013. The plans for the 2013 application were already modified from 12 cages to  
270 10 cages as a result of feedback from the community (Argyll and Bute Council, 2013). The 2016  
271 application refusal was appealed by Dawnfresh, and refused by the Scottish Ministers based on *'adverse*  
272 *landscape, visual and cumulative impacts'* (The Scottish Government, 2016b). Dawnfresh reduced the  
273 size of the farm by two cages in their application in 2013, due to community feedback. It then submitted  
274 a plan for an extension of the farm in 2016 of two cages. Had the extension been granted, it would have  
275 made the farm an equivalent size to the 2013 plan, which was rejected by the community. It is therefore  
276 understandable that objections would hone in on this point.

277 The **lack of regulation/accountability** theme refers to the relationship between the regulating agencies  
278 and the company, where commenters perceived that regulating agencies weren't doing a good enough  
279 job at holding aquaculture companies accountable when they breached regulation. This code was  
280 mentioned several times within the comments and is inextricably linked to other codes about inaccurate  
281 planning applications, poor Environmental Statements, and breaches of previous consenting terms.

282 The **environmental and social** theme contains some of the codes with the most mentions.  
283 *'Environmental concern'* was a high priority for all of the cases and *'wild fish interactions (sea lice and*  
284 *diseases)'* was an import objection point for all but one of the cases - Isle of Shuna. These two codes  
285 were separated because the commenters made a distinction between e.g. *'pollution'* and e.g. *'sea lice*  
286 *on wild fish'*. The researcher proposes that this is because of level of knowledge around the  
287 environmental impacts of fish farms, where objectors may have first or second-hand experience of sea  
288 lice issues through angling, whereas chemical discharge issues are a less tangible topic for those who  
289 are not involved in the fish farming industry and as such, were not described in detail. *'Noise and light*  
290 *pollution'* was also found to be an issue in all of the cases. This code straddles environmental as well  
291 as social aspects of the applications, given that many were objecting on the grounds of their properties  
292 or the places that they liked to visit being degraded by this type of pollution. The Loch Etive 2013 and  
293 Isle of Shuna cases had objections relating to fish farm debris ending up on local beaches. *'Poor animal*  
294 *welfare'* did crop up in one case but didn't receive many mentions.

295 **Shared marine space** referred wholly to objectors' perception that the use of the space that the  
296 applicant was proposing would restrict the use of the loch for other activities. In most cases this was  
297 referring to leisure activities such as angling, kayaking, sailing, and tourism. In the case of Loch Slapin,  
298 this was relating to a single commercial creel boat and a shellfish farm (Highland Council, 2014).  
299 Perceived negative interactions of the developments with tourism was one of the top 6 reasons for  
300 objecting in all of cases.

301 The **social and economic** theme overlaps somewhat with the shared marine space theme, where the  
302 main issues for objectors was the lack of jobs and community benefits that the proposed sites would  
303 bring to the area. In the case of Loch Etive the code '*competing uses provide more jobs*' pertained to  
304 the tourism industry, where objectors were worried that the proposed site would decrease the numbers  
305 of tourists visiting the area and thus reduce the number of jobs that the tourism industry provides. They  
306 perceived that the tourism industry was incompatible with the fish farming industry.

307 The **visual** theme includes the '*visual impact*' code, which was one of the most mentioned reasons to  
308 object in all of the cases. The objectors were also taking into consideration other visual impacts in the  
309 vicinity of the proposed sites, with many advising that they disliked that there was more than one fish  
310 farm in the area (Loch Etive). In the case of Isle of Shuna, there was reference to the cumulative visual  
311 impacts of having both wind farms and fish farms in sight of each other.

312 The theme of **infrastructure** included practical objections, based on perceptions that the infrastructure  
313 at the sites wasn't good enough to host the proposed activities. In the case of Loch Striven, these  
314 objections were referring to parking spaces available for workers. In the cases of Loch Etive and Loch  
315 Slapin, the capacity of the roads to handle more traffic was in question. Infrastructure was not a high  
316 priority for most of the objectors.

317 The code, '*cultural heritage loss*', within the theme of **culture** was a point for objection in both Loch  
318 Etive cases and in the Loch Slapin case, however it is unclear what the commenters meant by 'cultural  
319 heritage' as the term was used without any explanation or referral to sites, activities, art, or literature. It  
320 was not mentioned many times.

### 321 **5.3 Information sourced in the public comments**

322 There were 38 different sources of information that were used in the public comments (appendix E).  
323 Of these there were only seven which were mentioned more than 10 times. These were; *personal*  
324 *opinion*, *a standard email*, *Loch Etive Integrated Coastal Zone Management Plan (ICZMP)*, *planning*  
325 *application*, *Friends of Loch Etive (FLoE)*, *Scottish Environment Protection Agency (SEPA)*, and the  
326 *applicants' website*. Some of the sources were case specific. For example, the Loch Etive ICZMP and  
327 the NGO, FLoE were only relevant in the Loch Etive cases.

328 **Personal opinion** was the source of information that was referred to the most out of all of the sources.  
329 Personal opinion was classed by the researcher as any statement made without reference to a source.  
330 Sources were defined as any mention of location of information by the commenter (there wasn't the  
331 requirement for a reference).

332 The **standard email** pertains to comments where the content was copied and pasted, or very closely  
333 aligned with the wording of a single source. The Loch Etive 2016 standard email can be found in  
334 appendix E, which only used personal opinion as a source of information. In the case of the Loch Etive,  
335 the standard email was written by Dawnfresh (Argyll and Bute Council, 2015). FLoE urged people to  
336 object to planning application on Loch Etive via their website. Although it suggested topics to cover, it  
337 asked people to use their own words (Friends of Loch Etive, 2016). The Loch Slapin case had a  
338 community group which provided information on the application face-to-face, via meetings, and in a  
339 free book which contained numerous references (Merryweather, 2016), which was likely to be the  
340 reason why the comments in that case referred to more sources than any other. It might also be why the  
341 planning application itself was used as a source, more than in any other case.

342 The Loch Etive ICZMP was cited 29 times over the two Loch Etive cases. It was only used by the  
343 objectors. The researcher postulates that this is because the ICZMP, which was published in 2010, stated  
344 that the loch is *'either at or approaching landscape capacity in many places, therefore little capacity*  
345 *for new development has been identified'* (Argyll and Bute Council, 2010).

346 The Scottish Environment Protection Agency (SEPA) was cited to by both objection and support  
347 commenters. In the support comments, SEPA was written about as an agency which was trusted to  
348 ensure that the fish farms were not polluting the environment. This was the opposite in the objection  
349 comments where SEPA was seen as an agency which is allowing pollution to happen without  
350 accountability. SEPA was also cited as not doing a good enough job in terms of wild fish interactions  
351 and sea lice. As this isn't SEPA jurisdiction (The Scottish Government, 2013), it is the responsibility  
352 of the industry through the Scottish Salmon Producers Organisation (SSPO) Code of Good Practice  
353 (Marine Scotland, 2012) and Marine Scotland through the Aquaculture and Fisheries (Scotland) Act  
354 2010 and the Fish Farming Business (Record Keeping) (Scotland) Act 2008, this was a case of false or  
355 incorrect information being used by the public. This is, however, understandable as SEPA is responsible  
356 for medicine discharges in the water under and around cages which can be associated with de-lousing  
357 treatments (Marine Scotland, 2012).

358 The applicants' websites were sourced 10 times over all of the cases. The majority of citations came  
359 from supporting comments and related to good practice. However, in the case of Loch Slapin, it was  
360 cited twice by objectors. The objectors were pointing out that the company's actual fish production  
361 didn't match up with what they had on their website (Merryweather, 2014).

362 The rest of the sources were mentioned less than 10 times. Interestingly the SSPO Standards of Good  
 363 Practice was not mentioned by any supporting commenters, it was only sourced in objections. The  
 364 context of the citations was mostly relating to sea lice counts, and reports that most farms didn't meet  
 365 the SSPO targets. In the Loch Slapin case, the SSPO was used as a reference because Hjaltland, the  
 366 company applying for planning, had been removed from the members list due to a breach of the Code  
 367 of Good Practice (BBC News Scotland, 2014). The Fisheries Trusts were referenced by objectors due  
 368 to their work on wild fish interactions and escapes (Coulson, 2012; Rivers and Fisheries Trusts of  
 369 Scotland, 2015).

370 **5.4 Location of the commenters**

371 The locations of those who commented on the planning applications is summarised in Table 2. This  
 372 data was limited because not all the comments had addresses associated with them, or were not available  
 373 on the public record; as such, this analysis is limited and descriptive. The majority of commenters were  
 374 from the UK, with a small number coming from countries in Europe, Oceania and North America. For  
 375 the Loch Etive applications, approximately half of the commenters were from Scotland, and half were  
 376 from the rest of the UK. This was the same across the two applications, possibly because the same  
 377 people who commented on the first application also commented on the second application. There were  
 378 fewer non-local support comments, with most of the commenters living in Argyll. The support  
 379 comments from global locations were from the same people in both applications.

380

**Table 2. Summary of the locations of the commenters according to the application and type of comment.**

Planning Application	Objection		Support	
	Number of locations in UK	Number of locations globally	Number of locations UK	Number of locations globally
<b>Loch Etive 2013</b>	156	11	57	4
<b>Loch Etive 2016</b>	81	10	41	4
<b>Loch Striven 2013</b>	4	0	19	0

381

382 **6. General discussion; gaging social licence to operate using public comment**  
 383 **analysis**

384 Using Social Licence to Operate as a framework for describing the relationships that industry has with  
 385 the communities that host them is useful in characterising the social acceptability or the social  
 386 legitimacy of a given industrial operation (Gehman et al., 2017). Within the 'three strand model' of  
 387 SLO described by Gunningham et al., (2004), SLO is described as a part of a larger licencing scheme  
 388 which allows industries with environmental and social costs, to operate. It involves social, economic,

389 and legal licences which overlap, can be co-dependant and often form feedback loops. Of more  
390 importance to this study is their description of the slippery nature of SLO, where variation in the terms  
391 of SLO depends on uncertain public and community expectations, operators, and the context of the  
392 legal and planning system (Gunningham et al., 2004; Prno, 2013).

393 Under the Town and Country Planning (Scotland) Act 1997, from the outset, debates about the  
394 suitability of fish farming for a given location, are cast as either acceptable or unacceptable use of the  
395 area. This is reflected in the way that the general public can formally interact with a planning  
396 application. Those who do choose to engage have no choice but to take a side (support/ object) or be  
397 neutral in their opinions, there is no space for negotiation or deliberation. The Loch Etive case is a good  
398 illustration of this, where opinions were radically polarised, often pejorative towards the Local  
399 Authority and the Scottish Government (e.g. *'Why our government is ignoring this problem points*  
400 *directly to either backhanders being issued by Salmon Farming [sic] or they must be taking a fortune*  
401 *in tax'* – objection comment, Loch Etive 2016) and not necessarily reflective of the views of the  
402 communities which border the loch. This was shown through the submissions of the Community  
403 Councils – one which was opposed and one which supported the 2013 application from Dawnfresh  
404 (Argyll and Bute Council, 2013)<sup>7</sup>.

405 The variation in local opinions are likely to be more scalar (or on a continuum) than simply opposition,  
406 support or neutral, because of the influence of personal world-views and epistemologies (Billing et al.,  
407 2017). The binary engagement and decision-making of this planning process does not account for the  
408 larger scale issue of where to place finfish farms as it is not reflective of the complexity of public  
409 opinions and expectations of the finfish farming industry nor the interactions that fish farms have with  
410 other coastal and marine industries and users. More flexibility within the planning process is required  
411 to adapt to the variable nature of societal debate around acceptable use of marine space, recognising  
412 local contexts and the changing needs of maritime industries.

413 This study shows that variation in expectation of the SLO terms can start with a single individual and  
414 then propagate outwards to incorporate local communities, communities of interest, eNGOs, the media  
415 and the general public. Rather than providing a space for deliberation around what society deems as  
416 acceptable use of the sea at a regional or local level, the individual nature of the opinions expressed  
417 through the planning system pushes negotiations for SLO out of the informal and local world  
418 (Habermas, 1984), where Gehman et al., (2017) and Gunningham et al., (2004) advise SLO starts, and  
419 into the formal domain of the law through planning appeals and litigation.

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<sup>7</sup> Community Councils are the most local level of statutory representation in Scotland. They are run by elected members who have to be resident within the specified borders of the Community Council Area. They are all volunteers (Community Council Scotland, 2018; The Scottish Government, 2015).

420 In theory, SLO has the potential to leverage equity for communities, stakeholders and users of the same  
421 areas thus contributing to the sustainable development (Prno and Scott Slocombe, 2012) of aquaculture  
422 and is promoted by the ‘Ecosystem Approach to Aquaculture’ (EAA) . The second principal of the EAA  
423 states that; ‘*Aquaculture must improve human well-being with equity for all relevant stakeholders (e.g.  
424 access rights and fair share of income)*’ (Aguilar-Manjarrez et al., 2017). As previously noted,  
425 Gunningham et al., (2004) found that SLO has a role to play in the formality of environmental law and  
426 regulations. However, this study finds that the formal domain of law limits the opportunity of local  
427 individuals, communities, and organisations to be involved in reaching an agreement with the company  
428 and between themselves, which is a compromise, but acceptable to the majority (i.e. deliberative), on a  
429 local scale. This is especially true when resource-rich individuals are able to pay for often costly  
430 administrative and legal procedures.

431 In the case of Loch Etive, two resource rich individuals with opposing views facilitated the polarisation  
432 of the debate around whether a fish farm should receive planning permission through informal  
433 communication routes such as handing out fliers and visiting local residents. This style of campaigning  
434 created such tension between those in favour of and those opposing the fish farm development that it  
435 reduced the opportunity for local communities and interest groups to have a meaningful dialogue with  
436 each other and with the company<sup>8</sup>. Decisions about the potential development and the consenting  
437 conditions were situated in centralised national processes where the planning authority was taken to  
438 court by an individual opposing the development and the company appealed the planning decision made  
439 by the local planning authority<sup>9</sup> (Scottish Courts and Tribunals, 2015; The Scottish Government,  
440 2016b).

441 In other words, there are two levels of individual agency which can permeate SLO negotiations between  
442 finfish farming operators and local communities. One which is facilitated by the planning regime, where  
443 individuals can push for their views to be upheld over others through the centralised planning and legal  
444 system; and one which is ‘grass-roots’, where individuals campaigning from a specific standpoint can  
445 sway public opinion through local initiatives. Both of these forms of agency require a significant amount  
446 of resources including money, time and education. This means that the SLO is not contracted between  
447 the groups described by Gunningham et al., (2004) and the developers. Rather it is a murky process  
448 which favours individuals with resources over local communities, NGOs and interest groups, and is  
449 ultimately reliant on legal and planning systems to ensure that the outcomes are justifiable by law. In  
450 such cases it is difficult to determine whether or not a development has SLO.

451 Public comments can provide a freely available resource for characterisation of an area, the issues  
452 concerning local residents and communities of interest, and the likelihood of gaining or negotiating a

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<sup>8</sup> Face-to-face interviews (x3) 17.02.2017

<sup>9</sup> Appeal decisions are made by a Scottish Government reporter or the Scottish Ministers.

453 social licence. For example, the majority of applications for the development of new finfish farms were  
454 accepted and attracted less than ten public comments, showing that there is a general acceptance of  
455 finfish farming in Argyll. However, where there are issues they are identifiable through the content of  
456 the public comments. The Loch Etive cases show that the main concern is visual and environmental  
457 impact, interlinked with the complex dynamics of what individuals, the local community and the  
458 broader communities of interest view as acceptable use of marine space. All of the cases that are  
459 analysed in this study show that governing bodies contribute to how communities view the finfish  
460 industry, with supporting comments stating that they have trust in the agencies that regulate  
461 environmental aspects of the industry and the objection comments stating the opposite. Analysing  
462 public comments reveals the complexity of SLO, with the high profile cases, like Loch Etive,  
463 influencing the overall opinion of the aquaculture industry; that there is poor public perception and  
464 wavering local social acceptability of finfish aquaculture<sup>10</sup>.

### 465 ***6.1 How can support comments help understanding of SLO?***

466 Perceived economic and associated social benefits of the industry to the localities where the developers  
467 planned to operate were the main reasons for supporting the formation of new finfish farms. These  
468 benefits, which include stable jobs, attracting younger working populations to rural and/or remote areas,  
469 contracts for supply-chain businesses, and year-round economic activity, are well documented in  
470 governmental reports (Alexander et al., 2014; Scientific Technical and Economic Committee for  
471 Fisheries & Aquaculture (STECFA), 2014; The Marine Socio-Economics Project, 2011), and peer  
472 reviewed literature (Bostock et al., 2016; Murray and Gubbins, 2016; Tiller et al., 2014). Of more  
473 interest to this discussion on SLO, however, are the reasons why some individuals and communities  
474 choose to support a specific company's activities and only accept another's.

475 There were two contrasting cases within the results – the first was the Loch Striven application, where  
476 commenters were supportive of not only the activities but also the style, quality and extent of  
477 community engagement that the Scottish Salmon Company employs.

478 *'The company [SSC] has a sponsorship programme and is willing to take part in and engage*  
479 *with communities.'* – Loch Striven supporting commenter

480 This finding is reflective of Moffat & Zhang's (2014) study, where they found that 'quality contact'  
481 plays an important role in gaining SLO, with useful or positive engagement experiences contributing  
482 to trust. The second case was the Dawn Fresh application, where some commenters stated that they  
483 supported the application because they perceived that it would contribute a net (socio-economic) benefit  
484 to the area, but also expressed that they did not necessarily 'like' having aquaculture in the area. A

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<sup>10</sup> AquaSpace workshop for the Scottish Case Study, Scottish Association for Marine Science, January 2016

485 couple went so far as to say that they hoped the company would improve its protocols for keeping sites  
486 tidy, and reducing fish farm debris on local beaches.

487 Within social acceptability research, Batel et al., (2013) found that *'acceptance'* does not necessarily  
488 mean *'support'* when it comes to high voltage power lines (Gehman et al., 2017). In their view,  
489 acceptance is a passive and not wholly positive behaviour, whereas support is a more active recognition  
490 of the benefits. Although power lines are not directly related to aquaculture, this differentiation between  
491 terms is useful for describing the varying positions of the support commenters. The researcher proposes  
492 that in the two cases outlined above, the former has *'support'*, whereas the latter has *'acceptance'*. The  
493 emotive nature of the Loch Etive case might have meant that those who would have otherwise had a  
494 non-polar opinion of the proposal were compelled to comment, resulting in some *'acceptance'*  
495 comments coming from those who were writing in support of the application. Recognition of this  
496 distinction might be important for SLO, providing companies with a warning sign that the benefits that  
497 their activities provide are not enough to produce support. In the case of Loch Etive, the public  
498 comments provided exact directions for how the company could gain support, in the view of the  
499 commenters.

## 500 **6.2 How can objection comments help understanding of SLO?**

501 Achieving SLO is a negotiation process (Leith et al., 2014) which requires effective communication  
502 between local communities and the company proposing the activities (Moffat and Zhang, 2014).  
503 Habermas, (1984) defines two types of negotiation – communicative action, where actors have not  
504 determined their positions in advance and strategic action, where actors aim to get a particular outcome.

505 The negotiations in Loch Slapin could be defined as poor social practices on behalf of the company  
506 where the planning authority noted that the company (Hjaltland) didn't engage with the community at  
507 all. This was also brought up in the response of the community council to the planning application  
508 (Highland Council, 2014). This resulted in strategic action by the community council and those  
509 commenting on the planning application – asking the council to reject the application. In comparison,  
510 in Loch Etive, the company (Dawnfresh) did engage with the two relevant community councils which  
511 border the loch which resulted in the company compromising with the community and the planning  
512 authorities to reduce the size of the farm from 12 to 10 cages (Argyll and Bute Council, 2013). This  
513 was not enough engagement for one individual, however;

514 *'At no stage, either prior to the 14 cage application and now the 10 cage application, has the*  
515 *developer tried to discuss or address the severe impacts with which its plan threaten Muckairn*  
516 *[Estate] ... Dawnfresh admits that Muckairn will suffer the worst impact in terms of the visual*  
517 *intrusion of the farm but the developer has not even bothered to talk to me about this' - Owner*  
518 *of Muckairn Estate (Argyll and Bute Council, 2013)*

519 This individual expected that the responsibility for communication should lie with the company and  
520 should be directed at them specifically, because of the proximity of their property to the development.  
521 They were also the founder of the eNGO, Friends of Loch Etive (FLoE). FLoE took strategic action by  
522 raising the profile of the planning application and the number of objections to it through its activities of  
523 post-carding local areas, attending local events with visualisation of the farm, and setting up of a website  
524 with information on their view of the application, and details on how to object (Argyll and Bute Council,  
525 2013; Friends of Loch Etive, 2016). Although the request for personal communication and the formation  
526 of an eNGO might seem like a reasonable response given the severity of the impacts to the individual,  
527 in terms of SLO it poses some interesting questions: If the company had engaged with the individual,  
528 would this have changed the negotiation process? If so, then how does SLO help to achieve sustainable  
529 development when negotiations can be so heavily influenced by individuals? This is of particular  
530 importance in areas where large tracts of coastal land are owned by individuals or families, but are also  
531 host to populations which are not necessarily resource-rich and in some cases can be deprived.

532 In addition to this context of a battle between an individual and a company (locally described as ‘a  
533 *battle between a millionaire and a billionaire*’) there was a view in many objection comments that their  
534 words were representative of the whole community, rather than their own individual opinions. For  
535 example;

536 *‘This is planning application which is opportunistic and drives a wedge between the community*  
537 *and the planning process. We have all lost faith in the public consultancy process because it is*  
538 *so often used as a ruse by developers to pacify local opinion and then take no notice of the*  
539 *views of the community – making a mockery of both the consultation process and the planning*  
540 *system.’ – Loch Etive objection comment 2013<sup>11</sup>*

541 The researcher postulates that this position might have come about because those objecting felt like  
542 they were in the majority and therefore assumed they would ‘win’ the debate. Exacerbating this view  
543 was the fact that there *were* negotiations between the company, the community councils and the  
544 planning authority which resulted in the application being accepted.

545 When framed in SLO theory, the Loch Etive case is an interesting example where the resources of FLoE  
546 meant that an individual was able to prioritise their views within the planning system. The activities of  
547 FLoE were effective in polarising the opinions of the local community and the wider general public,  
548 causing conflict. This polarisation of opinion is not unique to Loch Etive. In their work on salmon  
549 farming in Tasmania, Leith et al., (2014) found that views were often polarised because of different

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<sup>11</sup> Planning decisions are steered by Scottish Planning Policy and Local Development Plans which are determined prior to any public consultation on individual planning applications. Local Development Plans also have public consultation processes (The Scottish Government, 2014b).

550 perspective on ‘use’. Affluent and resource rich individuals were more likely to determine ‘use’ as  
551 leisure opportunity rather than productivity.

### 552 **6.3 The role of information in SLO negotiations (and the finfish farming debate)**

553 Information and its role in forming the opinions of the general public, different voter groups and  
554 communities of interest and locality is a topic which is of increasing relevance in our media-driven and  
555 technologically advancing world. Within this study, the opinions of those who commented on the  
556 planning applications were largely based on personal views, but these views were grounded in  
557 information which was either factual, partially factual, subject to framing and (mis)interpretation or  
558 false. The material that was sourced was from eNGOs, the Council, the applicant (aquaculture  
559 companies), and regulating agencies.

560 The majority of objection comments were based on the environmental interactions of finfish farming  
561 and can be split into two categories of concern; non-specific (environmental concern) and specific (sea  
562 lice and wild fish interactions). The former was comprised of the generic but also popular notions that  
563 finfish farms create *‘holes in the bottom of the sea’*, and *‘pollute the loch’*. This shows that although  
564 concern was real, there was limited detailed comprehension of the specificities of issues relating to  
565 eutrophication and organic matter (Tett et al., 2018). Which is not unexpected given the niche nature of  
566 the knowledge required to understand, or partially understand, a complex biophysical system. What is  
567 more important here is the opinions that commenters have about the source of the information and their  
568 interpretation of the evidence rather than the evidence itself. For example, the Scottish Environment  
569 Protection Agency (SEPA) was used as a source of information by both supporting and objecting  
570 commenters, but the objection commenters explicitly stated that they didn’t *‘trust’* SEPA which meant  
571 that the information and evidence (on organic matter impacts from finfish farms) provided by SEPA  
572 was seen as *‘incorrect’*, *‘not the whole truth’* or *‘selective’*. Whereas information and evidence provided  
573 by FLoE and James Merryweather of the Scottish Salmon Think Tank (SSTT) was seen as *‘revealing*  
574 *the truth’* and showing *‘the real impact of finfish farming on our environment’*, respectively.

575 The means by which this information was delivered might also have role in its efficacy, but more work  
576 is needed to understand the differences between techniques. FLoE used leafleting of all local houses,  
577 attended local events with petitions for signing (Argyll and Bute Council, 2013), and provided an easily  
578 accessible and readable website ([www.lochetive.org](http://www.lochetive.org)). Merryweather wrote a book which was freely  
579 provided to every household in the area due to a donation from an individual (Merryweather, 2012),  
580 the individuals from the SSTT went around all of the local houses for face-to-face visits (Personal  
581 communications via interview, May 2017) and also have a website where all of their information is  
582 available ([www.scottishsalmonthinktank.net](http://www.scottishsalmonthinktank.net)).

583 In contrast to the non-specific descriptions of pollution found in the majority of comments, there were  
584 also numerous objection comments which precisely and explicitly noted that anglers were reporting less

585 catches and an increase in the number of sea lice on the fish that they did catch. The commenters linked  
586 these issues with the expansion of finfish aquaculture, which overlaps with the decline in wild salmon  
587 and trout populations over the past 30 years (Ormerod, 2003). Although salmon and trout farming does  
588 increase the likelihood of sea lice infestation on the farms and there is clear evidence from Norway that  
589 these influxes affect the viability of wild salmon populations, there is limited evidence in Scotland (Tett  
590 et al., 2018; Thorstad et al., 2015). These interactions are researched, but are still not well understood  
591 (Clews et al., 2010). When operating on a local scale, in a tight-knit community, personal experiences  
592 are shared rapidly and widely (Anderson Crow and Berggren, 2014). The limited nature of the peer-  
593 reviewed literature in this area does little to challenge the reasoning and first-hand experience of those  
594 who suggest that finfish aquaculture does impact wild salmon stocks.

595 More work is required in this area to investigate how information is used by those who are engaged  
596 with the planning process and comment on applications, and how this impacts the SLO for finfish  
597 farming. The evidence from this study suggests that in a similar fashion to political opinions, opinions  
598 on aquaculture are subject to confirmation bias. Those who are motivated and have strong attitudes are  
599 likely to seek out information which confirms their position (Druckman et al., 2012). Furthermore, this  
600 study shows that a small number of individuals who are motivated and engaged will act as agents, by  
601 providing other people with information which they have specifically selected, framing it in a way  
602 which is emotive, morally formulated and (attempts to) persuade(s) others to hold the same views and  
603 act on the opinions of the few (Lakoff, 2004).

604 This leads neatly into the debate on acceptable use of marine space and its associated resources. Those  
605 who commented on the application and were not located in Scotland seemed to value the *'beauty of the*  
606 *area'*, with some objectors threatening to *'remove their business'* if the development went ahead. This  
607 type of comment can be linked with the relationship that the commenter has with the area and what they  
608 perceive as *'acceptable use'* of the loch (Leith et al., 2014). In such cases the commenters, more often  
609 than not, were tourists who visit Loch Etive as a retreat from the norm of their lives. As such, their  
610 expectations were for *'peace and quiet'*, rather than *'industrial activities'* associated with farming  
611 finfish. The supporting comments which were not from Scotland ironically related to the *'unfairness'*  
612 of being able to comment on such an application when not being from the area; ironically one comment  
613 noted that they were supporting the application to counteract the objectors who were not from the area.

614 The wider context of the discussion around the location of the commenters is that the people who  
615 commented on these planning applications presented different values based on whether they were  
616 working, taking leisure time, or were retired. In an area like Argyll, which relies on its beauty and rural  
617 qualities for its largest sector, tourism, but also has an aging population, limited quality full time jobs  
618 and over-stretched public services (Argyll and Bute Council, 2016), the dichotomy between those who  
619 value the local areas for their leisure opportunity and those who value the local areas for other livelihood

620 potential (i.e. aquaculture), creates conflict and is likely to influence SLO. The results of this study point  
621 to a need for more work to be conducted on the conflict between leisure opportunity and livelihood  
622 potential within the framework of SLO, especially where the context is complex i.e. livelihood potential  
623 is linked to both aquaculture and tourism, and resource-rich individuals actively influence the societal  
624 debate around acceptable use of local marine resources.

## 625 **7. Conclusions**

626 Social Licence to Operate has been a useful theoretical framework for describing the relationships  
627 between local communities and industry (Leith et al., 2014; Moffat and Zhang, 2014; Rooney et al.,  
628 2014) especially as it has been identified that there is limited research and understanding of the local  
629 scale social interactions that the aquaculture industry has with host communities (Krause et al., 2015).  
630 This study shows that it is possible to determine some of the aspects and complexities involved in  
631 garnering SLO for new finfish farms through analysing public comments made on planning  
632 applications.

633 It confirms that SLO varies across different areas, as the industry advised, but reveals some of the  
634 reasons why this might be the case. The variation in SLO means that how individual companies handle  
635 the high profile cases is important for the industry as a whole, as they are a ‘showcase’ in the local area,  
636 the national press and on occasion, internationally. It is hard to predict where these types of cases will  
637 occur, however, the Loch Etive case in this study does show that where there has been engagement and  
638 compromise between a community and an aquaculture company, the company trying to circumvent  
639 these compromises, erodes social licence.

640 The SLO framework is also applicable to the aquaculture regulatory bodies, where public trust in their  
641 processes and ability for them to enforce accountability for errors incurred by the industry. If there is  
642 low trust in the regulating agencies, then it is likely they there will be even less for the industry. Equally,  
643 the industry needs to hold itself to higher standards than regulation dictates. The SSPO Code of Good  
644 Practice is the current mechanism for this (Scottish Salmon Producers Organisation, 2014). However,  
645 there are still examples of poor practice that are used as illustrations of the irresponsibility of the  
646 industry as a whole, rather than just that operator. Waste on beaches and untidy sites are an example of  
647 where every company gets tarnished for the poor practice of individual companies or even individual  
648 site management. Considering that visual impact is listed as a high priority in the public objections in  
649 this study it should be a high priority for the Scottish aquaculture industry to be aware of and maintain  
650 good aesthetic standards on all sites, including those in remote areas.

651 Both the Loch Etive and the Loch Slapin applications showed that individuals with effective  
652 communication techniques can skew SLO negotiations as well as the industry’s perception of public  
653 acceptance levels. The FLoE campaign was successful in engaging large numbers of the general public.

654 However, because of the lack of non-polarised information available to those commenting on the  
655 applications the debate may not have been reflective of actual views within local communities. With  
656 the quality of communication between stakeholder groups and industry being a key part of SLO (Moffat  
657 and Zhang, 2014), it may be that the anti-aquaculture campaigns seen in this study are better at  
658 communicating with the public because they were actively providing engaging and compelling  
659 information without the need for the public to expend any energy to receive it (i.e. to their doorstep) or  
660 in spaces where the public already looks (i.e. newspapers and websites). It might prove beneficial for  
661 the societal debate around aquaculture and local SLO negotiations if aquaculture companies were to  
662 balance the information available in the press and social media, in a more active way.

663 This study finds that more neutral sources of information are required to ensure that communities and  
664 individuals can find impartial and adequate advice on aquaculture in their local area on which they can  
665 base their negotiations with aquaculture companies. This is especially important for with regards to  
666 environmental interactions, specifically wild fish and sea lice, as this is the main concern of those who  
667 engage with the planning process. This information needs to be actively promoted to ensure that it can  
668 compete with the more biased information. Further thought and dialogue within and between the  
669 research community, regulators, industry and communities is needed to evaluate the best options for  
670 how this information is accumulated, who would manage it, and how it is communicated to ensure that  
671 it is useful to society.

672 SLO has been presented in the literature as a means for achieving the sustainable development of an  
673 area, focussing on the negotiation a company has with local communities and the parameters of impact/  
674 enhancement which are deemed acceptable by the community. However, the results of this study show  
675 that resource-rich and motivated individuals can have a significant impact on SLO negotiations for  
676 finfish aquaculture, moving decisions about acceptability out of the hands of local communities and  
677 into the hands of national government, or law, neither of which solve the local scale conundrum of  
678 where to locate finfish farms.

### 679 **Acknowledgements**

680 This research was funded by the EU Horizon 2020 project ‘AquaSpace’ (grant number 633476). The  
681 write-up of this paper received funding from the MASTS pooling initiative (The Marine Alliance for  
682 Science and Technology for Scotland) and their support is gratefully acknowledged. MASTS is funded  
683 by the Scottish Funding Council (grant reference HR09011) and contributing institutions. The author  
684 would like to thank Professor Paul Tett for his advice and support on this paper and Kristi Dingwall for  
685 her editorial skills.

686

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825 **Appendix A;** Summary table of applications for new finfish farms. Grey fields show the cases that were analysed.

Year	Type of application	Planning reference	Location	Company	Date of decision	Accepted/rejected	Public comments	Public objections	Public support	Biomass allowed on site <sup>1</sup>	Species	Size of cages <sup>2</sup>	Number of cages	Notes
<b>2015/2016</b>	Marine finfish	15/03017/MFF	Carradale	Marine harvest	23/12/15	Accepted	1	0	0	2500	Salmon	120	10	New farm
	Marine finfish	15/01179/MFF	Shuna, Ardfern	Marine harvest	21/08/15	Accepted	0	0	0	2100	Salmon	120	10	New farm on old site
	Marine finfish	15/00127/MFF	Carradale	Marine harvest	04/11/15	Accepted	1	0	1	2500	Salmon	100	14	New farm
	Marine finfish	15/02607/MFF	Loch Etive	Dawnfresh	25/02/2016	Refused	408	225	183	2500	Trout	80	12	Extension of 2013 site
<b>2014/2015</b>	Marine finfish	14/00676/MFF	Isle of Shuna	Kames fish farming	21/08/14	Accepted	49	29	17	2500	Trout	100	14	New farm
<b>2013/2014</b>	Marine finfish	13/02905/MFF	Colonsay	Marine harvest	09/04/14	Accepted	0	0	0	2500	Salmon	120	12	New farm
	Marine finfish	13/01379/MFF	Loch Etive	Dawnfresh	21/03/14	Accepted	812	589	218	1500	Trout	80	10	New farm
	Marine finfish	13/00533/MFF	Colonsay	Marine harvest	18/07/13	Accepted	6	0	6	2500	Salmon	120	12	New farm
	Marine shellfish	13/00621/MFF	Loch Spelve, mull	Mr. Robert Corbett	10/05/13	Accepted	0	0	0		Oyster	Trestle tables	6 trestle tables	Retrospective
<b>2012/2013</b>	Marine finfish	12/02585/MFF	Loch Striven	Scottish Salmon company	29/05/13	Accepted	48	12	35	2437	Salmon	32	16	New farm

<b>2014<sup>3</sup></b>	Marine finfish	14/01467/ FUL	Loch Slapin	Hjaltland ltd	12/08/201 4	Refused	71	69	2	2200	Salmon	120	10	New farm
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<sup>1</sup>Measured in tonnes, <sup>2</sup>Measured in meters and circumference, <sup>3</sup> Pilot case study, Loch Slapin, in the Highlands Council area (HIGHLAND COUNCIL, 2014)

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827 **Appendix B;** Letter of Support for the Loch Etive Planning Application– Argyll and Bute reference  
828 number: 15/02607/MFF  
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Dear Mr Kerr,

I would like to support the above mentioned planning application. Many new jobs were created by Dawnfresh to the Argyll area in the last year.

Please note below:

Dawnfresh’s healthy and nutritious fish are grown responsibly, respecting the environment on which they depend, whilst maintaining jobs and supporting local economies in rural areas.

Dawnfresh strongly support the local economy through outsourcing and resourcing local businesses to set up the farms. Creating effective maintenance plans, thus crafting a year round sustainable business.

Across Scotland, it is estimated some 2,257 direct jobs are supported by fish farming, with 2,131 of those within the Highlands and Islands.

Aquaculture revenue in Scotland is now estimated to be worth £1.86 billion annually to the economy, an increase of £110 million year-on-year, and supports over £8,000 jobs. If industry’s sustainable growth targets, supported by the Scottish Government, are met this value will rise to well over £2 billion a year and support 10,000 jobs across Scotland by 2020.

Fish farming offers an interesting focal point on the marine landscape and it is enjoyable to watch boats working around the farms.

My details are below,

Thank you for your time.

Name:

Address:

Postcode:

**Appendix C; Table** listing the emergent themes and their codes for the supporting comments.

<b>Social and economic</b>	<b>Environmental and social</b>	<b>Regulation and company standards</b>	<b>Scottish aquaculture</b>	<b>Shared marine space</b>	<b>Visual</b>
Employment in local area	Environmentally sustainable business	Well-regulated industry	Scottish Salmon is world-renowned for quality	No issue for sailing	Visually unobtrusive
Supporting local supply-chain businesses	No environmental concern	SSC has a record of compliance	Strengthen Scottish aquaculture	No difference to navigation	Visually interesting
Keep populations in local area	No proven record of environmental issues	SSC has good environmental policies	Aquaculture industry in Scotland is growing	Room for other marine industries as well	Visual impacts are low
Better career prospects for those already employed	Extension won't have a noticeable environmental impact	SSC part of RSPCA welfare standards	Scotland is world leader in aquaculture	Need good control for porpoise activities	Normal part of the countryside
Provides year-round business	Enhances biodiversity	SSC has good staff training for optimum fish welfare	Salmon is top export		
Provides jobs in rural areas	Respects the environment on which farming relies	SSC has good community engagement			
Jobs keep young people in Argyll	Sustainable source of fish protein	Trust in SSC systems of operation			
Dawnfresh provides skills and training for local area	Dawnfresh farm nutritious fish	Well-regulated industry			
Training for students and young people	Trout farming is a historical and cultural activity	Dawnfresh adheres to regulations			
Contribution to community	History of aquaculture in the area	Dawnfresh is an ethical company			
Provides support to other water users because of marine specialist skills	Expansion is in keeping with existing activity	Applications consistent with LDP			
Won't affect tourism	40 yrs of operation in the area				

Sustainable business	Improvements have been made to fish farming over the years
National Balance of Payments	Dawnfresh have addressed community concerns
Sector requires support and expansion	Wild fishing is unsustainable
High value industry	
Strengthen Scottish economy	
Scotland-wide benefits through exports	
Family business	

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**Appendix D; Table** listing the emergent themes and their codes for the objecting comments.

<b>Regulation and company standards</b>	<b>Environmental and social</b>	<b>Shared marine space</b>	<b>Social and economic</b>	<b>Visual</b>	<b>Infrastructure</b>	<b>Culture</b>
Discrepancies between policy and application	Environmental concern	Obstruction of current fishing activities	Devaluing local properties	Visual impact	No parking spaces for more workers	Cultural heritage loss
Crown Estate refusal of shellfish farm	Wild fish interactions (sea lice and diseases)	Obstruction of current fisheries and shellfish activities	No employment at development	Further industrialisation of the loch	Lack of infrastructure (roads)	
Lack of regulation/ accountability	Shooting of predators	Loch navigation issues for sailing and kayaking	Lack of employment at development	Industrialisation of the area		
Back-door planning	Noise and light pollution	Tourism	Competing uses provide more jobs	Too many other fish farms		
Breach of previous planning application	Poor animal welfare	Restricting access to the loch	Lack of community benefits	Wind farms+ fish farms too much		
Lack of community engagement	Fish farm debris left on shores	Negative interactions with angling	Seasonal jobs are lost	Landscape classifications		
SEPA not done a cumulative impact study		Dawnfresh ownership of the loch				
Poor ES - no mention of harbour porpoise, use of EPS, alternative to shooting seals not considered						
Inaccurate planning application						