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Transitions to sustainability: A photographic exploration into the motivations, impacts, and expectations of community renewable energy production on the Isle of Eigg.

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Declaration

I, Neil Gordon Davey, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature.....

Date.....

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Òran taing.

Abstract

Island communities around the world have long had to deal with issues that many mainland communities are beginning to face. European small islands face many of the same challenges as islands in the Asia-Pacific or Caribbean regions. They are vulnerable to climate events such as extreme weather, they often lack infrastructure, and many have declining populations. This means they need to implement smart solutions in areas such as energy production, waste and water management, employment, and community and cultural preservation. Small European islands that have developed pioneering approaches to the above issues include Ouessant, Seine, and Molene in France, Utsira in Norway, Tilos in Greece, Vormsi in Estonia, and the Isle of Eigg off the west coast of Scotland. These islands' approaches include the use of autonomous renewable energy systems, energy storage, IT solutions, sustainable entrepreneurial practices and innovative conservation management. An example of sustainable energy production can be found on the Isle of Eigg. Eigg is a community owned island that combines wind, solar, and hydro power to generate enough electricity for its forty households. Some homes have micro-hydro plants, and evacuated tubes on their roofs to heat water, but many residents rely solely on the grid for 24 hour-a-day electricity for the first time in the island's history. Until the grid was switched on in February 2008, most islanders struggled with unreliable diesel generators. This in-depth qualitative study employs visual data collection methods and photo-elicitation to gather narratives and explore the motivations, impacts, and expectations of using the system. Eigg's isolation, as well as a strong community will to preserve its culture, heritage, and environment has led to the island's innovative energy management practices. Such practices can empower and revive island communities and highlight what appears to be a relatively simple transition to more sustainable, but nonetheless modern ways of living. These practices also identify islands such as Eigg as notable leaders in small-scale sustainable management techniques, which promote ecologically and socially viable options for a low carbon future.

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1. INTRODUCTION

1.1 BIG AMBITIONS; SMALL STEPS

The Scottish government has ambitious targets for renewable energy generation. It aims to generate 100% of Scotland's energy needs (500MW of electricity) from renewable sources by 2020 (Armstrong, 2015; Dickie, 2015). Despite a lack of support from the current UK government, which favours options such as nuclear energy and fracking for natural gas (Carrington, 2015), Scotland is on track to meet its target. Scotland's safer and more sustainable option makes use of the abundant natural resources available to the country. Moreover, Armstrong (2015, p. 10) suggests that as "energy becomes more expensive and less secure, local systems will be more important than ever". In Scotland, many projects are at the forefront of local renewable energy production.

Recent years have seen a surge in the amount of local renewable energy projects in Scotland, which decentralise energy production and hand autonomy to communities or public/private partnerships. Most systems are connected to the national UK grid, feeding in to it when there is more supply than demand, and using it when demand is high but supply is low. However, one of the most discussed systems is the Isle of Eigg's autonomous grid. The hybrid grid on Eigg consists of wind, solar and hydro-power. It is frequently cited as a successful example of local renewable energy development that could be replicated around the world.

1.2 OBJECTIVES

Eigg has received much media attention in recent years. Articles have ranged from hailing it as an eco-socialist utopia, to berating the islanders and branding them 'hippies' (see Nicoll, 2003; Rodger, 2016). However, Chmiel and Bhattacharyya (2015, p. 578) claim, "Eigg has received little academic attention in terms of reference in peer-reviewed journal papers". Furthermore, Armstrong (2015, p. 8) highlights that although community renewable projects can help shape attitudes toward climate change mitigation, there is still little more than "anecdotal evidence" to show the social impacts of such projects. Therefore, this study of the Isle of Eigg explores the motivations, impacts, and expectations of implementing off-grid renewable energy production as an innovative and sustainable management method. It investigates how the community of users perceive the system, the causal mechanisms at work, and the significance of any emergent social phenomena.

Equally significant in this study is the choice of a visual methodology, in particular photography and photographs. The research explores how and why photography can be used

as an integral part of the research process and outcome in a social science study. The method's success can be measured by the extent that it helps to find the motivations, impacts, and expectations. The methods this study applies are an ideal way to explore perceptions and build knowledge from the subjective perspectives, meanings, and insight of participants. The methods and the approach will be outlined in more detail throughout the thesis.

1.3 EIGG'S RENEWABLE GRID – A WORLD FIRST

When Eigg's hybrid grid was switched on in February 2008, it provided the island with 24 hour-a-day electricity for the first time in its history. Previously, islanders mainly relied on diesel generators (Ashden Awards, 2010), although some homes had small limited renewable sources such as small hydro generators known as 'pico-hydro'; i.e. small systems that do not need dams and reservoirs (Piggot, 2003). Furthermore, the majority of household heating came from oil-burning stoves or coal (Ashden Awards, 2010); both of which are unsustainable in the global scheme of energy supply. Since the grid's implementation, carbon emissions on the island have fallen dramatically. And although residents were previously used to having limited electricity, they now use half of the average UK household.

Eigg's system is the world's first fully autonomous hybrid electric grid. It is neither connected to nor does it feed into the mainland grid, such as the wind turbines on the Isle of Gigha - another island community renewable energy project. On Eigg, the islanders deemed laying a cable to connect to the mainland grid too expensive and funding was hard to find for the estimated £2 million to £4.5 million required (Chmiel & Bhattacharyya, 2015; Piggot, 2003). Therefore, with the desire for a reliable and permanent electricity supply, and with diesel generators proving costly due to rising fuel prices and ongoing maintenance, the autonomous hybrid renewable grid system was what they opted for. The system cost £1.66 million. Much of this was met by grants from organisations such as the European Regional Development Fund and the Scottish Households Renewables Initiative (Andrews, 2014). Although the system was essentially installed for free due to the various grants and monetary awards, Eigg residents pay more than mainland electricity prices, although they believe this is a price worth paying (Andrews, 2014; Chmiel & Bhattacharyya, 2015).

Geophysicist Roger Andrews claims Eigg's grid is "almost unbelievably inefficient" and operates at less than 4% of its capacity (Andrews, 2014). However, islanders appear to have positive opinions of the system, such as, "whatever people say, there's no question the project's been a massive success" and, "It's the reliability aspect of it. Just having 24 hour power makes such a difference" (The Cadispa Trust, n.d.). These and other ambiguities are

prevalent in the literature surrounding autonomous renewable energy generation, and supply and demand of energy. Amongst other things, such ambiguities make Eigg a worthwhile study area.

1.4 ENERGY CONCEPTS

Preliminary literature reviews indicated concepts in relation to energy efficiency and energy transitions that are relevant to the study and worth considering throughout the research and analysis. One such concept is demand side management (DSM). DSM is where electricity supply is matched with demand by reducing the overall demand. Andrews (2014) may call the energy metering system used on Eigg aggressive, but Rae and Bradley (2012) highlight the merits of using this particular technique at a local level. However, the success of this concept relies on the participation of the community as stakeholders. Community engagement can increase awareness and acceptance of managing demand according to supply. Adhering to DSM is important with a fully autonomous renewable system such as Eigg's, with potential limitations such as lack of external support, storage, and back-up generation. Furthermore, transitioning to renewable energy could potentially increase consumers' own awareness of environmental sustainability, and the impacts of their actions. Changing practices in regards to household and community level energy consumption can also indirectly influence other energy-consuming processes, for example those associated with infrastructure, such as transport and waste disposal (Moloney, Horne, & Fien, 2010; Shove, 2004). Thus, this study will also address if, and to what extent, using a stand-alone off-grid renewables system influences processes such as environmental awareness.

Consumer attitudes and practices are complex areas of investigation. Moreover, the variables that relate to energy consumption are inherently subjective to the individual. According to Moloney et al. (2010, p. 7615), internally these include "what goes on inside a person's mind, such as awareness, knowledge, values, attitudes, behaviour, rational thought processes, emotional states and entrenched habits". In turn, these internal variables are influenced by external ones, such as physical and social environments. However, Moloney et al. (p. 7615) conclude that although these variables can influence consumers' behaviour, "there is no universally accepted theory of behaviour change". Thus, this research is less concerned with behavioural change and more with the meanings people attribute to their behaviour.

Eigg provides an unparalleled opportunity to explore associated variables at different levels and in different directions. On one hand, long term residents who have gone through

the transition from diesel generators or inconsistent and independent micro-renewables now have a reliable and permanent electricity supply, and according to some of the aforementioned literature have been able to increase their electricity consumption. Thus, although instantaneous consumption is limited, they can use appliances such as washing machines for the first time in the island's history and with little to no impact on the environment. This has contributed to higher living standards for the islanders (The Cadispa Trust, n.d.).

Yet, claims that Eigg is a successful model and example of DSM could be misguided. Andrews (2014) calls the DSM practices on Eigg "aggressive". Households and businesses have their instantaneous consumption limited to 5kW and 10kW respectively. If they exceed their limit their supply is switched off and requires reconnection manually (Armstrong, 2015). However, Rae and Bradley (2012, p. 6502) merely state that "residents are encouraged" to use less electricity. Other statements, including that Eigg has successfully managed supply and demand by reducing energy consumption, are contradicted by those that consumption has increased due to the previous lack of a reliable and consistent energy supply. According to Armstrong (2015), the cap on instantaneous consumption is far greater than what residents were used to. One Eigg resident said,

> It sounds silly to folk on the mainland but for folk here it's different. I had a micro hydro which meant I could have on my computer, telly and stereo but I couldn't have a washing machine, and for me now it's just amazing I got a washing machine for the first time when I became 60. (The Cadispa Trust, n.d.).

Nevertheless, regardless of the demand and how much electricity is consumed, in the latter case the environmental impacts are far less due to how the energy is produced.

Strengers (2012, p. 226) would argue that successful integration of DSM into the community and the subsequent behavioural change among users is down to traditional theoretical approaches that problematise consumers' "attitudes, behaviour and choices" being re-evaluated and integrated at a social level. Thus, successful DSM leads to positive behavioural change in regards to energy consumption. However, preliminary research about Eigg indicated instances of no change to electricity demand, increased demand due to improved supply, and deliberate reduction in demand from newcomers to the island (from what they were used to on the mainland) who want to use the island's 'green' characteristics to shape their own lifestyles. Therefore, although the island has improved its environmental credentials and reduced its carbon footprint, one could ask if Eigg *can* be used as a positive model of DSM if one scenario indicates increased energy consumption.

On the other hand, Eigg's 'green' image, coupled with the relaxed pace of life that island communities are known for, attracts incomers who are looking for an alternative and more sustainable way of life than what the mainland and large cities in particular have to offer. Furthermore, Andrews (2014) claims this image is maintained even when the grid fails to deliver enough power and the back-up diesel generators could be turned on, but are not. From this, it appears that keeping CO^2 emissions down on Eigg is as important as providing reliable 24 hour-a-day electricity and has become a large part of the island's appeal to both new residents and tourists alike.

1.5 RESEARCH METHODOLOGY

Photography is the primary research method for this thesis, and will be emphasised in an extensive methods section. My own professional photography career spans nearly twenty years. This, combined with a year of studying International Studies, a BSc in International Environment and Development Studies and now an MSc in International Environmental Studies, including an independent advanced research methods course - *Using photography as a methodology in research*, laid the foundation for me to use photography as my research method. I believe my skills as an illustrative photographer are transferable to using photography at all stages of the research process and outcome of a study such as this. By doing so, I hope to learn and explore how photography can be used as an integral part of qualitative social science research, along with refining the method for future studies. My proficiency in photography along with a sound theoretical knowledge of the subject will hopefully enhance the research by offering a fresh and viable alternative, or supplement traditional research methods with richer data.

2. A NARROW FOCUS ON ENERGY

Researchers have studied energy use and efficiency for several decades. Key studies and articles date back to the 1970s (see Milstein, 1977; Socolow, 1978; Sonderegger, 1978). However, one dominant model of DSM analysis emerged from early research (Wilhite, Shove, Lutzenhiser, & Kempton, 2000). The physical, technical, and economic model, which energy researcher and sociologist Loren Lutzenhiser termed PTEM (Lutzenhiser, 2014), overshadowed anthropological and sociological research that focussed on individual, family, community, and society as influences to energy use. PTEM omitted such factors, preferring to concentrate on economics and technology (Wilhite et al., 2000), "supported by rational choices and prudent returns" (Lutzenhiser, 2014, p. 146).

Subsequent approaches based on PTEM further ignored these elements. They eventually included people, but as consumers - rational choice makers, and asked how they can be encouraged to act more efficiently, but did not necessarily ask what shapes their choices (Sanne, 2002). Shove and Walker (2014) echo this sentiment – human perceptions being side-lined to concentrate on supplying more energy, more efficiently. Furthermore, Lutzenhiser (2014) claims the PTEM approach is too narrow, too conventional, and too limited to impact climate change mitigation policies in regards to energy use. Adversely, a social science perspective can investigate the relationship between humans and energy outside the scope of economics, technology, and engineering (Wilhite et al., 2000), and thus has a significant role in energy research. This can help fill the gaps left by the PTEM approach and fuel future energy research.

Energy models such as PTEM display nuances between individuals as rational choice makers and how their choices are shaped, such as through societal or institutional arrangements (Sanne, 2002). However, the individualistic, rationalist, and utilitarian approach of the past is still widely accepted in energy research (Camerer, Loewenstein, & Rabin, 2011; Lutzenhiser, 2014). Moreover, this narrow focus does not explore the non-economic influences on people's actions. Social science disciplines such as sociology and anthropology are more suited to investigate energy use in the broader sense that considers social and cultural factors and the interplay between them. Furthermore, in-depth qualitative studies can attribute meaning to practices and how individuals perceive certain phenomena. Although economics has a place in energy research, normative practices and other non-economic influences remain outside the remit of the majority of approaches to energy-use analysis.

Individual choice in regards to energy use is not necessarily performed individually. However, according to Sanne (2002), this is the general assumption. An individualistic and rationalist approach oversimplifies energy decisions. For example, Wilson and Dowlatabadi (2007), and Yates and Aronson (1983), claim how information is presented influences household energy efficiency measures. Furthermore, Stern (1986) and Sovacool (2014) acknowledge the merits of financial incentives, while Reckwitz (2002) recognises the interrelations between the many elements that construct peoples' routines and practices. Thus, Reckwitz moves beyond the individualistic approach of PTEM and highlights the need for broader understanding in regards to what determines energy behaviour – a role social sciences can fill. Meanwhile, Walker (2014) considers the gap between natural cycles and recursive energy intensive practices and how technology can address the lack of synchronisation between for example, solar generation and evening energy use. Although this highlights the challenges that renewable systems like the one on Eigg face, it does not necessarily question if and how recursive practices can be changed to align with the natural cycles, peaks, and troughs of renewable energy generation.

Sovacool (2014) analysed energy literature based on four years of published scholarly articles in three journals. Behaviour studies totalled 2.2% of research topics - the least popular. Behaviour studies is complex and perhaps this is why the topic remains understudied in energy research. Thus, there is a gap in data that can help understand practices and draw meaning from them in the context of energy use. This study does not focus on behaviour as such, but concentrates on gathering meanings attributed to practices and phenomena; meanings that lead to insight and knowledge. The methods are key to filling the gap and addressing the 'why'.

To my knowledge, there are no previous studies that combine my chosen methods with the topic of (renewable) energy research - exploring perceptions of small-scale renewable energy systems using photography. However, a study by Chisik (2011) entitled *An Image of Electricity: Towards an Understanding of How People Perceive Electricity* utilised visual methods in the form of asking research participants to draw responses to questions about electricity and energy use. Opting for a phenomenological approach, Chisik drew upon methods previously used in environmental planning (see Lynch, 1960) to uncover participants' perceptions of electricity and energy use.

Chisik conducted his study in Madeira, a Portuguese governed archipelago comprising of four islands off the north-west coast of Morocco. Although Madeira uses renewable energy, it still largely relies on oil and gas fired power stations (Miguel, Nogueira,

& Martins, 2017). Madeira has a significantly larger population than Eigg, with 267,785 inhabitants according to the 2011 census (citypopulation.de, 2017). However, although the methods are of more interest here, the results of Chisik's study are interesting; in general, participants' perceptions reflected *energy uses* such as lights and devices as opposed to *energy generation*, along with the distinct inability to estimate how much electricity a device consumes. Chisik used nine trained undergraduate students to interview 454 participants around the city of Funchal in interviews that lasted between 15 and 45 minutes (Chisik, 2011). Interviewers asked participants questions such as "why they drew a light bulb or light fixture" (p. 106), however, "No video or audio recordings were conducted during the interviews" (p. 105). Chisik's sample size is much larger than this study's, but with the use of only three drawings per respondent it lacks the in-depth quality of my narratives that stem from photo-elicitation. Nevertheless, Chisik's study highlights the merit of using visual methods to explore perceptions of energy and opens up the field to innovative types of energy research.

3. RESEARCH PHILOSOPHY: CAUSATION & PHENOMENOLOGY

3.1 CAUSATION

This research does not look for a single causal mechanism to, for example, the success of Eigg's renewable system. Furthermore, the focus is not on the technical success of the system, but the *perceived* success of the system as a whole, as highlighted earlier by Andrews (2014); how it is created, and what it leads to. Trying to reduce this to a single cause is futile. The concern is the meaning islanders attribute to certain phenomena – in effect causal properties that are either existent or emergent. This adds value and surpasses the process of simply gathering data. The approach is distinctly non-reductionist and rigorously qualitative. Anjum (2017) acknowledges that one's own background suppositions as a researcher is "a precondition for the possibility of knowledge". However, this might leave answers more open to interpretation than a definitive approach would. Nevertheless, although my approach progresses from the least subjective visual survey to the most subjective photo-elicitation, I do not consider any part of it to be wholly objective.

Due to the variety of (visual) techniques used, I consider this approach to be epistemologically pluralist. It provides rich data about a complex single case and tries to identify and appreciate the causal relationships; the dispositions, manifestations, and dynamics of the internal elements (Mumford & Anjum, 2013). A reductionist approach does not suit this study. Preliminary research identified the case as being unique and multi-faceted. Therefore, I believe the chosen approach is the most appropriate for the context and nature of the study. Furthermore, considering the knowledge gap identified in the energy literature, understanding the causal interactions digs deeper and addresses the 'why' that a reductionist approach does not (Anjum, 2017). This study's approach emphasises the uniqueness of the individual case and is as scientific as any other approach; the science is in the philosophy, in the methodology, and in the multi-dimensional nature of the case.

Considering causal transformation adds another dimension to the research and distinguishes it from previous studies. The physical cause and effect of the grid can easily be ascertained; in a simplified example – water turns a turbine and through technology the energy is converted into electricity. However, the metaphysical is of more interest to a study such as this that explores perceptions, contextual interpretations of phenomena, and how they manifest; for example, if community renewable projects can help shape attitudes toward climate change mitigation, as Armstrong (2015) suggests. Thus, this study draws upon the concepts of causal emergence, and perhaps more significantly, demergence (Anjum & Mumford, 2017); the former being when an emergent property, such as a successful

renewable system, is "sustained […] through the causal process of interaction of the parts" (p. 9), and the latter being where a "change or intervention at a higher level produces a change at a lower level" (p. 9). One should also acknowledge that this account of cause and effect is neither strictly hierarchical or linear and in the above example the parts and wholes could be reversed or be in tandem with each other. It is not always necessary to identify which is a part and which is a whole; what is important is the causal interactions between them. Furthermore, in order to value demergence, one must accept that phenomena *can* emerge and possess new powers that can influence their own causal parts.

Social science can provide a wealth of examples of emergence and demergence. Moreover, Anjum and Mumford (2017, p. 10) claim the concept can be applied to such social phenomena as "shared norms and values, cultural heritage, political structures and duties, [and] shared sense of identity" amongst others. Anjum and Mumford (p. 10) draw on Wittgenstein[1] to illustrate the theory in the context of language creation:

> […] a solitary individual could not create, sustain or use a language because doing so requires following a set of norms of meaning that can only be supported by an interacting plurality of users. Other language users can correct our usage if we misuse a word, and if they did not do so we would never know that we were using it correctly. We mutually enforce the norms of meaning of the language. Language can then be understood as a higher-level social phenomenon, having normative emergent powers that are more than the mere aggregation of the powers of the individuals who have jointly created the language. [Essentially,] no single individual had the power to use language. But if a group of individuals form a society, they each then change through their continuing interactions. Their society has the power to create and sustain a language, and doing so involves the transformation of those constituent individuals who then become language users.

The authors continue to explain how as a newly created normative power, the language then influences the behaviour of the individuals within the society that created it. Subsequently, the users can therefore think conceptually, read, reflect, and create political ideologies. The "linguistic powers thus have autonomy from the prior powers of individuals, illustrated in behaviours [they] are able to adopt only because [they] are parts of a language using community" (Anjum & Mumford, 2017, p. 11).

Anjum and Mumford (2017) emphasise strong emergence. Thus, newly emergent phenomena have powers different from those of their parts, and are not just a composition of their parts, in order to be metaphysically significant. Additionally, the emergent higher-level properties are ontologically dependent on the base-level properties and their mutual manifestations. However, they can also affect the base-level properties, "effectively making

[1] Ludwig Wittgenstein is an influential and important 20th century philosopher.

new *B*-level phenomena" (p. 14) that would not exist without the influence of the newly emerged phenomena. In this study of the motivations, impacts, and expectations for the community using Eigg's renewable system, this causal transformative framework is relevant. It highlights the non-linearity of causal systems and demonstrates that a simplistic reductionist approach to causality is unsuitable for such cases, which could have implications for successfully replicating the system elsewhere. It also illustrates "the causal complexity and context sensitivity of causal interactions" (Austin, 2016, p. 235). The framework befits both my methodology and my approach.

3.2. PHENOMENOLOGY

Phenomenology is both a philosophical and methodological approach to science. Phenomenology suits studies that centre around individuals' interpretations of reality and the world as they see it, such as perceptions, which are a key component of this research - "*the phenomenologist attempts to see things from that person's point of view*" (Bogdan & Taylor as cited in Bryman, 2012, p. 30; emphasis in original). A phenomenological approach emphasises human thinking instead of scientific empiricism as a foundation for knowledge (Crofton, 2012). While I do not claim that empirical data should be dismissed, this research is concerned with the meanings participants attribute to phenomena, and why. For example, why do residents claim the renewable system is a success when empirical data highlights gross inefficiencies (Andrews, 2014); how can the system influence users' opinions on environmental issues or those associated with climate change; and can the research provide more than "anecdotal evidence" (Armstrong, 2015, p. 8)? Furthermore, this research is wholly interpretive, both on the part of participants' interpretations of certain phenomena, my interpretations (as the researcher) of their interpretations, and even that of the audience, i.e. your interpretations, which may differ according to one's own perspective.

Social science researchers often adopt a phenomenological perspective, especially when research is of a distinctly qualitative nature. Disciplines such as psychology and sociology that are concerned with how people interpret the world through their own subjective interactions with it use phenomenology to gain an understanding of the how the world appears to them, and why (Web Center for Social Research Methods, 2006). Other fields, such as political ecology, use an inter-disciplinary approach to analyse socio-environmental discourses, for example in relation to natural resource management. However, political ecology strives to find a balance between relativist and realist ontologies. According to Robbins, Hintz, and Moore (2011), this avoids gathering an overwhelming amount of

unreliable information rooted in relativist theory. Furthermore, Proctor (as cited in Robbins et al., 2011) claims relativism alone risks leading to nihilism. Nevertheless, this study *is* concerned with the meanings people attribute to phenomena, along with how they perceive their own relationships with their environment. However, it shares an approach with political ecology that commonly gathers narratives and perspectives from below by using folk tales, metaphors, and most relevant to this research, images. It also acknowledges ongoing debates between those with relativist or realist ontologies as to which approaches are most appropriate in science. This includes the use of photography.

Visual ethnographers adopt a variety of approaches to research. John Collier Jr.[2] used photography to gather large volumes of visual data (Collier Jr. & Collier, 1986); Donna Schwartz and Jon Prosser place photography in a "traditional qualitative framework rather than adopt ideas emanating from postmodern-critique" (Prosser & Schwartz, 1998, p. 115); and Stephen Gold combines theory and method in a grounded theory approach (Pink, 2013); while esteemed visual ethnographer Sarah Pink[3] advocates a reflexive approach. While positivists are critical of using photography in research due to its subjectivity, Pink does not appear to recognise that a realist approach can be used alongside hers. Her auto-ethnographic approach is not concerned with large volume data analysis to reach conclusions. However, I recognise that using various visual approaches across the research spectrum can enhance data and bridge a gap between research philosophies in the appropriate context.

[2] John Collier Jr. is considered to be a pioneer in the field of visual anthropology and authored one of the earliest works on the subject in 1968, later revised with his son Malcolm, which is still widely referred to today; Visual Anthropology: Photography as a research method.

[3] Sarah Pink is a Professor of Design and Media Ethnography at RMIT University, Australia, Professor of Social Sciences and Honorary Professor at the Center for Public Culture and Ideas at Griffith University, Australia. She has published several books on contemporary visual research and is well-known for her work.

4. METHODOLOGY

4.1 INTRODUCING PHOTOGRAPHY AS A RESEARCH METHOD

> [P]hotography has evolved as follows. In early stages people marveled at capturing an image. Then pictures were used to report or illustrate, for archival purposes, and in family albums, documentaries, histories, and as evidence. Finally, photographs became works of art, a status that is still debated, with relatively recent acceptance by some museums and galleries. […][T]hey are also used as research data and as stimuli for gathering further data. (Heisley & Levy, 1991, p. 259).

Most scientific disciplines use photography. It is often used for illustrative purposes where it can convey something that is not easily explained using words alone, or as evidence to back-up findings (Newhall, 1982). It is also useful in mapping and surveying. Furthermore, visual media is embedded into social research, in particular anthropology. Bronisław Malanowski was a leading ethnographer of the early 20th century whose field work revolutionised British social anthropology (Young, 1998). Malanowski's visual studies, which included ethnographic research on Papua New Guinea's Trobriand Islands, exemplified photography as a valuable asset to ethnographic studies. Photographs can be both illustrative and informative, and can offer valuable insight into the subject matter. A photograph can aid the research process from the information it contains, depending on how it is interpreted. It provides a lasting visual record that can be revisited and scrutinised, connecting the viewer to the data (Szto, Furman, & Langer, 2005).

Anthropologist John Collier Jr. is credited with pioneering the visual survey. He used this in the early stages of research to provide a cultural inventory of various communities. Using photography in such a way can quickly gather "demographic, social and economic information" (Collier Jr. & Collier, 1986, p. 17) from, for example items portrayed in the photographs. However, contemporary visual researchers such as Sarah Pink and Deborah Barndt[4] advocate an interpretive approach to gathering information from a photograph, which is framed within the context of the researchers', participants', and viewers' subjectivity. By doing so, Pink (2013) claims that rather than just being treated like numerical data, photographs take on a different meaning with human and experiential elements. Thus, the knowledge produced can, for example indicate how people's environment and relationships shape their perception of reality. As with most qualitative methods, this involves spiralling between data collection and analysis, along with reflexivity. Although one of the most

[4] Deborah Barndt is an Environmental Studies professor at York University, Toronto, Canada who integrates photography into her research methodology. She is described as a 'photographer and activist'.

objective methods - a visual survey - will play an important part in this research (whilst still not wholly objective due to the technical and aesthetic control of the photographer), I acknowledge the subjective and contextual nature of how a photograph is produced, interpreted and presented.

Visual surveying is particularly useful, but so are the more sensory approaches promoted by visual ethnographers such as Pink. How a photograph is analysed plays a crucial role when integrating photography into the research process in order to gather data - essentially meanings - and in accordance with the research objective. Visual surveying along with the archive comparisons used in this research lead to a process known as elicitation.

Elicitation involves collaborating with research participants. Photographs are used to initiate discussions which are similar to unstructured interviews. However, the photographs can help evoke an emotional response from the participants, working with the researcher/interviewer to build a knowledge base. Elicitation comes after the initial shooting and contributes to the spiralling process between data collection and analysis that makes up qualitative research. The visual survey, along with the archive photos to compare with current ones (as employed in this research), are prerequisites to the elicitation/interview process and can lead to fruitful discussions with participants. However, not all visual methods are suitable for this particular study. For example, the first field visit showed that documentary photography of the islanders' day to day life would not be useful since most of their daily activities, such as employment, are not especially energy intensive.

4.2 METHOD 1: THE VISUAL SURVEY

A visual survey - using a camera to record initial observations - is a useful method for a researcher at the beginning of field work. Not only does this help a researcher become acquainted with their study area, both geographically and socially, but also helps them gather large amounts of visual information in a short time. Collier Jr. and Collier (1986) claimed this technique is especially useful in the initial stages of a research project. For mapping and surveying, the Colliers hailed the camera a "logical" tool to do so. Furthermore, what is recorded during this initial stage can be used throughout the research process when moving from observation to explanation. With that in mind, the visual researcher should undertake visual surveying to the best of his ability in order to fully utilise it.

A visual survey can incorporate several photographic techniques. Collier Jr. and Collier (1986, p. 30) claimed that "one of the most accepted uses of the camera" in this phase of research is long view and aerial photography. Such techniques can be especially useful

when mapping a research site. Aerial photography, however, might be out of the scope of many researchers, including myself during this research. However, as well as long range photography, i.e. photographing from a distance using a lens with a long focal length, a visual survey could also include medium range and even close-up photography. For example, with a medium range zoom lens a photographic researcher can walk-around a research site and easily record observations of anything from landscapes and buildings to small material possessions or useful details. Furthermore, if a researcher wishes to record observations with a camera, it helps to have sufficient technical knowledge of their tool along with adequate proficiency in such photographic aspects as composition and depth of field, especially if they wish to publish or display their photographs. Thus, the viewer will easily be able to identify the subject as the photographer observed it. Barndt is an accomplished photographer and researcher, but some of the photographs she published in her 2007 book, *Tangled routes: Women, work, and globalization on the tomato trail* lack compositional quality, and subsequently, some vital information. Therefore, Barndt uses accompanying text to explain what the viewer cannot see in the photographs. Despite her possible lack of foresight, she demonstrates that if a photograph contains any discernible information at all it is sure to aid the research process in one way or another.

Amongst other uses, a visual survey can save time in the initial stages of research; a field researcher would undoubtedly struggle to obtain a similar amount of data in the same time. Tasks such as mapping, orientation, and creating inventories can be time consuming and a visual survey can speed up the process. Collier Jr. and Collier (1986) claim photographs that are rich in detail can describe such things as boundaries, patterns, relationships between humans and the environment, and community structures. For example, on Eigg a visual researcher could easily obtain an overview of key locations and the immediate environment, enabling him to quickly become familiar with the area. And as the research progresses photographs taken during this initial stage may be returned to and examined further, raising questions about the subject matter that were not obvious until more insight had developed, in turn helping to further gather understanding. Human eyes cannot process all the visual information they see at once, but a photograph can be returned to and examined countless number of times throughout the research process if necessary.

Szto et al. (2005) claim that Eugène Atget (1857 – 1927) was the first photographer to make use of a visual survey. Atget was a flâneur and documentary photographer who photographed the streets of Paris for years and made detailed prints of his observations. Collier Jr. and Collier (1986) were proponents of the visual survey and highlighted its use for

such tasks as reconnaissance during WWII; detailed photographs of terrain are useful for pilots when flying over hard to negotiate areas, such as the Himalayas. Furthermore, John Collier's early work includes visual surveys of up to 2,000 negatives, such as his 1955 cultural inventory of the Indian community, Hacienda Vicos, in the Peruvian Andes - a thorough record of the community's "demographic, social and economic information" (p. 17).

However, for contemporary visual ethnographer Pink (2013), the Colliers should have included more perspectives of the householders, i.e. what meanings the householders attribute to the material elements of their homes. Pink suggests this is where their method falls short, at least as they used it. Nevertheless, although the Colliers may not have adopted the reflexive approach that Pink promotes, they cooperated with the communities in which they worked. This provided them with both empirical knowledge about, and respect within the communities where they researched (Collier Jr. & Collier, 1986).

The process of undertaking a visual survey is not only a good way of becoming acquainted with the geography of a study area, but also with the community at large. Barndt (2007) also acknowledges photography as an effective way of being acquainted with participants. While researching for her book, Barndt, "snapped furiously [as there might] never be another opportunity" (p. 13), in a Mexican tomato picking and packing plant to which she was granted access. This also gave her an opportunity to meet the female workers, some of whom she continued to work with during her research and after completion. The Colliers (1986) emphasise the importance of the fieldworker being accepted and trusted within the community where he is conducting research. Such respect from within the community, and in some cases from leading community members, can allow the fieldworker access to areas that could usually be out-of-bounds for non-community members. Nevertheless, although photography can be a good entry point, P. Hitchcock (as cited in Collier Jr. & Collier, 1986, p. 24) emphasises that good behaviour is also imperative:

> If a man's research plan involves the people he wishes to photograph he has to consider their feelings. He is not a tourist or press photographer whose aim is to get a picture and get out, broken camera or no.

Although surveying is perhaps the most objective form of visual research, the role, subjective knowledge, and understanding of the photographer can influence the results of a visual survey. The data a photograph contains is empirical, but the photographer's input is key to the outcome. This includes, but is not limited to: lens choice, aperture, shutter speed, composition, and framing, i.e. what to include from the surrounding environment. This is no

different to any research project; whether using photography or not, a researcher's project design will always influence the result. Thus, Pink (2013) argues that objectivity in this context cannot be achieved. Essentially, the photographer controls what information the photograph includes, even if some might not be ascertained until a later stage. However, although the photographer is primarily in control, limiting factors such as available light, space, and weather may dictate *how* the photographer takes control. According to T. Hall (2009) of the Centre for Active Learning, University of Gloucestershire, this active engagement with the research subject is more pronounced when doing visual research than when using more conventional means.

Most visual ethnographers acknowledge their own theoretical relationship with the research subject. This affects the relationship between observing and learning. Pink (2013) professes that in order to fully understand the knowledge that pictures hold within their subjective context, they need to be interpreted reflexively. This could be either by the researcher initially, or with participants as the research progresses, for example through elicitation. Pink (2013, p. 17) also draws upon, "theories of place and space, practice, movement and the senses" and how such factors shape one's perception of reality. She acknowledges this, and any changes in the environment as the research progresses, as key components that shape the nature of the research. Furthermore, Harper (2002) implies that such visual research is fundamentally phenomenological and that meanings are contextualised by individual experiences and interpretations.

The visual survey on the Isle of Eigg was carried out during the first and second week of field work in week 27, July 2016, and week 35, in September 2016. Travel around the island was mainly done by car, as Highland Council granted a vehicle permit for all field trips. Such permits are normally reserved for disabled drivers or commercial vehicles, but the nature of the research project qualified for the permit. However, Eigg only has one paved single-track road, from the pier to Cleadale, so during the first and second week of field work my car was often parked at the roadside, the pier, or left at my accommodation as it was unsuitable for the unpaved roads. Travel on the unpaved roads, and through woods, fields, across beaches, etc. was therefore done on foot. Accommodation during the first week of research was in a bed and breakfast house in Cleadale, the second week in a converted bothy (formally the old smiddy) overlooking the pier at Galmisdale, and the third week (when I conducted the elicitation interviews) in an apartment adjacent to the Glebe Hostel with views out to the Sgurr, the highest peak on the island.

The visual survey on Eigg incorporated long, medium and close-range photography. The pier is the entry point for the two ferries that bring people to the island. Therefore, this was a good starting point to use long-range photography to record what is visible in relation to energy use upon arrival; not only to record first impressions but also subjects that would be worth investigating further. Long range photographs were also useful to record information that was hard to see, for example, distant houses. The photographs could be viewed and zoomed into on the camera's screen or laptop afterwards. Drives across, and walks around the island, also provided opportunities to record images related to the research objective. Care was taken with landscape images to ensure they accurately represented the true aesthetics and feeling of Eigg. Close-ups were also useful to record detailed observations, such as signs on gates, or garden flora. For more information on the camera equipment used see the appendix.

The main objectives of 'energy' and 'environment' were kept in mind during the visual survey. Observations were recorded during walk-arounds, drives across the island, and from specific vantage points, such as the pier or Laig Beach (see appendix for satellite image of Eigg). Local activities, such as the craft market at the community hall which was taking place on the first day of arrival, offered the opportunity to visit specific locations, recording observations en route, and to become acquainted with the island and some of the residents. Furthermore, by not asking anyone where the renewable energy sites for the wind, solar and hydro were initially, exploring parts of the island proved more productive than aimlessly walking around when time was a limiting factor. For example, the four modest sized wind turbines are just visible below the left of the Sgurr from the ferry while approaching Eigg, but are not visible from the pier. Finding them on foot offered a purposeful hike where other observations could be recorded on the way. Images were copied from the camera to a portable hard drive at the end of each day to ensure they were backed up and stored in two locations.

4.3 METHOD 2: ARCHIVES

In reality, a photograph is always an archive, or historic document - a camera records the precise moment the shutter was pressed, thus depicting the subject as it was in the past. However, the more time that passes between documenting the subject and viewing the image, the more the information it contains becomes useful in a research context where an accurate or visual historical record is required or helpful. Thus, the visual document of a precise moment in time, the archive photograph, provides information that may have otherwise been lost or missed with more conventional, non-visual research methods.

Whether or not early documentary photographers had the foresight to provide an historical account of what they studied, and not just what they considered to be the present, their work has provided valuable information which was recorded in the past but can be used in the present. Early examples include photographs by Scottish painter David Hill (1802-1870) and engineer Robert Adamson (1821-1848), who documented the fishwives of Newhaven, a fishing community on the outskirts of Edinburgh, Scotland; Eugene Auguste Atget (1856-1927), who captured the essence of Paris with his detailed prints of the city; American sociologist Lewis Hine's (1874-1940) whose photographs of children working in factories throughout the United States led to improved child labour laws; and John Collier, Jr.'s (1913-1992) cultural inventories consisting of thousands of negatives (Collier Jr. & Collier, 1986; Newhall, 1982; Szto et al., 2005). Much of this historic work has now been digitised and is easy to access and view.

Historic photographs not only show how life once was, but also provide a good basis for comparison between past and present. This applies to any photograph that contains information that can be used to examine phenomena such as changes in cultural landscapes and lifestyles. In a research situation, archive photographs can also be used in photo-elicitation discussions with research participants to evoke memories and initiate discussions about the past, or compare it with the present. For example, when discussing the differences between past and present-day life on Eigg, certain archive photographs acted as a visual aid to jog the memory of islanders as to how life was before electricity.

Eigg has a comprehensive archive photograph collection consisting of over 3000 photographs. The collection is located at the community centre in the school. The majority of the collection was compiled by the Eigg History Society between 1995 and 2005. Photographs were lent to the society by families and individuals for copying and were mainly taken by islanders and visitors between the 1880s and 1990s. Many island families helped with the massive task of captioning the photographs, some of which are very descriptive and thus give them meaning.

4.4 METHOD 3: ELICITATION

One popular method when conducting visual research is to insert photographs into an interview situation. According to Harper (2002), John Collier, Jr. first mentioned what is the now the common term for this – photo-elicitation – in 1957. Harper describes elicitation as a "continuum" (p. 13), where photographs are used in research situations to inspire dialogue and discussion. At one end of Harper's continuum is the kind of elicitation the Colliers

employed, for example, helping with orientation and gaining acceptance within a community. At the other end is the approach taken by contemporary visual researchers such as Pink. The latter approach, which focusses on the meanings participants attribute to phenomena and their world around them, is more sensory than the Colliers' and is often used to evoke emotional responses from participants. Furthermore, although Harper claimed elicitation is "largely unrecognised" (p. 13), a decade later K. Nakamura (2013, p. 132) of Yale University described the more sensory approach to elicitation as an "emerging trend within visual anthropology".

The modern, sensory approach to elicitation as adopted by Pink and her contemporaries allegedly encourages reflexivity. There is a strong emphasis on participant subjectivity, along with potentially changing contexts as the research progresses. Although Harper (2002) emphasises the phenomenological nature of such an approach, Pink (2013) takes this a step further. She is a proponent of this method, but questions the truthfulness of knowledge produced in this manner, which involves both participants' interpretations and the researcher's interpretations of these interpretations.

Heisley and Levy (1991, p. 257) present elicitation as a useful tool in consumer behavioural studies where participants "drive" interviews. Furthermore, by adding audio recordings, Heisley and Levy state that participants do not only see, but hear their behaviour. They claim this method of "autodriving" enriches data in an unobtrusive manner. For example, when studying household meal preparation, perhaps an uneventful task, they state, "when the photographs ask the questions, nuances of the family's interactions surface". Moreover, the collaborative interpretations of the photographs and sounds encourage participants to attribute meanings to the phenomena being investigated.

Using photographs allow researchers to interact with participants differently from traditional interview techniques. Collier (as cited in Heisley & Levy, 1991, p. 260) often used elicitation to gain an insider's perspective of a research area:

> Photographs as probes in interviewing ask their own questions which often yield unpredictable answers. The imagery dredges the consciousness (and subconsciousness) of the informant, and in an exploratory fashion reveals significance triggered by the photographic subject matter. The content of the imagery which photographically is an outside view is used projectively with the informant to give us an inside view of our research territory.

Caldarola (as cited in Heisley & Levy, 1991, p. 260) echoes this sentiment:

> The interviewing in particular became an exceptional source of rapport and a method of eliciting detailed information about economic transactions, technical skills, and social variables. More importantly, the interviews encouraged the informants' active participation in the re- search

program by demystifying the photographic research process.

Meanwhile, Clark (2012) claims photo-elicitation empowers participants by acknowledging them as an integral part of the research process rather than just objects of the research. In addition to the exploratory nature of photo-elicitation, subjectivity and reflexivity are at the other end of Harper's continuum, where researchers such as Pink are placed.

Pink claims her expressive approach to analysis challenges traditional approaches by encouraging reflexivity and questions about the nature of reality from different perspectives (Pink, 2013). This produces subjective realities rather than "purport[ing] to record reality" (p. 20). For example, feelings and memories that are inherently subjective to the individual. Furthermore, they are hard to initiate by using discursive techniques alone, (Hall, 2009; Pink, 2013). In short, when elicitation is used in this manner, it can add the human value and sensory experience that scientific research often lacks.

4.5 ETHICS

A broad scope for consent is important when conducting visual research. The nature of the research may change, along with the way it is published, so every eventuality must be considered. Respect is paramount when conducting research and particularly so when taking photographs (Collier Jr. & Collier, 1986), for example, in indigenous or close-knit communities, if topics are of a controversial nature, or if children are involved. The increasing use of photography within academic research has led to the ethical procedures of visual researchers being scrutinised more than ever (Pink, 2013). Traditional ethical guidelines are not always entirely appropriate for visual research. Nevertheless, all approaches to research share key ethical principles.

Diener and Crandal's (1978, as cited in Bryman, 2012) four areas of ethics, which comprise of harm to participants, informed consent, privacy, and trust, are just as applicable to visual research methods as they are to conventional research methods. However, Clark (2012) suggests that ethical guidelines, such as those of the British Research Council, are inappropriate for visual approaches to research. He further suggests that a 'situated approach' is more applicable. Thus, ethical considerations of individual cases are evaluated accordingly. This approach involves making decisions collaboratively with participants as the research progresses and the context possibly changes. According to Clark, ethics boards remain unfamiliar with this approach.

Clark (2012) also claims that a situated approach to ethics can empower participants. This recognises their involvement and is in contrast to the dominant and traditional "paternal

relationship" (p. 29) that implies participants need protection. This depends on the nature of the research, but as Harper (as cited in Clark, 2012, p. 20) states, there is little chance of harm to subjects from "showing normal people doing normal things". Nevertheless, respect, mindfulness and 'doing no harm' is as essential when using photography as it is with all other research.[5]

[5] See appendix for the informed consent form to this research project.

5. EIGG

***dùthchas:*heritage**

Figure 1: Map of Scotland (adapted from maps.google.com). Map data ©2018 Google

Eigg is part the Small Isles (which also include Canna, Rum and Muck) of the Inner Hebrides archipelago and is situated approximately 12 miles (20 km) from the mainland off the west coast of Scotland. It lies at 56.8937° N and 6.1533° W. Eigg is 5.6 miles (9km) from north to south and 3.1 miles (5km) from east to west with an area of 11.77 square miles (30.49 km²). At the time of the 2011 census, Eigg had a population of 83, with 38 households (National Records of Scotland, 2013). Eigg is reached by ferry from Mallaig which takes approximately 1 hour and 15 minutes. The ferry does not run daily and times and days of service change with the seasons and are subject to last-minute cancellations in the event of adverse weather. In addition, Mallaig is approximately a 4-hour car drive from my location on the west of Edinburgh. Although I have explored and photographed the surrounding area and other islands several times, I had never visited Eigg before the research took place.

Eigg has a varied and interesting history from stone age settlements, clan warfare,

famine, and the Clearances[6], to incompetent landlords, community empowerment, and the renewable energy system. A comprehensive account of Eigg's history dating back to the stone age can be found in *Eigg: The Story of an Island* (2014) by Eigg resident and historian, Camille Dressler. The following section outlines key periods and developments in the island's history over the last one hundred years.

In the 1920s, Eigg entered an age of prosperity after many years of instability and population decline. The new landlord, Lord Walter Runciman was a wealthy cabinet minister and his wife was one of Britain's first female MPs (Dressler, 2014). The couple looked upon Eigg as a retreat from their mainland life. They were also keen to develop the island as a self-sustainable entity. They reinvigorated farming on the island with poultry, cattle, trout, and potato production. Lord Runciman also built the Lodge where the previously landlord's short-lived property once stood but was destroyed in a fire. The Runciman Lodge had coal-fired central heating along with electricity generated from the nearby dam.

The ensuing years under the Runciman ownership included WWII. During this time, Eigg's self-subsistence kept the islanders going and they were not affected to the same extent as mainlanders with food rationings and shortages (Dressler, 2014). However, for those returning after the war, there were very few opportunities for paid employment on the island, and the few jobs that existed were taken fast. Crofting[7] was more for subsistence and did not provide a full-time income, although it was full-time work. In 1956, the Department of Agriculture introduced the "Crofting Counties Agricultural Grants" (p. 148) to improve crofting livelihoods and living conditions. Subsequently, agricultural production increased and croft houses had water pumps, septic tanks, inside toilets, and gas piping installed. Tourism also started to provide crofters with an alternative or supplementary source of income. However, as houses were put up for let as holiday homes, this decreased the number of active crofts on the island. This continued throughout the 1960s. In 1966 Lord Runciman put the island up for sale.

Despite a bid by two Scots with connections to the island, it was sold to a higher bidder – an aging but wealthy Welsh farmer, and so began another period of uncertainty on Eigg. Eigg was subsequently resold, and resold again, this time in 1975 to businessman and ex-Olympic bobsleigher, Keith Schellenberg (Dressler, 2014). Schellenberg had big plans for

[6] The forced eviction of Highlanders that took place throughout the 18th and 19th centuries to make way for sheep farming.

[7] Small-scale farming.

Eigg and islanders were optimistic that he could regenerate the island after a decade of decline under the previous two largely absentee landlords. His aim was to return to self-sufficiency, further develop Eigg as an attractive tourist destination, and attract new residents, since the population was at a record low of thirty-nine adults and two school children. In the first few years of Schellenberg's stewardship, Eigg's population almost doubled. Among the new residents were Maggie Fyffe, who is a participant in this study, and her husband Wes.

Although crofting had declined, the marked increase in population breathed new life into the community. Eigg started to have a proper community again and social events were commonplace (Dressler, 2014). Many of the new residents who came to work for Schellenberg on the estate decided to stay once their employment ended for whatever reason. As well as many of Schellenberg's grand plans for Eigg failing, such as forestry, he began to alienate islanders. He refused to offer tenants security on their leases, or spend money maintaining his properties unless they were to be used as holiday homes. Some former employees even moved into caravans after they lost their houses that were tied to the estate. A survey by a local branch of the housing charity Shelter identified Eigg as an area in need of vast improvement to the majority of homes. However, the 90% housing improvement grant (p. 167) that was awarded in light of the island's poor economy did not cover estate houses unless tenants had a secure lease. Thus, the rift between Schellenberg and the islanders continued to escalate. Furthermore, through a complicated set of affairs involving legal battles with his ex-wife and through selling his half share of the island to a company of which he was the managing director, Schellenberg, who although still was the proprietor on paper, was banned from running the estate in 1989. Subsequently, the Isle of Eigg Trust was founded.

Expecting the island to be put up for sale once again, the Trust launched an appeal for £3 million in July 1991 (Dressler, 2014, p. 171) The trust's aim was to remove Eigg from private ownership and into the hands of the community. However, when the island went up for sale in May 1992, the trust had not raised enough capital and Schellenberg was the highest bidder – essentially buying the island from himself. His relationship with the islanders and his tenants, which was already fraught to say the least, continued to deteriorate and public battles in the media ensued. On the morning of Monday 27 March 1995, islanders discovered that Schellenberg had sold Eigg to Marlin Eckhart, a German artist who went under the name of Maruma (p. 181).

Maruma took over Eigg full of promises. Firstly, he was going to pay for the removal of all the scrap cars on the island (Dressler, 2014). He also planned to create jobs, increase

tourism, improve infrastructure, build leisure facilities, and install an integrated renewable energy system comprising of wind and solar power. However, nothing materialised, apart from a pile of scrap cars by the pier which became known as “the Maruma Centre” (p. 185). Furthermore, Maruma ignored the islanders’ proposal for a reforestation scheme to replenish the woodland lost to sheep farming. The following January, islanders issued a statement of no confidence to the press; Maruma’s days as landlord were numbered, the island was put up for sale once again, and that August, the Trust launched their bid to buy. After raising £1.5 million with donations from around the world, the Trust’s offer was accepted on Friday 4 April 1997 and it took over ownership on 12 June 1997. The community now owned the island, which in turn set a precedence for community buy-outs and an historic reform of land tenure in Scotland.

Years of environmental neglect and heavy grazing had taken its toll on Eigg. As the new owner, the community vowed to do what it could to rectify this. A key objective of the buy-out campaign was forestry management and regeneration of native woodland (Dressler, 2014). Richer woodlands would attract species to return and sustainable forestry management could supply islanders with wood fuel. This was one of the Trust’s first acts of environmental improvements post ownership. However, one resident recognised that climate change had also taken its toll with an abundance of bracken now growing that needed cleared in order for young trees to flourish. Crofting has also been re-encouraged, but in a diverse sustainable manner, and aided by European-funded grants. Dressler states that every year since the buy-out has seen marked “progress in the island’s infrastructure” (p. 205). Furthermore, she claims the significant increase in environmental awareness is in part responsible for the implementation of the renewable grid in 2008. After the buy-out, Eigg has come a long way in a short time; the community now holds the key to the island’s future. Thus, Dressler concludes the 2008 postscript to *Eigg: The Story of an Island* (2014, p. 205) with, “The island and its people have shown indeed how communities that are incentivised, empowered and supported can become a powerful vehicle for social and environmental change.”

6. RESULTS

> ***The mind is not so full of images, the soul is receptive therefore, and quiet, the faculty of perceiving truth is not yet fully atrophied.*** (George Scott-Moncrieff)

6.1 METHOD 1: THE VISUAL SURVEY

6.1.1 CODING

Contact sheets containing small images from each day of photography during the visual survey were created using Adobe Photoshop CC for coding. The contact sheets were examined and individual images placed within a category befitting the content of the photograph. Initially, photographs were placed within twelve categories which was reduced to ten after a second round of coding. Some subjects were photographed more than others. Therefore, some categories, which were still largely undefined at the time of the survey, contain more images than others. Notwithstanding the idea that some researchers may perceive anomalies with this coding method, it offered a good basis of emergent themes to follow during the research, along with key concepts that can appear within and between categories that warrant further exploration and shaped the nature of the research. A second round of coding defined the ten categories of the visual survey as follows (Tables 1-10):

- Connections to the land.
- Island homes – visible signs of renewable energy or not.
- Nature.
- Tourism.
- The renewable energy grid.
- Individual & household fuel use (non-renewable).
- Waste management.
- Community.
- Politics.
- Property construction & renovation.

6.1.2 RESULTS

Table 1. Connections to the land.

Subject	**Images (see appendix – images in bold appear more than once, within or between categories)**
Herb garden	**158**, 159
Children's gardening tools	170, 171, 172
School garden	169, **173**, 174, **175**, 176
Polytunnels	**173**, **010**, 029, 067, **071**, **079**, **111**
Sheep farming	**005**, 060, 091
Willow croft	063, 064, 065, 066, 094
Fruit and vegetables	**138, 175**, **038**, **068**, **069**, **070**, **071**, **082**, **095**
Crafts	**078**, **160**, **167**
Other plants/flowers (non-edible)	**156**, 161, **018**, **028**, **068**, **069**, **070**, **071**, **082**, **095**, 096, **097**
Eco-centre	**133**, **134**, **135**, **136**, **137**, **138, 139, 156**
Other	**160**, **078**, **168**

Table 2. Island homes – visible signs of renewable energy or not.

Subject	**Images (see appendix – images in bold appear more than once, within or between categories)**
Solar panels	**097**, **156**, 157, 055
Evacuated tubes	**152**, **153**, **004**, **006**, **007**, 008, 009, **037**, **100**, **104**, **105**, **106**, **107**, **111**, 112, **125**
Nothing visible	**005**, **006**, **010**, **018**, **020**, **019**, **028**, **035, 057**, **125**

Table 3. Nature

Subject	**Images (see appendix – images in bold appear more than once, within or between categories)**
Island interior	**153**, **154**, **155**, **162**, **090**, **093**, 109, **126**
Galmisdale Bay	**127**, 163, 191, 001, 002, **003**, **038**, **039**, 040, 041, 042, 043
View to mainland/other islands	**151**, **162**, 193, **003**, **044**, **045**, **046, 087**, **105**, **107**, **108**, **126,** 011, 012, 013, **061**
Laig Bay	**074**, 115, 116, 117
The Sgurr	**007**, **038, 041, 109, 127, 185, 186, 085, 086**
Other (Kildonan)	**110**

Table 4. Tourism

Subject	**Images (see appendix – images in bold appear more than once within or through categories)**
Tourist information/activities	**128**, 129, **133**, **134**, **135**, **136**, **137**, **138**, **139**, **158**, **167**, 290
History	130, 177, 016, **052**, **061**, 062
Community info	**164**, **165**, **166**, **168**
Tourist accommodation	**131**, 190, **005**, **004**, **019**, 030, 032, 033, **035**, **036**, **037**
Other	**189**, **007**

Table 5. The renewable grid

Subject	**Images (see appendix – images in bold appear more than once within or through categories)**
Wind	**127**, 184, **185**, **186**, 187, 084, **085**, **086**, **087**, 088, 089
Solar	**044**, **045**, **046**, 047, 048, 049, 050, 051, 099
Hydro	140, 141, 143, 178, 179, 180, 181, 182, 183, 058, 059, 118
Other	132, **128,** 014, 015

Table 6. Individual & household fuel use (non-renewable).

Subject	**Images (see appendix – images in bold appear more than once within or through categories)**
Gas	188, **005**, 034, **035**, **036**, 053, **057**, **090**, **120**, **125**, **110**, 119
Diesel	192, **021**, **022**, **023**, **024**, **092**, **114**
Coal	**123**
Wood	**020**, 026, 054, **101**
Electric	017, **018**
Kerosene	**005**, **114**

Table 7. Waste management

Subject	**Images (see appendix – images in bold appear more than once within or through categories)**
Household waste disposal	**005**, 025, 056, **113**, **120**, **123**, **121**, **124**, **125**
Diesel drums	**021**, **022**, **023**, **024**, **092**, **113**, **114, 125**
Vehicles	031, **124**
Other	**010**, **076**, 077

Table 8. Community

Subject	**Images (see appendix – images in bold appear more than once within or through categories)**
Waiting room/tea room	**164**, **165**, **166**, **167**, **168**, **007**, **039**
People	**189**

Table 9. Politics

Subject	**Images (see appendix – images in bold appear more than once within or through categories)**
Scotland	**131**, 027, **052**, **120**, **121**, **123**, 122
Europe	**131**

Table 10. Property construction & renovation

Subject	Images (see appendix – images in bold appear more than once within or through categories)
Karl (new)	142, 144, 145, 146, 147, 148, 149, 150, **151**, **152**, **153**, **154**, **155**, **093**
Catherine & Pascal (new)	072, 073, **074**, 075, **076**, **079**, 080, 081, **082**, 083
The Manse (renovation)	098, **101**, 102, 103, **104**, **105**, **106**, **107**, **108**

After duplicated images were removed, further analysis revealed the most visible subjects on the island.

Table 11. Most visible subjects within each category

Category	Most visible subject	No. of images related to subject
Connections to the land	Fruit and vegetables Other plants/flowers (non-edible)	10 10
Island homes – visible signs of renewable energy or not	Evacuated tubes	10
Nature	View to mainland/other islands	12
Tourism	Tourist information/activities	10
The renewable grid	Wind	6
Individual & household fuel use (non-renewable)	Gas	8
Waste management	Diesel drums	8
Community	Tearoom	7
Politics	Scotland	5
Property construction & renovation	Katrine & Karl The Manse	6 6

Connections to the land:

Figure 2 (image 071). Catherine & Pascal's garden, Cleadale.

Many residents grow their own fruit and vegetables on Eigg. Vegetable plots and polytunnels are visible around the island. Fruit trees grow at the entrance to the Earth Connections Eco-centre, also known as 'The Lodge', and it has an orchard and tropical garden in its grounds. Cultivated plants and flowers are equally as visible, especially in Catherine and Pascal's garden in Cleadale (Figure 2), where they are interspersed with an extensive vegetable patch. The school also has a geodome and vegetable garden with colourful gardening tools for the children to use.

Island homes – visible signs of renewable energy or not: Many residences have evacuated tubes on their roofs. Evacuated tubes can heat household water by using sunlight, thus reducing electricity demand. The Earth Connections Eco-centre and the school have PV panels. The former's is on the roof at the south side of the building and able to be angled towards the sun. The school has several PV panels on its angled, south facing roof. However, many residences have no visible signs of renewable energy use. Furthermore, this does not differentiate much between traditional and modern buildings.

Nature:

Figure 3 (image 011). View to Rum from Cleadale.

Eigg offers rewarding scenery. Views over the sea to the mainland, and Skye and Rum (Figure 3) with their respective Cuillin mountain ranges, are plentiful. The Sgurr, Eigg's highest point, looms into view from around and beyond the island. The interior has lush vegetation and bracken is abundant. Access roads to the remoter parts of the island's interior are unpaved and rough. Many residences are positioned to offer fantastic views, such as the Manse, under renovation at the time of research by Steve and Do. The Manse overlooks Galmisdale Bay towards the mainland.

Tourism: Eigg caters well for tourists considering its modest size and population. Tourist information and facilities such as bike hire are available by the pier and tearoom/waiting room. Signposts display information about walks and the geological history of the island. Information on activities such as willow weaving workshops, along with what is happening in the community, is found in the waiting room in between the small craft shop and the tearoom. Information about the island's efforts to adopt renewable energy, and sustainability in general, is found at the pier and at the Earth Connections Eco-centre. Tourist accommodation is visible around the island and ranges from basic campsites with wooden 'pods' to guest houses. However, there is a distinct lack of signage showing tourists where to go once they

disembark either of the ferries. Nevertheless, Eigg seems to welcome tourists and upon leaving, the local piper plays as the ferry draws away from the pier.

The renewable grid:

Figure 4 (image 186). Wind turbines.

The renewable grid is not especially noticeable when travelling around the island by car or by foot. The four modest sized wind turbines (Figure 4) are visible from the ferry on the way to the island but disappear from view on approach. They are out of sight of the island's main settlements. The turbines are located on an exposed southerly part of the island and come into sight on the road between Galmisdale and Grulin. Wind is plentiful on Eigg, so much so that on the first week of field work, the Saltire flag by the pier barely stayed attached to its pole, and ferries to the island are frequently cancelled. Furthermore, the wind increased dramatically on the approach to where the turbines are located during my hike up to them. The solar panels are located approximately half way between Galmisdale and the school. They are close to the road and visible from a few nearby spots, but their elevated position places them largely out of sight. Similarly, the three small hydro plants are hard to find unless their location is known. Even then they are still relatively inconspicuous. Several mini hydro turbines are dotted around the island that serve individual homes, but many are hidden by trees or so small that they are not visually intrusive. Some pipes/cables from the hydro plants

can be seen in places and their turbines are audible close-up, but by and large this is unnoticeable.

Individual & household fuel use (non-renewable): Fossil fuels ire visible all over the island. Many properties have gas bottles sitting outside. Gas is presumably used as cooking fuel. Diesel drums are also visible around the island. There are a few electric vehicles on Eigg, however most of the vehicles I saw had diesel engines. Eigg does not have a petrol station - the nearest is in Mallaig. Other visible fuels include kerosene. Large kerosene containers can be seen outside properties. There are also signs of coal. Wood is visible, but perhaps not as prominent as one would imagine.

Waste management: The remoteness and interior geography of Eigg means waste management can be logistically challenging. This is evident around the island. Whether the aforementioned diesel drums are in use or not, some of them look old and many can be seen lying rusting outside properties. Furthermore, household waste disposal does not seem as straight forward as on the mainland. At the time of research, Eigg was going through a transition to a new household waste collection and recycling system to bring it in line with the mainland. Thus, the blue and green ‘wheelie’ bins that every household should have were left at several points around the island (on the paved road) to be collected by the residents. Many of them had still not been collected between visits and instead left at the collection points.

Community:

Figure 5 (image 290). The tearoom, shop and bike rental.

The tearoom (Figure 5) by the pier is the hub of island activity. On ferry days, tourists and islanders alike chat and enjoy a coffee, locally brewed beer, or a 'wee dram'. The tearoom caters for locals and tourists, and makes fresh food. Often this is from what the local fishing boat drops off. Octopus and squat lobsters were the specials during the first week of field work. Adjacent to the tearoom is the waiting room (for ferry passengers), a craft shop, and the only grocery shop on the island. Bike and canoe rental is next door. When deliveries to the store and tearoom come off the ferry, there are plenty of willing bodies to help carry them in. Furthermore, islanders are welcoming and take time to talk not only with each other, but also with visitors.

Politics: It is clear that many residents support Scottish independence. Apart from the Saltire which was flying by the pier, which is not necessarily a sign of support for independence, but also of patriotism, several properties and vehicles displayed 'yes'[8] signs or stickers. The Gaelic signage on the school reflects the Scottish government's policy of displaying all signs in English *and* Gaelic in traditionally Gaelic speaking communities. This is despite English

[8] The campaign slogan for those wishing Scotland to leave the United Kingdom.

replacing Gaelic as the island's main language many years ago (Dressler, 2014). Furthermore, many current residents are not originally from Eigg, or even Scotland – many English accents were heard around the island. Nevertheless, support for independence is evident in the visual survey. Signage also displays the EU's role in the electrification project. How the EU helped fund Scottish infrastructure was also evident on the journey to Eigg, in particular the upgrading of the road between Fort William and Mallaig which is known as 'the road to the isles'.

Property construction & renovation:

Figure 6 (image 153). Karl & Katrine's new house.

Three properties that were either being built or renovated were photographed during the visual survey. Katrine and Karl were building a small property (Figure 6) inland which overlooks Galmisdale towards the mainland. The property is set at the edge of a wooded area on the track that leads to Grulin and the wind turbines. I met Karl during the first week of field work. He was walking his dog while I was hiking behind the Lodge. Karl allowed me to photograph his new-build although it was not finished. I believed his motivations behind the choice of materials and style could provide me with insight in line with the research objective. Therefore, I photographed the exterior and interior to discuss with Karl at a later date, which he agreed to.

Similarly, I called unannounced to Catherine and Pascal's new-build adjacent to their willow croft at the opposite end of the island. I was advised to visit them by another islander I met at the tearoom. Catherine and Pascal's house is the last property on the way from Cleadale to Singing Sands. Similarities between the two new properties include having a view, and the need for good insulation. Differences include the size, style, and that Karl and Katrine's house is connected to the grid while Catherine and Pascal's is not (although this is not evident from the photographs). Furthermore, although evacuated tubes are visible on Karl and Katrine's new build, I could not see any on Catherine and Pascal's. Catherine and Pascal's house is also set on concrete blocks, while Karl and Katrine's is not. Catherine and Pascal also agreed to a discussion at a later date when I returned to the island.

Steve and Do who own the old Manse also agreed to discuss the renovations and their affiliation with Eigg. The Manse is a large building that lay derelict for many years until the couple bought it. The Manse also has a lovely view in an elevated position above Kildonan. Evacuated tubes were lying in the garden waiting to be fitted. Renovating and retro fitting a house on Eigg appears to be a very different project from building from scratch. I hoped further discussions with the respective owners of the three properties would provide insight into their individual motivations behind the projects and how they perceive energy use in their new island homes.

Along with highlighting (what I perceived as) prominent aspects of life on Eigg, the visual survey was a great way of getting to know the island and many islanders. It led to meetings – some by chance and some by recommendation – and was key to selecting participants for the final elicitation stage. However, the limitations of undertaking a visual survey on Eigg included: weather, lack of geographical knowledge (although at times this was beneficial in order to record in a more objective manner), and time. Although the visual survey was done in the hope that it would ultimately save time in relation to how long traditional means would take to gather information, weather and geography hampered efforts to cover more of the island than I did in the time permitted. Nevertheless, bad weather also gave me some time to explore the extensive archive collection.

6.2 METHOD 2: ARCHIVES

6.2.1 CODING

Many of Eigg's archive photographs fit within the categories defined by the visual survey. Thus, they offer a good basis for comparison of past and present life on the island in respect to this study. During week 1, I initially recorded 173 archive photographs for coding

and further analysis. The following selection (Tables 12 – 19) are examples of archive photographs that fit into the respective categories, with the absence of politics and the renewable grid, since no photographs of these topics were evident. Eigg History Society granted permission to reproduce the archive photographs and accompanying captions.

6.2.2 RESULTS

Table 12. Connections to the land.

Archive images (see appendix – images in bold appear in more than one category)	**194**, 197, **201**, **204**, **206**, 207, **225**, 226, **232**

Figure 7 (image 225). "Ishbel MacQuarrie with a horse carrying peat, 1914."

The archive collection highlights islanders' connections to the land. Photographs date back to the early 1900s, for example, Figure 7 which depicts Ishbel MacQuarrie and horses laden with peat. Peat was cut then stacked, and brought down when dry. Peat collecting was mainly the task of the women on the island. The caption that accompanies Figure 7 states that Ishbel is wearing a skirt made from locally woven cloth. Eigg was predominantly a farming/crofting community and many of the archives show islanders 'living off the land'. These include harvesting oats, cutting hay, working with animals - for example sheep shearing, and forestry. Visiting relatives also helped with crofting tasks.

Table 13. Island homes – visible signs of renewable energy or not.

Archive images (see appendix – images in bold appear in more than one category)	**221,** 235

Figure 8 (image 221). The Runciman Lodge.

Although the archive collection does not include photographs of individual houses' renewable energy sources, the two photographs of The Lodge dating from the 1920s and 1960s respectively, fit the category. Eigg was bought by a wealthy shipping magnet, Lord Runciman, in the 1920s. Runciman built the Mediterranean inspired property (Figure 8) and its tropical-style gardens as his island residence. According to Dressler Dressler (2014, p. 121), Runciman was "green and ecologically" minded and he had a hydro-electric system installed to service The Lodge. Although some residences eventually followed suit with individual micro-hydro plants, this appears to be the first of its kind on the island.

Table 14. Nature.

Archive images (see appendix)	199, 200, 202, 205, 208, 209, 212, 213, 214, 215, 216, 217, 218, 219, 220, 222, 223, 224, 227, 228, 229, 230, 231, 233, 234, 236

Figure 9 (image 209). Archive postcard.

It is no surprise that many of the archives fit this category since the nature on Eigg is very special. It appears that almost every corner of the island has been photographed and some photographs (images 228, 229 & 234 – see appendix) date back to the late 1800s – not long after the invention of photography; although it was not necessarily as accessible a medium for everyone then as it is now, let alone those living on a remote island who often got by with only a subsistence way of living. Thus, as soon as the beauty of the island could be recorded on film, it was. Many of the photographs in this category are postcards, such as Figure 9, which dates back to the early 1900s. Furthermore, the prominent Sgurr and the cliffs feature heavily in the photographs. These features exemplify Eigg's unique landscape and geology and have attracted photographers for over 100 years. Other scenes, which still attract photographers today, are those looking over the bays towards Rum, Skye or the mainland.

Table 15. Tourism.

Archive images (see appendix – images in bold appear in more than one category)	**203**, 210, **225**, 241, 242, 243, 244, 245, 246

Figure 10 (image 203). De Havilland Gypsy Moth on Laig Beach.

Many of the archive images were placed into the ‘tourism’ category, as indeed many of them were taken by visitors, or were originally postcards, such as some of those in table 14. However, two collections are particularly noteworthy. Figure 10 dates back to around 1938 or 1939 when a Mr and Mrs Fairweather landed the plane on a visit to Eigg. The Fairweathers were the daughter and son-in-law of the then landlord, Lord Runciman. This must have been quite an event for the islanders, and the caption that accompanies the photograph states that from the dress of the islanders in the photograph, this must have been on a Sunday.

The other noteworthy collection is a series of photographs taken by Leonard Wilde from Edinburgh on a family holiday to Eigg in 1936, when he stayed at Bayview croft along with his wife Jan and his young daughter Ann. The photographs and accompanying letters found in the archive collection provide a fascinating insight into what it was like to experience Eigg as a tourist in the first half of the twentieth century. The photographs include travels across the island, the guest house at Bayview, and other sights as seen by the Wilde family on their summer holiday. The two letters that accompany the photographs, addressed to Leonard’s parents, are printed in full in the appendix.

Table 16. Individual & household fuel use (non-renewable).

Archive images (see appendix – images in bold appear in more than one category)	**194,** 195, **198,** 196, 211, **225**, **232**, 240

Figure 11 (image 195). Dugald MacKinnon's lorry.

Horse power was still common on Eigg for agricultural work long after diesel powered machinery would have replaced horses for many tasks on much of the mainland. Furthermore, many of the archive photographs depict horses, which were presumably also used for transport around the island. There are a few, but not many cars featured in the archive photos. One could assume that most of the cars that *were* on the island used diesel, such as Dugald MacKinnon's ex-army lorry which became the school bus (Figure 11). Diesel would have been used in farm machinery and vehicles. It would have been shipped over and filled into drums such as the one in image 198 (see appendix).

Peat was traditionally a common source of fuel for croft houses. Islanders would cut and stack the peat to dry before the women would cart it back on horses, as shown in Figure

7. Later, 'puffer' boats[9] delivered coal, as in image 211 (see appendix) and divided it into piles near the pier for the crofters. The Lodge's supply was delivered separately. There are several photographs of kitchens in the archives that hint at the commonly used cooking fuels throughout the years. For example, image 240 (see appendix) shows Mary Kirk in her kitchen at Laig Farm with a modern gas cooker standing next to a traditional stove, although the exact fuel source for this cannot be determined from the photograph.

Table 17. Waste management.

Archive images (see appendix – images in bold appear in more than one category)	**198**

The aforementioned diesel drums which were visible in the visual survey can also be seen in the archive photographs.

Table 18. Community

Archive images (see appendix – images in bold appear in more than one category)	**201, 203, 204, 206,** 237, 238, 239

Several photographs in the archive collection depict the community coming together for occasions and events throughout the past century. Image 201, image 204, image 206, and image 237 (see appendix), all show male islanders, including some of the younger island lads, involved in tasks such as sheep shearing, cattle herding, forestry, and harvesting. Others show gatherings, whether for cutting hair, socialising, or both, in the kitchen of Laig Farm, along with the aforementioned Sunday landing of the De Havilland Gypsy Moth on Laig Beach by The Fairweathers.

Table 19. Property construction & renovation

Archive images (see appendix – images in bold appear in more than one category)	**221,** 247, 248, 249

Apart from image 221, which shows the newly built Lodge (Figure 8 - also in table 13), the only other archive photographs that show any noteworthy construction are in the

[9] 'Puffer' boats were small coal-fired cargo vessels that operated around the islands and west coast of Scotland.

Wade-Martins collection from the mid-1990s. These show what were originally built as houses for elderly island residents, but are now used for volunteers to some of island's conservation projects, along with as private residences. In terms of energy use, or energy saving, the buildings look standard with no visible energy saving or renewable energy measures. The island's electric grid was not yet installed at the time of building.

6.2.3 RESULTS – COMPARISONS

Fifty-eight archive photographs (table 20) were selected to re-photograph on the basis that they might provide a good comparison between past and present energy use and energy related issues on the island. In week two I re-photographed twenty-four of the selected archive photographs. They are presented for comparison alongside the original below. Time and weather hampered my efforts to photograph all of them. To provide an accurate basis for comparison, it was important to shoot from the same vantage point so I used tried to the best of my ability.

Table 20. Archive photographs selected to re-photograph.

Archives selected to re-photograph (see appendix); Files in bold were re-photographed
253, 254, 199, **200**, 255, 208, 210, 256, **257**, **258**, **259**, **260**, 261, **262**, **263**, **264**, **214**, **265**, **266**, 267, **268**, 215, 216, **217**, 218, **221**, 269, **270**, **271**, **272**, 273, **274**, 275, **276,** 277, **278**, 279, 280, 281, **282**, 283, 238, 239, 240, **284**, 242, **243**, 245, 285, 286, 287, 288, 289, 250, 251, 247, **248**, 252

Cleadale

Figure 12 (image 200, 1959).


Figure 13 (image 214, 1991).

Figure 14 (2016).

Figures 12, 13, and 14 show Cleadale between 1959 and when I visited in 2016. The earliest photograph is a postcard sent to Ishbel Anderson by her father after he arrived on the island in 1959. Ishbel's late husband, Donald, is buried on Eigg. There is very little visible change to the Cleadale houses in the first two photographs between 1959 and 1991. A new porch has been built on the croft house at the left, but nothing obvious in line with energy use. However, there are significant differences between 1991 and 2016.

As opposed to the thirty-one years between 1959 and 1991, there are many noticeable differences in the twenty-five years between 1991 and 2016. The Cleadale houses in the photographs have undergone extensive modernisation and renovation, including modern windows and doors, loft conversions (adding upstairs rooms) and extensions. Furthermore, the recycling boxes, and the new recycling bins which Highland Council had just provided, are visible by the houses and the roadside, along with a car.

Apart from understandable differences in vegetation, it was straightforward to re-photograph the Cleadale cottages from a similar vantage point as the archive photographs.

Howlin

Figure 15 (image 257 - date unknown).

Figure 16 (2016).

Dusk was approaching when I photographed Howlin. It was one of the last photographs I took during week two, and after a delay due to a prolonged period of heavy

rain. It was easy to obtain the same position on the track leading to Howlin.

Howlin House itself is small in the photograph and differences are almost indeterminable apart from the paint and stonework. Unfortunately the date of the archive photograph is unknown, nevertheless, upon closer inspection there are several differences between the house in the archive and in 2016. The house has been extended, has a new porch, modern windows, and sports a satellite TV dish on its gable end. Furthermore, the coal shed on the same gable end is no longer there. Howlin House was up for sale at the time of my visit.

According to the sales brochure, Howlin House is double glazed and has oil fired central heating (MacPhee & Partners, 2016). The lounge features a multi-fuel stove and the kitchen a Rangemaster cooker. Furthermore, the house has an energy efficiency rating of D64, which falls around the middle of the energy efficiency rating scale. According to MoneySupermarket.com (2018), this is typical for an older property without modern energy saving technology. The sales schedule also states Howlin House is class B listed, meaning it has “some regional or high local importance” (Argyll and Bute Council, n.d.; MacPhee & Partners, 2016). Thus, owners must apply for permission to the local authority before making alterations.

Other differences between the archive of Howlin and the recent photograph include the addition of a caravan, a log cabin, polytunnels, and a car. The tarred section of the only tarred road on Eigg (from Galmisdale to Cleadale) ends not far before the point where the photograph was taken. There is also a fenced off area (below Howlin House’s outhouses in Figure 16) which looks like a micro-hydro plant.

Crow's nest

Figure 17 (image 258). The Crow's Nest, where the Jamiesons lived, in 1952.

Figure 18 (2016).

The Crow's Nest is a short walk from the pier on the track to The Lodge. It was raining heavily when I visited. The surrounding wooded area and increased vegetation in the Crow's Nest's garden made it difficult to photograph the house from the same viewpoint as the 1952 archive.

In 1952 the Crow's Nest's paintwork was fresh, and the property had a well-maintained lawn. At some point the property's ornate, multi-paned windows have been replaced with standard modern ones. Apart from the garden and the paintwork, no other significant alterations are evident.

Galmisdale

Figure 19 (image 259, 1952).

Figure 20 (2016).

The photographs show significant changes to the area by the pier between 1952 and 2016. Apart from being the main entry point to the island, this is the meeting point for islanders and where the general store and tea room are located (just out of frame in Figure 20). Bike hire and the craft shop are also found here. The Sgurr is obviously still there, overlooking Galmisdale, but was not visible at the time of photography in 2016 due to low cloud. The road is now paved and there are more cars in Figure 20. This is unsurprising since this is where islanders collect supplies, either from the store or the ferry, and socialise at the tearoom. Since Eigg does not allow tourists to bring cars to the island, unless under special circumstances, most of the vehicles in the photograph belong to islanders. The only visible vehicle in Figure 19 is Dougald MacKinnon's lorry which served as the school bus and was known as "The Pea Green Boat" or "The Hen Coup" according to the accompanying text in the archives. In terms of renewable energy use, Pier Cottage (top left) now has evacuated tubes on its roof.

The School

Figure 21 (image 243, 1936).


Figure 22 (2016).


Figure 23 (image 260, 1952).


Figure 24 (2016).


Figure 25 (image 278, 1980).

Figure 26 (2016).

There are many archive photographs of the school to compare as it once was to as it is now. It was straight forward to re-photograph the three archives of the school due to good reference points and access.

Comparing Figures 23 and 24 show significant changes to the school in the sixty-five years between photographs. For one, the building has been extended (on the right of the photograph). The headmaster's flat is on the top floor and the community centre on the ground floor (where the archives are kept). A satellite dish is mounted on the extension's wall. Furthermore, and in terms of renewable energy, around sixteen PV panels are mounted

to the school's roof. This is the highest number visible on any single building on the island.

The other four photographs show the school from the north. The other side of the community centre is visible, plus an additional smaller extension. There are no solar panels on this side of the roof. However, there is now a wood-burning shed to the right of the school in the recent photographs. Furthermore, Figure 26 shows a geodome in the school garden next to the children's playground.

Kildonan House

Figure 27 (image 262, 1978).

Figure 28 (2016).

Kildonan House is an eighteenth-century farmhouse that looks over Kildonan Bay and towards the mainland. The archive of the farmhouse was easily re-photographed from where it was taken in 1978. Apart from a satellite dish and television antenna, Kildonan House looks the same as it did 39 years prior; even the 4-pane sash and case windows look the same.

Glebe Bungalow

Figure 29 (image 263, 1982).

Figure 30 (2016).

According to the archives, Glebe Bungalow was built in 1982 (by Fergus and Lesley Gowans), the year of the archive photograph. Glebe Bungalow was easy to photograph from the same position as the archive.

The property appears to have been a standard build, common in the UK around that

time. Visible differences include the addition of a satellite dish and new living-room windows. There are now evacuated tubes on the roof of the house and a chimney is now visible on the flat roof at the right of Figure 30. The chimney looks like it was installed for a wood burning stove.

Shore Cottage

Figure 31 (image 264, 1983).

Figure 32 (2016).

Shore Cottage sits across the road from Galmisdale Bay. Apart from heavy rain, Shore Cottage was relatively straight forward to photograph. Structurally, Shore Cottage appears to be the same as it was in 1983. However, the windows have been modernised and the yard/garden fenced in with red stone chips replacing the grass. The exterior now looks tidier; the archive shows oil drums and gas bottles lying outside (centre left). The original outhouses have been replaced or substantially renovated.

The Top House

Figure 33 (image 274, pre-1960s).

Figure 34 (2016).

Figure 35 (image 266, 1953).

Figure 36 (2016).

The Top House is a holiday home with a view over Laig Bay towards the Isle of Rum. The property has had many alterations since the archive photographs were taken around the mid-20th century. According to the archive description, Hugh MacKinnon replaced the wooden porch with the concrete one, and the corrugated iron roof was replaced with slates and dormer windows added in the 1960s. Since then, an extension has been added. The outbuilding (a weaving shed – visible in Figure 33) was removed and the dry-stone wall was removed in around 1967. The archives state that Angus MacKinnon, Hugh's son, used the stone to make a roadway between his crofts, making it easier to cross the boggy ground. Figure 33 also shows ploughed land all the way to the back of the croft house.

Apart from the modernisation to the Top House, there is little evidence of recent alterations in line with energy use. However, the property in the background of Figures 33 and 34 now has evacuated tubes on its roof.

Lageorna

Figure 37 (image 268, early 1980s).

Figure 38 (2016).

Lageorna is now a guest house and restaurant in Cleadale. It was difficult to photograph the house from the same vantage point as the archive due to the surrounding vegetation. Nevertheless, the recent photo shows Lageorna has been extensively renovated

and modernised since the 1980s. Much of the original building was rebuilt after being destroyed by fire.

Laig

Figure 39 (image 217 - postcard – date unknown).

Figure 40 (2016).

Unfortunately, the date of the postcard of Laig Bay showing Laig Farm the in the foreground is unknown. Nevertheless, although the landscape has not changed much apart from the trees around the farm, there are a few noticeable differences to Laig Farm itself. A gas bottle is visible in Figure 40 beside the sceptic tank, and there are more vehicles in the yard. Furthermore, the roof of the farmhouse has water-heating evacuated tubes.

Another notable difference between the two photographs is a new building to the right of the farmhouse, just above the trees. This is Laig Beach Bothy - a holiday cabin that sleeps up to five guests. The bothy has solar water heating and a wood burning stove. It is connected to the island's renewable grid (Eigg Time, n.d.). Laig Beach Bothy costs £750 a week to rent during the summer season.

The Lodge

Figure 41 (image 221, 1926).

Figure 42 (2016).

The photographs of The Lodge compare it between its completion in 1926 and my visit in 2016. The garden of The Lodge is lush and flora hides much of its ground floor from

this angle. Since 1926, The Lodge has had a pitched roof added to the main part of the building. More recently, and in line with energy use, there is now a rotatable solar panel mounted on the remaining part of the flat roof.

Sandavore

Figure 43 (image 270, date unknown).

Figure 44 (2016).

Figure 45 (image 271, date unknown).

Figure 46 (2016).

According to the archives, the same person (Andersen) probably took the original photographs of Sandavore, although there are no dates. One of Sandavore's porches has been removed between when the archive was taken and 2016 (top), but apart from that, and some paintwork, the property looks similar in both photographs. Looking closer, the windows, doors, and roof windows have been replaced. There are also oil drums in both photographs of Sandavore from the front. However, in 2016 there are also gas bottles, a kerosene tank and a sceptic tank, along with a wheelie bin for household waste.

The recent photograph of Sandavore from the rear and above the cottage shows a shed has been removed (bottom). It also shows the new tearoom, waiting room and craft shop by the pier in the background (just above the roof of Sandavore), with cars parked outside.

Brae Cottage/Millers Cottage & Hill Cottage

Figure 47 (image 272, date unknown).

Figure 48 (2016).

The archive collection states that Andersen also took the original photograph of Brae Cottage, and that it should be called Millers Cottage. The photographs show significant changes to Millers Cottage. The property now has additional windows to the side, dormer windows, and an extension to the rear. Evacuated tubes are on the roof of the extension. The front porch has been removed, along with the fenced garden. Similar to other properties, there is a gas bottle in the garden, a wheelie bin for waste, and a satellite dish mounted to the front of the property.

Hill Cottage, or Tigh Breach in Gaelic is in the background of both photographs. It is not as visible in the recent photograph, but visible differences include a vehicle which is parked in front of fenced-in polytunnels. There is no forested area behind Hill Cottage in the archive photograph.

The Sgurr & Galmisdale House

Figure 49 (image 276, 1960s postcard).


Figure 50 (2016).

Figure 50 highlights some of the issues faced by using this method when both time and weather can be limiting factors. No comparison to the archive is possible and it was hard to even determine the correct location. Furthermore, limited time and poor weather prevented an opportunity to revisit the site.

Maggie Fyffe's house

Figure 51 (image 282, 1981).

Figure 52 (2016).

Maggie and Wes Fyffe's Cuagach croft house was tricky to photograph from the exact position as the archive due to their now lush garden. However, there have been significant changes to the house between 1981 and 2016. The upstairs now has dormer windows and the other windows have been modernised. Furthermore, a porch has been added (at the far right in Figure 52) and the front door moved to the side of the porch, although this is not visible in the photograph.

Maggie Fyffe in her kitchen

Figure 53 (image 265, 1991).

Figure 54 (2016).

Maggie's kitchen has not changed much. She has a new cooker, but it still uses gas. There is also more laundry hanging to dry. However, there are several differences between the archive photograph and Figure 54 that reflect a shift to a permanent electricity supply. In general, more electrical kitchen appliances are visible. These include a kettle and a coffee maker. Moreover, in the archive photograph there is a dimly glowing gas ceiling lamp. Whereas in Figure 54, an electric ceiling lamp hangs to the right of the ceiling beam.

Figure 55 (image 284, 1982).

Figure 56 (2016).

Another archive photograph of Maggie Fyffe in her kitchen from 1982 shows the kitchen before it was renovated and the rear extension added. When I visited Maggie to re-photograph the archives, she explained that the milk jug in the original photograph, taken thirty-six years earlier, had only just broke.

Old people's housing

Figure 57 (image 248, 1996).

Figure 58 (2016).

The old people's housing in Cleadale was built in 1996. However, it is no longer used as such. Eigg's taxi driver and his wife now live in the cottage on the right. Although the property is unfinished in the original photograph, it does not look like there have been many, if any changes since it was built. However, outside there is a new blue recycling bin, a gas bottle, and a satellite dish in the garden. In the background, up the hill and to the right of the

property in Figure 59, there is what looks like a monitoring station, which is not in the original photograph.

6.3 METHOD 3: ELICITATION

6.3.1 PARTICIPANT SELECTION

Elicitation took place on my third and final visit to Eigg. Some participants were selected for the elicitation stage of the research through interactions, recommendations, and chance encounters during the visual survey. Others were selected while re-photographing the archive photographs – comparing the archive photographs of their house and surrounding environment with the ones I took provided a good starting point for a discussion. Furthermore, although random encounters often led to a participant, the final sampling method was purposive. This was done to reflect the diversity of backgrounds among the island's population and the varying demographic of Eigg. I also wanted to avoid the islanders who were usually interviewed by the media whenever there is an article or feature about Eigg. Thus, the selected participants range from residents who have spent their entire life on the island, such as Marie, to those who were making the move there, such as Steve and Do. Additionally, the selection of some participants overlapped between the visual survey and the archive comparisons. For example, Eric invited me to look at his micro-hydro system after a chance introduction at the tearoom; meanwhile, I also selected his house to re-photograph after finding a 1982 photograph of it in the archive collection. All participants were willing to talk to me and for me to record the conversations. They also agreed for me to photograph their property, and in some cases them.

6.3.2 ELICITATION PHOTOGRAPHS

102 photographs were printed to use for elicitation (see appendix). These included photographs from the visual survey and the archives., and photographs from a mainland home with many electrical appliances, including an electric car sitting on a monobloc driveway. Some packs of photographs were tailored to suit individual participants to provoke dialogue about their own life on Eigg as well as their opinions, stories, and views. These included photographs of their homes and gardens. The following section comprises of discussions with participants, and key photographs that initiated dialogue.

6.3.3 ELICITATION: NARRATIVES

Three original participants' narratives are not included in the following section. One of them requested anonymity which is hard to guarantee in such a small community.

Nevertheless, some of the participant's comments have been used where appropriate. As the research and writing progressed, another participant's narrative appeared out of context with the rest, and although methodologically significant, it did not relate to the research objective. The third helped me at the early stages of research, but logistics were against us and we could not meet again at a later stage. I preferred to use the same format for all interviews/discussions so did not consider email or telephone to be an option in this particular case.

Norah

I found out about Norah after a conversation with another Eigg resident at the tearoom, who thought she would be interesting to talk to regarding my research. Norah and her partner Bob live in and run the Earth Connections Eco-Centre in what was formerly the Runciman Lodge. They first learnt about Eigg while studying human ecology in Edinburgh. Before moving to Eigg, Norah and Bob lived on a boat while looking for somewhere around the west coast of Scotland to start an eco-centre. They were finding it hard to find land since most of it was under private ownership. After advertising, someone from Eigg approached them since the island was seeking new residents to increase its population. This was around five years after the community buyout. Eigg's history and community governance are what attracted Norah and Bob, and after initially looking at some available croftland which was unsuitable, they purchased the Lodge. Although Norah is sure that if they had been determined they would have found somewhere else, the community ownership of Eigg specifically, made it easier for them.

Sitting in Norah's kitchen with the photographs of the Lodge spread on the table, Norah's attention was drawn to the photograph of the newly completed Runciman Lodge from the archives. "Wow", she exclaimed, "Where did you get that? […] I've never seen that picture." She asked if I had any pictures of the garden as she had been unable to find any. What she has as a mini orchard now had once been the original kitchen garden, and she finds it interesting that archive pictures are of the house and none of the garden. Norah explained that she first thought the Lodge was too grand a building for them, especially after spending two years living on a boat, and previously building earth ships and tyre buildings in America, and they planned on doing something similar. Nevertheless, the Lodge ticked all the boxes to accommodate an eco-centre. However, the building had lain derelict for a while and required extensive repairs to the damage caused by damp and water leaks.

Norah and Bob utilised renewable energy sources as soon as they started the repair

work on the Lodge. Although they used diesel generators, they built a small hydro plant on the Lodge grounds to run an industrial dehumidifier. They also installed the Lodge's solar panel and run on their own power for a couple of years before the island's grid system was installed. By managing this successfully, she knew they could demonstrate to others how it was done. When the couple moved to Eigg, a few people on the island already had hydro systems and there were already discussions about renewable energy systems. Her and Bob were keen to be part of that. Norah also explained that not everyone on Eigg made the transition to renewable energy for purely environmental reasons as is often portrayed in the media. Unfortunately, their hydro was not working on my visit as it needed an overhaul. She laughed, "shame with all this water", referring to the heavy rainfall outside. If they have a lot of visitors or need to use machinery that requires more power, they switch to the Eigg electric system.

Norah has two cookers in her kitchen – a gas stove and a Raeburn. She uses both, although the Raeburn is mainly used in winter. Depending on how much wood her and Bob have, they also use coal; indeed, I noticed a bucket of coal in the corner of the kitchen. "I hate using it, it's my nemesis", she said of coal. The Lodge also has an efficient wood gasification boiler in the cellar which can heat the entire building. However, although Norah would like to reduce coal, and other fossil fuel use, she explained it is necessary to keep the house and family warm. According to Norah, it is difficult, time consuming, and requires a lot of organisation to run a wood burning stove the whole year around.

Reducing coal usage and shifting to wood was part of the Big Green Challenge, an incentive driven programme in which Eigg participated and was successful; residents documented coal usage in diaries. However, Norah explained that in reality it was easy to slip back into using more coal again. Nevertheless, she also explained that a big reward engaged the community and motivated some individuals to monitor and reduce their coal usage. Other projects included insulating houses. Furthermore, she said that different people require different motivations – the bonus at the end of the Big Green Challenge being just one of them. Norah hopes the wood system on Eigg will improve with the appointment of a wood fuel team, but she thinks a main factor in changing people's behaviour is increasing costs, not only *of* the coal but also the cost of getting it to the island. Norah also stated that although there is more scope to conserve energy in general, "there is a big demand."

Figure 59 (Elic_058). *"Yeah, well that's what we can't do."*

Norah explained that after the grid became operational many residents purchased white goods. However, they can be used with a good conscience since the electricity is produced from renewable sources. Nevertheless, Norah's kitchen is very different from the mainland one in Figure 59 that shows eight electrical appliances: dishwasher, washing machine, fridge, freezer, toaster, mobile phone, house phone, and kettle – all of which can be used or charged simultaneously. Although modern appliances can be used on Eigg, the cap on instant consumption means that attention has to be paid to energy ratings. For example, an electric kettle can go up to 2kw straight away, Norah explained. To keep water hot in the kitchen, Norah has a water heater which goes up to about 1kw and then acts like a Thermos, keeping the water hot and saving the need to boil more. She only recently got a toaster to make it easier to make toast for visitors. Although businesses are allowed to pay for a 10kwh cap instead of the regular 5kwh, Earth Connections still manages with 5kwh. Norah pointed out the OWL monitor to me that monitors energy consumption and is fitted in every island home that is connected to the grid. She explained that using a timer or spreading the load helps avoid surpassing the 5kwh cap. Although she stated that some new residents have asked for more than 5kwh, it is unnecessary. Furthermore, Norah thinks it is important to look at where appliances come from and where they will go at the end of their life.

Figure 60 (Elic_055). Nissan Leaf.

Norah has an electric buggy to travel around the island and she told me there are other electric cars on the island. Her and Bob also have an old electric milk float they have had since they moved to Eigg. Although people used to laugh, she says it was ideal for carrying coal and seaweed. She thinks the initial cost of electric cars is what puts people off buying them, so they continue to buy cheaper old, non-electric ones, although when they break down there is a problem with disposal. Norah and Bob have always promoted electric vehicles. Although some, such as the Nissan Leaf in Figure 60, are not particularly suited to some of the island's roads it makes sense to own an electric car when it can be charged overnight from renewable sources when other appliances are not being used, according to Norah.

Figure 61 (Elic_012). Looking from the pier towards Glebe Hostel.

Norah explained that part of the Eigg trust's vision was to look after the land and the island's heritage. She agrees that is easier when surrounded by beautiful scenery and nature - "If it looks particularly beautiful you're going to look after it."

Figure 62 (Elic_003). The Saltire.

"The flag makes me just personally slightly uneasy because it, it oversimplifies things and it's a bit of a red rag to a bull in a way, a bit defiant you know. It can be good and bad, can't it?"

On my first visit to Eigg, Scotland's national flag, the Saltire, flew prominently above Galmisdale at the entry point to the island. Norah explained that the Saltire was raised during the year of the Scottish independence referendum – 2014 - and that the majority of residents, including her, hoped for change, i.e. independence from the United Kingdom. She appeared enthusiastic about the Scottish government's support for renewable energy and she was aware of their ambitious targets. However, she was unaware of the Scottish government's position on small-scale systems such as the one on Eigg, which she believes work best. She expressed concern about the loss of local control, benefits to the local economy, and local jobs; losses that she says can come with large scale systems run by multinational companies. She also told me that the Eigg system provides jobs for six or seven local people and reinvests its profits into the system. Furthermore, Eigg has benefitted from European Union funding and she was worried this could be lost due to the United Kingdom's upcoming exit from the European Union.

Figure 63 (Elic_023) Broken down Daihatsu and the new ‘wheelie bins’.

“This is a totally inappropriate new thing. Nobody likes them. It’s not really been consulted with […]. We had boxes [which] worked fine so I’m not quite sure why [Highland Council] changed to this. It’s what they do on the mainland so they’ll do it here as well. They’re sort of just streamlining and budget cuts, but you know if they spent just a little bit of time talking to us about what would work for us I’m sure they would have saved money because they’ve spent a lot of money on this, and hardly anyone’s using them. They’re just going to sit there.”

Norah did not think the new waste collection system that had just been brought to the island by Highland Council, which uses ‘wheelie bins’ (Figure 63) instead of recycling boxes, is suitable for Eigg. The problem on Eigg, she explained, is that the person responsible for collecting and emptying the bins is not permitted to leave the paved road. Eigg only has one paved road. She believed this will be an issue and that the bins will not get used since many people will not be able to wheel them to the main road from their homes, resulting in them being blown away when they are lying empty. However, she is willing to try out the new system to support the local contractor who is also an Eigg resident.

Norah explained that waste management on the island, especially for larger items such as cars and oil drums, can be problematic. However, it does get dealt with, she said. I noticed several scrap cars on Eigg, but she explained that “every so often” they are collected. She also told me that diesel drums are refilled from a boat that comes to the island until they are no longer fit to be used. She stated that it is very important to be conscious of waste - what you are putting in and where it is going.

Norah also said the increasing popularity of Eigg brings many challenges. For example, new residents cannot demand more electricity – what resources there are still need to be managed carefully and new residents need to be aware of this. Reiterating her thoughts on fossil fuel, she emphasised that the renewable system should stay prioritised in the future, along with stressing the importance of having a wood fuel system on the island.

Eric

Eric lives in the Glebe Bungalow which is on the main road between Galmisdale and Cleadale. First, I mentioned to Eric that I thought the grid system – the wind turbines, hydro plants, solar panels, and cabling, was very discreet for such a small island. He told me that all the grid cabling is underground. He also explained that the original plan was to install larger wind turbines but they were advised to use more hydro as it's more constant, especially in winter. Certainly, on the November night I visited Eric at the Glebe Bungalow, it was lashing down with rain, again.

I showed Eric the archive photograph of his house along with the one I took (Figures 29 & 30). Eric has owned the property for twenty years after moving to the island with his late wife, who was the island doctor. They moved from Fort Augustus on the mainland. He pointed out the old windows that were single glazed and rotten so he replaced them with double glazed ones. He also insulated the attic. Eric explained that the only electricity source for the house was an old 1.5kw generator from 1957 – probably the oldest on the island. Inside, there had been a stove that heated a couple of radiators which required the generator to work the pump to pump water through the radiators. Eric installed evacuated tubes on roof of the house to heat water. He explained that they heat the water sufficiently in summer, and in winter up to around twenty degrees Celsius, which saves on kerosene.

Eric had an inverter system and batteries for his old generator, to avoid running it for hours by charging batteries to use when it was off. However, his generator eventually needed replaced. To avoid buying a newer one, which he said would have been lower quality, he decided to try to install a small hydro system, using the inverter and batteries to convert the hydro energy to household electricity. There is a burn across the road from the Glebe Bungalow which he had watched for years so he thought it might be suitable for a hydro system. Eric installed all the equipment for the hydro himself, but had some help wiring it up. He was originally told he it would probably run a fridge, but the hydro system has now powered his house for twelve years.

On the cold and dark November night when I visited Eric, his house was warm and

light – he explained that everything was running from the hydro alone. He told me it is satisfying to see the heavy rain outside and know that he is benefitting from it. Although he said that he could do more, like installing solar panels, there is no need; he does not use much electricity so it does not cost him much. He used to have a big generator to run large appliances. However, now if he wants to use something heavy like a washing machine he switches over to the Eigg electric system. All households have a switch from the days of using generators. Now the renewable electric system is so good it has replaced the need for generators, Eric explained. He told me that the island is so much cleaner and quieter now.

Eric explained that the unique renewable system was not planned, rather it evolved after a couple of hydros had been installed – one at the pier centre to power the fridges and freezers, and one at Kildonan for the five houses there. He believes that such a system could be used all over the Scottish Highlands and the abundance of small streams and burns could easily provide enough power for small villages. However, he states that maybe this is not encouraged by the big electric companies and the (UK) government. He also told me that a European wind company approached the island to install several large turbines to feed into the mainland grid. They offered to lay a cable to the mainland free of charge and pay a fee each year to the island. However, islanders rejected the offer since it would be too intrusive; "The Sgurr would be bristling with wind turbines", he said.

Eric tries to keep his fuel costs to a minimum. This includes fuel for his car – he runs an electric car that gives him about thirty miles on a full charge - and freight costs for fuel such as kerosene. He thinks more output of electricity on the island is required, for example by installing another couple of hydros to meet demand and reduce reliance on fossil fuels. He told me that incomers to the island simply cannot use the same appliances they did on the mainland. He explained that not only are costs of fuel rising, the price of electricity on Eigg is significantly higher than on the mainland, and this is what prevents islanders heating their homes with electricity. Nevertheless, Eric wants to reduce dependence on kerosene, which could be done with an alternative heating system. Essentially, Eric just wants to "make life as easy as possible".

Catherine & Pascal

When I first met Catherine and Pascal, they were building a house at the far end of the island, passed Cleadale. Because of the location, Catherine and Pascal's new build will not be connected to the island's renewable grid. This is down to an estimated cost of around fourteen to fifteen thousand pounds. Before the couple moved to Eigg, they lived in

Thornhill, Central Scotland. Catherine said they had a lovely house, good jobs and enjoyable hobbies that included running a community woodland group. Catherine and Pascal's love for Eigg began when they came to look after a friend's croft for two weeks. Catherine was excited by "the wildness, the beauty, [and] the potential", so they bought a house on the island, and six weeks later they returned to live. This was just after the community buyout. Catherine explained that physically, life on the island is more demanding than what they were used to, but for her and Pascal it was all about the potential to live the way they wanted – to grow willow and grow their own food, and that was what excited her the most.

Figure 64 (Elic_053). *"It all says a certain lifestyle. There's no life."*

Figure 65 (Elic_054). *"It's dated, […] it's not for the twenty-first century."*

Figure 66 (Elic_056.

"Microwaves, plugs, extractor fan – we need to do it better. It's all this cleanliness, […] it's clinical, it's very unhealthy actually."

Figure 67 (Elic_057).

"I would rather live in a hut than in that house with the false fire and false chimneys."

The first photographs I showed Catherine were of the house on the mainland. To Catherine, Figure 64 represents the "status quo" and "conformity". She pointed out the mono-block drive, the car, the small windows, and the absence of solar panels on the roof of the house. She noted that although the car in the photograph is electric, "it means nothing". According to Catherine, the photograph "says it all." Catherine believes there can be a balance between living sustainably and creating a pleasant environment: "If they've got their priorities right they can make it look nice all they want." Catherine's first priority is low impact living.

Figure 68 (Elic_031).

"Is that oor hoose? Oh, that's braw."

Figure 69 (Elic_038).

Catherine's reaction to the photographs I took of her house on my first visit to Eigg, was in complete contrast to her reaction to the mainland house; her face lit up with pride and she became emotional. According to Catherine, her house, the location, and the immediate environment, that does not include a mono-block drive, show an effort to be low impact – "It just looks green." Furthermore, their house is built on blocks to minimise the use of concrete and further reduce its environmental impact. Although their new house does not have solar panels, Pascal explained this is due to the orientation of the site. However, they intend to fit solar panels to the roof of their willow weaving workshop which is situated behind the house.

Catherine explained the van in Figure 69 - their van - is a necessity. They use it to transport their willow and collect seaweed for their garden. They often make deliveries to the mainland and take their willow baskets to shows. However, she said they are continuously looking at the possibility of getting an electric vehicle, like some of the other islanders. Catherine could not remember who the car in the same photograph belonged to.

Figure 70 (Elic_033). Insulation.

The photographs of Catherine and Pascal's house during construction show the extent of the insulation they were using. Catherine explained that insulation was indeed the main consideration. They intend to use only one wood burning stove to heat the entire property.

Furthermore, the hot water tank they installed gives the option of fitting solar water heating in the future.

Figure 71 (Elic_042). Catherine and Pascal's new bedroom.

To Catherine, it is important to feel connected to nature and to let it into her living environment. Thus, it was important for her to have big windows. Catherine explained that waking up to the view from her bedroom (Figure 71) gives her energy: "The first thing I see is the grass and then the sea without lifting my head off the pillow. It's fantastic." I concurred, since on that particular visit to Eigg I woke every morning to a view of the Sgurr through the skylight window above my bed.

Figure 72 (Elic_046). Catherine and Pascal's garden.

Catherine's garden (Figures 2 & 72) also connects her to nature. Spending time gardening destresses Catherine and she thinks everyone should have the opportunity to "connect back to the soil and the land." However, Catherine recognises that not everyone can live this way, i.e. growing their own food, but again it is important to find a balance, she states. Catherine and Pascal's garden is a no-dig system. Furthermore, she explained that the system is holistic, with as many flowers as vegetables: "Without the flowers you've not got the insects pollinating."

Figure 73 (Elic_047). Willow croft.

Catherine and Pascal had to apply for permission to grow willow for their basket-weaving business on the croftland behind their house. This was, as Catherine put it, “because we’re not growing cows.” This delayed their business for a year, but now they are proving that basketry can be a viable and sustainable way of living in the twenty-first century.

Figure 74 (Elic_001). Approaching Eigg.

Looking at some general pictures of Eigg, we spoke about how inobtrusive the renewable grid is. For example, on the ferry to Eigg, the four wind turbines are barely visible on the skyline. In Figure 74 they can only be seen on very close inspection around the centre of the skyline. Both Catherine and Pascal explained that “the community wanted [the grid] to be as visually inobtrusive as possible.” Pascal told me the island could certainly support larger turbines, such as those on neighbouring Muck, but the residents did not want them. Moreover, the modest 60kw ones are situated on the way to Gruilin partially to keep them out of sight. Catherine stated this is for residents, not just tourists. She also added that she would rather continue to have no telephone reception than have a “big ugly mast” at Cleadale to receive a 4G signal, which was trying to be pushed through at the time of my visit: “When you live somewhere like this, artificial, man-made things, big man-made things stick out and it’s a kind of low-level stress. It’s there at the back of your psyche and it effects your life.” The renewable grid was originally designed to meet the needs of the 2008 population of Eigg, with room for expansion, Pascal told me. However, he stated that it is “now virtually at capacity” and apart from increasing storage capacity, the obvious solution to generate more electricity is more wind turbines.

Pascal is sure islanders use more electricity now than before the grid. However, he explained that the cap is the key to the system’s success and it would not work without it.

Nevertheless, Eigg's increasing population will demand more electricity that is not currently possible to generate. Pascal told me that incomers to the island need to be aware they cannot live their lives the same way they did on the mainland in terms of energy use. He also thinks current residents can alter their behaviour and habits to reduce the demand for energy. Such changes can be minimal and still make a big difference, according to Pascal. For example, he suggested replacing all light bulbs with LED ones to save power, and therefore demand. However, at the time of our discussion he did not feel confident enough about his place in the community to make such a suggestion publicly.

Both Catherine and Pascal think the new recycling system on Eigg is inappropriate for the community (see Figure 63). Catherine stated that waste management on the island is an ongoing issue and they do not have a proper solution yet, but the mainland system will not work. Pascal added that the recycling before "wasn't brilliant" but the new bins are visually intrusive. Echoing Norah's earlier sentiments, he said pulling a bin to the main road on collection day is not an option for some people.

"Independence" is one of the first words that Catherine said when she saw the photograph of the Saltire (see Figure 62) – "The Scottish government have got their hands tied by Westminster." Pascal added that the Scottish government could invest further into renewables such as tidal and wave power, an area in which he claims Scotland are world leaders, if funding was not effectively still controlled by Westminster. Catherine added that along with renewable energy, the Scottish government wants to support infrastructure on islands and increase island populations, but the British government has no interest in this. Catherine and Pascal think independence from the United Kingdom can allow Scotland to do this. Furthermore, Catherine believes the campaign for independence in Scotland spurred on many grass roots groups and movements that highlight localism (or community empowerment) as opposed to centralisation as the way forward.

Catherine does not think island life is easy. However (when prompted by scenic photographs of Eigg), she told me that living in such an environment is inspirational in so much as that it makes one appreciate and try to preserve the surrounding natural scenery. After my question about if the local environment shapes people's views on global environmental sustainability, Pascal noted that I was asking him to judge other people through his interactions with them and that was difficult. Nevertheless, he commented that although some islanders care very much for the environment, others maybe do not think about it as much for one reason or another. Essentially, they try to live their lives the best they can in an already often harsh environment:

> "It's difficult to care very much when you're worrying if the boat hasn't come for a week […] and the visitors that were going to be providing some income to you are stranded on the mainland, or you can't get your messages […], the post hasn't come."

Catherine added that it can be difficult to actively care, but island life was always naturally low impact anyway by default, and is still very much so.

Catherine and Pascal refuse to burn coal "because it's a filthy fuel" despite its reliability, availability, and the heat it gives. Therefore, they try harder to find wood and "make it work." Catherine stated that there is a lot more work to be done on the island to create a reliable wood source. Pascal echoed her statement. Furthermore, Catherine told me the renewable grid made life a lot easier for islanders – they bought electrical appliances such as kettles and toasters that they could not use before – but it was not spurred on by environmental concerns alone. However, Catherine expressed that despite varying views and backgrounds among islanders, they "all care about Eigg". She hopes the community can continue its progress: "It is a time of hope and the time of possibility opposed to any other time, and it's all come together on Eigg to take us forward."

Marie

I met Marie when I asked permission to photograph her house. Marie and her husband Colin rent Kildonan House and farm from the trust on an agricultural tenancy. This means they can pass it on to their family. Marie runs the house as a guest house and Colin runs the farm.

Marie grew up on Eigg. Her parents moved to the island when she was four months old after they spent time working in Glasgow. Her father is originally from Eigg and her mother is from South Uist in the Outer Hebrides. Marie has lived on Eigg ever since, only leaving to attend high school on the mainland. Marie spent her childhood at Laig Farm so I showed her the archive of the farm and Laig Bay (Figure 39) beside the photograph I had taken six weeks previously (Figure 40). She did not see a lot of changes and told me that it was lovely place to grow up. Marie and Colin moved to Sandavore Farm in the early 1980s, so I also showed her the archive comparisons of Sandavore (Figures 43-46). Similar to Laig farm, she did not see much change to the property apart from the absence of one of the porches.

Marie told me it was just normal to grow up without electricity, as she did at Laig Farm until she was about seven or eight years old. Marie thought that not having electricity was "absolutely brilliant". She remembers her mum's old washing machine which she

describes as a museum piece. She told me a story about when her granny got her finger caught in the old ringer. Her dad had to be fetched to push a lever and fortunately her granny only ended up with a sore hand. Eventually, her family got a diesel generator. Marie recalled their first television, which she said she could not be bothered watching because of the snowy picture. Marie and Colin moved to Kildonan in 1988 so I also showed her the pictures of Kildonan (Figures 27 & 28).

When Marie and Colin renovated Kildonan House, it was important for her to have a kitchen that they could live in - she did not "want it all clinical". Marie's kitchen is comfortable, welcoming, and warm. She admits that she wants to use as little electricity as possible but is "not actually very green", with her cooker and a separate boiler running on kerosene. She did not consider the environment when choosing her appliances and opted for kerosene as unless she runs out, it is reliable. She requires a constant hot water supply for the guests and can cook separately without taking the heat away. However, she acknowledged that, "it's not that great you know running off kerosene." Marie said she would consider changing her boiler system to something cheaper and more efficient to run. She also has a large washing machine that runs off domestic hot water and a gas dryer to keep up with the amount of washing she has to do in the house.

Marie has a 10kwh cap on her electricity and does not think she will ever go above that. Even with the business, she is used to juggling appliances with a limited amount of instant electricity available. Before Eigg Electric, she had a hydro system and prior to that a generator. Although she did not notice much difference between using the hydro and moving to Eigg Electric, she did when she moved from the generator to the hydro in 2003. She could use more appliances at the same time and no longer had to go out and switch it off before she went to bed. Marie also said she really liked her hydro.

Figure 75 (Elic_002). Sign at the pier.

I showed Marie some of my photographs from the visual survey. About Figure 75, she remarked: “To me it says we shouldn’t use, or we should use as little fossil fuels as possible, […] recycling our rubbish, keeping vehicles to a minimum, sometimes you just have to, don’t you?” Marie thinks there is scope for more solar panels on the island, and admits that her views on energy use, sustainability and the environment have changed since the renewable grid was installed. However, she does not think the renewables are why people move to the island - that is more to do with it being a beautiful place to live that has a great community. She thinks islanders are more aware now than before of the resources they use and that some, such as fossil fuels, should not really be used. However, talking about her cooker again which runs on kerosene (which she does feel slightly guilty for), she explained that it was the best for her, although she did think about the fuel use before she bought it. Furthermore, she explains that needs often come first, for example with her minibus.

Marie needs the minibus to do the school run. When she bought it around six years ago she considered an electric vehicle but it was too expensive to buy something that size. She explained that when the bus needs replaced, she will look for something electric with seven or eight seats as she does not need one the size she has just now.

Before I left Kildonan House, I asked Marie about the ‘Yes’ sticker I noticed in her

kitchen window. Without hesitation she replied, “Well it makes sense doesn’t it? Why wouldn’t you vote yes? So hopefully it will happen.”

Karl & Katrine

Figure 76 (Elic_061). Karl and Katrine’s new house.

I first met Karl when I was conducting the visual survey during my first visit to Eigg. I was photographing his new house (Figure 76), which was yet to be finished, and he walked by with his dog. Karl immediately invited me in to look at the house and agreed to talk more to me.

Karl is originally from Manchester, England, but he lived on neighbouring Rum since 1998 before moving to Eigg around 2003. Karl wanted some security but could not get a building plot on Rum. Rum is owned by the conservation trust, Scottish Natural Heritage. Karl told me lots of people left Rum because of the lack of security. For him, Eigg is a far better island on which to live. He explained that the community ownership of the island means that everyone can have an input to what happens on the island through attending community meetings. He compared Rum’s system to the feudal system of land ownership – “you just have to do as you’re told”. Karl said this is what Eigg was like before the community buyout. However, Karl’s girlfriend Katrine added, now Eigg has a supportive community. They claim this helped them build the house.

I spoke to Karl outside the new property while he was sorting out some timber to plank up. Meanwhile, Katrine was working inside the house. When I showed Karl the photographs I took of his house during the summer, he was pleasantly surprised I had real prints instead of “an ipad thing”. Apart from something he was able to build himself, Karl’s main consideration for the house was to build a strong property – something that can withstand the winds. Equally as important to Karl, was cost, which he wanted to keep to a minimum, hence the reason for reusing wood. Even the foundations were laid using local gravel and sand. Karl admits this is through necessity as he does not have much money and could not afford to buy the all the materials: “I really don’t care much about the environment in a way, well I do but not in an eco, green, fanatical way at all. If it’s cheap, I have to because I’ve no money”.

Karl’s house is connected to the grid. This cost him and Katrine “about two or three grand or something” since the property is about three hundred metres from the power line. Karl considered installing his own hydro in the burn behind the house, but the cost of installing and maintaining it put him off. His water source is the burn behind the house and the water is piped straight in. Karl said this is “better than any mainland water.” When I visited, he had yet to install a heating system, but the house with its large south facing windows was comfortably warm. They have a large stove, but were not even sure if they would need to use it – certainly not in the summer, explained Karl.

Figure 77 (Elic_063). Insulation.

The house will be very well insulated to keep it warm and reduce the need for heating. Karl and Katrine saved some money on expensive insulation by buying left over material from another recent build on the island (Figure 77). He also installed evacuated tubes to heat water, which he said will still work well in the winter. Karl explained that they will have so much hot water he installed underfloor heating in the bathroom to dump some of it. He even installed a bath, which he said he would not normally bother with. Although the house is connected to the island's electric grid, Karl does not see the need to buy new electric appliances that demand more electricity.

Katrine, who is originally from Germany, works part-time for Eigg Electric. She told me that the grid soon needs to be expanded to meet the increasing demand for electricity. Katrine thinks more batteries to store electricity and better inverters that let more energy through could help meet demand from the increasing population. She explained that because the system is still quite new, it takes a while to find out what is actually needed. She said the reservoir at one of the hydro sites (Laig) cannot be expanded due to conservation issues. Furthermore, when demand is high and there is no water or wind, the grid can struggle to meet the demand. Then, the back-up generator will come on. Katrine explained though, this does not happen often and they do not use that much diesel. However, there are also times when the grid produces a surplus of electricity. Hence, there are dump heaters to purge the electricity in the form of heat in places such as the community hall and waiting room. There are also dump heaters in the open as a last resort, Katrine explained. Karl commented that at times like that, everyone should receive free electricity.

Karl, who was used to a mainland life before moving to the islands, explained that life on Eigg is special. He admitted that physically it is hard, but mentally it is easy. He would not move back to the mainland and would "rather be here and skint, living in a tent than over there". However, people cannot come to the island with expectations and need to learn to slow down, he said. Katrine echoed Karl's sentiments – "You don't need as much here because there are other qualities to life […] You're in the most amazing place."

Maggie

I contacted Maggie Fyffe before my first visit to Eigg. Maggie is the secretary of the Isle of Eigg Heritage Trust. I originally asked her how I would be received on the island, since Eigg has been the subject of many research projects in recent years. She said she thought islanders, including herself, would be happy to talk to me and she was interested in my innovative approach, i.e. using photography. She told me that many researchers had

visited Eigg, but she had never encountered anyone using my method. Maggie is a warm, friendly woman with a hearty laugh.

Maggie and her husband Wes moved to Eigg in 1976. The former landlord, Keith Schellenberg, asked them to come to Eigg to set up a craft shop. Maggie and Wes' first house on Eigg was Hill Cottage in Kildonan (Figure 47) - "I loved that house", said Maggie. Maggie told me that Hill Cottage did not have a generator and they knew that before they moved. Indeed, Maggie and Wes have never had a generator. She did not find it hard to adapt to not having electricity after previously living on the mainland. They used oil lamps for light at first, then gas lamps later on. Maggie said there were gas rings to cook on along with a Rayburn stove, for which they mainly used coal. Maggie remembers trying to cut their own peat from the old peat bogs below the Sgurr but said it was not very good peat. However, despite loving the house, Hill Cottage was tied to the estate, and without a lease there was no security.

Maggie and Wes moved to their crofthouse in Cleadale in 1981. I showed her the archive photographs of Cleadale (Figures 12 & 13) and she pointed out that nothing much had changed between 1959 and 1991, the years of the photographs respectively. I then showed her the recent photograph of Cleadale that I had taken a few weeks prior (Figure 14). Maggie laughed when I pointed out Wes doing some 'dry-stane dyking' in one of the gardens. She then pointed to several of the cottages telling me which ones had been sold and renovated and which ones were now holiday cottages. She explained that when Eigg was under private ownership, the landlord did not have any input into what was done with the croft houses as they were not tied to the estate. Maggie further explained that her former landlord, Schellenberg, refused to give tenants leases and turned many properties into homes for his holiday property rental business – "He wouldn't give you that sort of security that people craved."

The crofting community of Cleadale became a haven where crofters allowed residents to put caravans on their land to live. Later she explained that some residents still live in caravans – "[It's] fairly basic accommodation but it's rent free." Maggie claimed that her and Wes "became the agitators to a degree" of the conflict between Schellenberg and the other islanders that eventually led to the community buyout of Eigg. After they moved to their house in Cleadale they had security, and "could criticise him if we felt like it", said Maggie. The next landlord, the German artist known as Maruma, promised leases to cottages and the woodland, as well as a site for a new community hall, after buying Eigg from Schellenberg. However, none of his promises materialised either.

When we returned to the photographs, we looked at the many archive photographs of Maggie's house, and their 2016 counterparts (Figures 51-56) - "Oh dear – look at the difference of the colour of [my] hair", Maggie laughed. She explained that the archive photographs must have been taken not long after they moved into the house and she talked me through some of the early renovations. The changes they made at first were dictated by cost. Maggie told me they did not have a lot of money to spend on the house after moving in so the renovations were very basic. Later on, they were awarded a grant to make further changes as many houses on the island were deemed below adequate living standard. Maggie and Wes kept the renovations modest, but added a couple of rooms and an inside bathroom. Having an inside toilet, laughed Maggie, was great. Maggie told me that although she was always aware of energy use, she could not afford to take measures like replacing the single glazed windows with double glazed ones, and they just got used to a cold house. Although she said they have a few more to do yet, they have now started replacing the old windows.

With no generator, Maggie and Wes installed a hydro in the burn outside to supply the house with some electricity, but she could not remember the year they did this. The small hydro averaged about 500 watts and increased to about 1kw in the middle of winter. It gave them enough electricity to power a stereo, a radio, some lights, and eventually a television and a computer. At the time, Maggie did a lot of sewing and crocheting, she explained, and the electric lights were so much better than the old gas ones she had used for years. She told me that Wes had been keen to use water for power, and the hydro "pretty much revolutionised our lives."

When the grid was switched on several years later, Maggie's life was revolutionised further – "It was like a miracle", she laughed. Maggie explained that residents had been talking about getting a reliable and permanent electricity supply since she moved to the island. However, there were simply too few households to justify the cost of a sub-sea cable connected to the mainland supply. She told me that a company called Ecoconnect did a feasibility study and "came up with the idea of using three technologies linked together. […] It hadn't been done before – an ambitious project." There were some changes along the way, such as going for more hydro and less wind. However, the PV panels proved more worthwhile than originally thought, especially in the summer. Hence, they have been increased twice from 10kw to 50kw using money from the Big Green Challenge award. For Maggie, it was "a luxury to be able to switch a light on and not find a torch" and she was able to have a washing machine for the first time instead of "scrubbing at the sink". In the summer her burn would often not have enough water to run the hydro so a permanent 5kw supply

changed her life. Furthermore, islanders could finally use modern kitchen appliances - "Nobody would have an electric kettle previously but everybody's got one now", Maggie said.

Maggie said that some people (non-islanders) are horrified that 5kw is all an Eigg resident has to use. However, she told me that residents have always had to be aware of energy ratings due to the small capacity of the generators – normally less than 5kw – and are therefore more aware than most people. Furthermore, she also thinks that most residents were already environmentally because of their naturally low-impact way of living and having the renewable grid has not altered their perceptions. Maggie explained that islanders have always been keen to develop the island as a "decent place to work and live", but in an environmentally and culturally sensitive way.

Figure 78 (Elic_080). The entrance to Maggie's.

I showed Maggie Figure 78 - "Ah yeah, the bags of coal", she laughed. She explained that she would prefer to use wood, but the supply and quality is poor and she just "wants a fire that stays in." The coal Maggie uses is the smokeless type and it works well in her new

fire, she said. Maggie also told me that she has “no problem” with the new recycling system brought to Eigg to bring it in line with the mainland. She “burn[s] what’s burnable, compost[s] what’s compostable”, so is not left with much to recycle anyway, apart from catalogues and magazines. Furthermore, she burns some plastic waste, since she believes this has less environmental impact than when it is transported to the mainland and put into landfill. Maggie explained that living on an island with waste management challenges has made her more aware of her own waste than when she lived on the mainland.

Mounted on Maggie’s wooden garden gate is a hand carved ‘Yes’ sign. Maggie thinks independence for Scotland would be good for renewable energy by supporting and continuing with it. She thinks Westminster politics is self-destructive, greedy, and bad for the environment. Maggie would like to see more community renewable energy, like on Eigg, instead of large-scale production. However, she is unsure of the Scottish government’s position on community renewable energy schemes. Maggie also said that Eigg needs the solar, wind, and hydro to make the system function, but would like to see the addition of wave energy in the future – “It just seems that sea and tides are pretty constant.”

Maggie does not think Eigg desperately needs to produce more energy just yet. She told me there are plans to build four new houses, but increasing the inverter battery capacity should come before increasing production. Nevertheless, it is not necessary before the houses are built, she said. However, the influx of tourists in the summer does stretch the system a bit, she stated.

Maggie does not see any reason why a system such as Eigg’s could not work on areas of the mainland. For example, she told me she visits Glen Uig often where there are many waterfalls and potential for hydro energy systems. However, according to Maggie “there’s not the same impetus if you’ve already got mains electric.” She also told me of a plan to install a wind turbine at Mallaig to power the community hall to reduce their electricity costs, but locals objected to having a wind turbine in their view so the plan did not go ahead. The key to the system’s success on Eigg is the ownership of the land, Maggie stated. She told me that the crofters had to agree to the cables going through their land, but in Maggie’s words, “it’s a benefit to everybody so everybody were quite happy for that.”

Steve & Do

Figure 79 (Elic_085). The Manse under renovation.

I first met Steve when I was photographing the Manse (Figure 79); I saw he was working in the house so asked his permission to take photographs. After explaining what I was doing, Steve offered to send me some old photographs of the Manse that he had (Elic_083 & Elic_084 – see appendix), and agreed to talk to me at a later date. After my third trip to Eigg, I met Steve and his wife Do at the Edinburgh apartment they were rented.

Steve and Do first travelled to Eigg in 1975. They spent three days camping in Cleadale, by Singing Sands, helping to look after children on a school trip. One of Do's earliest lasting memories of Eigg is of teenagers having mock fights with seaweed on the beach. Although it rained the entire time of their camping trip, Steve and Do fell in love with the island.

After falling in love with Eigg, Steve and Do holidayed regularly on the island, staying in various bothies. Eventually they got the opportunity to lease Grulin, a bothy tucked away to the south-west of the Sgurr. Do described going up to Grulin as "magical". The couple leased Grulin for around thirteen years from Sophie Schellenberg, the daughter of former landlord, Keith Schellenberg. At one point, Steve applied for the position of primary school headmaster on Eigg but was unsuccessful. Sad at first, in hindsight he was "delighted"

due to the challenging nature of teaching “five kids aged between four and twelve”. Although Steve and Do destressed at Grulin, they also found it hard at times with no electricity or heating. Since they did not own the property, they were reluctant to invest in it. They used gas to cook, and ran the shower off one of two chargeable leisure batteries they had. Do commented that they needed a car on the island to carry the heavy batteries, which resulted in another vehicle burning diesel. Steve told me that although having no heating or electricity could be hard, the survival aspect was part of the attraction of holidays at Grulin. Nevertheless, they eventually became frustrated with the constant cold temperature in the bothy.

Steve and Do put their names on a plot of land, released by the trust, to build a house. However, they backed out when they realised they could not commit to living on Eigg full time. Then they were going to buy Grulin from Sophie Schellenberg, but she decided not to sell in the end. Subsequently, they heard about the Manse going up for sale. Steve and Do told me the timing was right for them, so they bought it. When Do looked at my photographs of the Manse, she commented, “It is just magnificent, isn’t it?” At first, the couple were worried about how residents would react to them, as outsiders, buying the Manse. Previously, they had “kept [theirselves] to [theirselves]”, according to Steve. However, they soon found out that everyone was delighted that someone had taken on the Manse to renovate. At one point, their solicitor recommended they had a survey done. Steve recalled replying with – “If it falls down tonight I’ve got the most beautiful building plot on the island.”

The Manse was not connected to the island’s grid when Steve and Do bought it, but the connection was already paid for by the previous owner. Steve thinks the higher than average electricity price on Eigg is worth it due to the grid being powered by renewables. Although Steve and Do did not have any input to the grid being installed – Grulin was going to be too expensive to connect due to its location – they followed the progress closely and with interest. Neither of them got the impression that environmental concerns were what drove the implementation of the grid, rather, it was the need for a reliable (and quiet) 24/7 electricity supply, Steve said. However, Do commented that she would have liked to see larger wind turbines on the island.

Although the Manse is now connected to the island grid, Steve and Do are aware that they cannot use electricity the same way as they do on the mainland. Steve pointed to the chandelier above our heads – “We’ll never have a light like that in the Manse.” Do continued – “There are sixteen bulbs up there and you’d never ever do that.” They have low-energy bulbs wherever they can, Steve told me. The Manse is a listed building so they are limited

with the changes they can make to the exterior. However, they were building a timber frame within the house and insulating between that and the original walls, and anywhere else they can. They received a grant from the trust to install solar water tubes, and they installed a log burner that also has a back burner to heat water. They also have a kerosene boiler and an immersion to heat water if needs be. They further commented that they will not heat all the rooms at the same time and will probably live mainly in the kitchen.

I then showed Steve and Do Figures 59 (kitchen) and 67 (living room) to compare the appliances to those they will have in the Manse. Do told me they want a freezer, but only a small one as a large one will be too expensive. They will not have a dishwasher. Neither will they have electric radiators as they are "going to burn mainly wood." Their cooker will be gas, as Steve tells me there is not the current to run an electric one anyway. They have an electric toaster and electric kettle, but said they will probably get a hob kettle like what they had at Grulin. Do stated she has never had access to a washing machine and really needs one, so they will have that, and probably a drier as well to use when they need to. They told me they will look at the consumption of a washing machine, but the main consideration will be its ability to cope with the fluctuations on the island's grid. They further told me they would probably not do this if buying a washing machine on the mainland, but Eigg has made them more conscious of energy ratings.

Furthermore, Steve and Do like the prepaid electricity system on Eigg, where residents buy electric meter cards. The meters then show how much electricity is being used and how much credit is left. This, Steve states, will make them more aware of turning off lights and appliances when not in use. Do added, "you do think differently." Do also stated that while renovating the Manse, they were using a soup maker which changed the way they use food and made them realise how cheaply they can live. In general, their views on sustainable living have been influenced by living on Eigg, they said. Furthermore, Steve said he is aware that he is preserving, rather than renovating the Manse. They try to recycle or reuse everything they can from furniture to materials to repair the house.

Looking at the exterior photographs of the mainland house, we started to discuss electric cars. Steve thinks they are a great idea, but the range puts him off buying one since the couple drive long distances. Do spoke about 'battery angst' from conversations with people on Skye who have electric cars but sometimes find it stressful to plan journeys across the island. At the time of our chat, Steve and Do had a 4x4 vehicle which they needed to take stuff to and from Eigg. However, they told me that once the heavy work was finished, they will not really need a car and probably will not have one on the island.

When I pointed to the photograph of the Saltire (Figure 62), Steve immediately related it to Europe and the upcoming exit of the UK from the European Union. He explained that Eigg benefited directly from European funding and would not be where it is without it. Hence, there is a pro-European feeling on Eigg. Both Steve and Do were upset about the upcoming 'Brexit'. In terms of renewables, Steve also commented that it makes "much more sense to make smaller set-aside grids with communities running their own thing" than spend billions of pounds on what the current UK government is doing with projects such as Hinkley Point power station[10]. Do commented on the ethics that surround renewable projects in relation to private individuals owning and profiting from large wind turbines:

> "You can't completely divorce the renewables from the ethics around it […] I think it's reflected in Eigg and the fact that the community own that system, warts and all, but they own it. Whereas I think if you're just going to have rich people […] owning these things it won't spread to the community feel of its shared ownership because I think that sharing and that community spirit is the only way."

In 2010, Do was involved with an EU funded project on Eigg through her job at Aberdeen University. She attempted to use IT to develop a portal, for example, as a one-stop shop for tourists to book accommodation and activities on the island. She told me she found it challenging as at that time there was a degree of reluctance to acknowledge tourism on Eigg. However, she also stated the result could be different now since the island has undergone much regeneration since then. Furthermore, Steve added that "it's got to be the future."

[10] A controversial nuclear power station being built in Somerset, England.

Figure 80 (Elic_016). Gate to grazing land.

I presented several photographs of Eigg to Steve and Do that led them to raise some of the dilemmas the island faces. These included: the scrap 4x4 vehicle by the post box (Figure 63) that Do hates; the new wheelie bin system, which she claims will “look horrible”; and the abundance of diesel drums (Figure 8) visible around the island – “Yes, they are [everywhere] aren’t they?” Figure 80 was taken close the Manse. Do thinks the metal gate is “hideous”, but explained that gates like the one in the photograph are cheap, which is the reason they are used around the island. Steve and Do are fully aware of some of the contradictions that surround living on Eigg; for example, trying to live sustainably by not having a vehicle, when there is little choice but to burn fossil fuels to heat a home; or burning rubbish instead of recycling it while undertaking beach clean-up projects. Do stated that there is room for improvement, but “you can’t have an ideal society.”

7. ANALYSIS & DISCUSSION

Islefolks may not be a pack of saints, they share the universal ills, but remoteness and the inevitability of being often alone and quiet, do give them a chance, too rare in the predominantly urban population, to live with their eyes beyond the world. They may be seldom able to put words to what they see, but it is immanent in their capacity to act intuitively. (George Scott-Moncrieff)

This section analyses and discusses participants' varying perspectives on the previously defined ten categories and the nuances of life on Eigg in relation to energy, the environment, and of course the renewable grid. Although during discussions, I did not specifically bring up all the categories, the subsequent information related to them surfaced due to the photographs used for elicitation, thus avoiding confirmation bias. Therefore, without me asking specific questions, participants related the photographs to certain topics without much influence other than the image in front of them. This chapter will contextualise information from the above narratives, the visual survey, and the archives in accordance with the categories and literature, and identify the key motivations, impacts, and expectations of Eigg's innovative renewable energy grid, through analysis of the participants' perspectives and the causal transformative model.

Part 1 - Categories

Community

Residents generally spoke favourably about their community. This includes both participants and other islanders who were not included in this thesis. The positive opinion of the community was shared between lifelong and long-term residents of the island, and more recent arrivals alike. Residents appear to be supportive of one another and willing to help each other if the need arises. Furthermore, many of the archive photographs hinted at a strong sense of community, especially in the crofting hamlet of Cleadale. In Cleadale, crofters would help out those less fortunate who had no security under past landlords, and this is where the idea for the community buy-out essentially originated. According to Dalby and MacKenzie (as cited in Rae & Bradley, 2012), a community can be strengthened when a "hardship or unifying resistance" exists, such as the battles against previous landlords and feudalism on the island.

Community ownership allowed islanders to take control of their island. Furthermore, it is one aspect of what made Eigg attractive to many of the newer residents; i.e. those who arrived after the buy-out. During discussions, many participants explained that with community governance, it was easier for them to set-up on the island and realise their

aspirations.

The presence and contributions of new residents, such as renovating old houses, was welcomed and reinvigorated Eigg while simultaneously boosting its dwindling population. However, according to Rae and Bradley (2012), shared values contribute to a community, therefore those whose opinions fall outside the scope of any existing commonalities may not feel welcome and risk alienation. Furthermore, although through community meetings residents can have a say in the affairs of the community, it is unclear as to how long it takes for newer residents to feel comfortable in voicing their opinions or offering suggestions, and whether their ideas will be welcomed. Nevertheless, in accordance with Warren and MacFadyen's (2010) findings, when community members are engaged as active stakeholders in something such as the renewable energy system, negative attitudes are suppressed and positive ones are amplified. This is apparent on Eigg and highlights the causal transformations that take place between base-level properties in order to sustain a newly emerged property (Anjum & Mumford, 2017).

Community empowerment in the form of ownership, as an emergent social phenomenon, came with powers that its parts did not previously have. Thus, in terms of causal transformation, community ownership is one of the two examples of strong emergence to come out of this case; the success of the renewable grid being the other. Furthermore, the change in the base-level properties, for example, security, implies demergence; the lack of security is part of what led to the community buy-out of Eigg, which in turn led to secure tenancies and to attract new residents.

Connections to the land

The visual survey showed signs of residents being connected to the land, for example the many polytunnels that are evident around the island. However, this was not a significant topic of discussion with my participants, apart from with **Catherine and Pascal**. Perhaps this is because it is natural for a rural, especially an isolated island community, to traditionally live off the land and cultivate whatever they can. Thus, for residents such as **Marie** who grew up on a farm and still lives on one, this is just a way of life. While for **Catherine and Pascal**, the opportunity to live off the land was part of what attracted them to Eigg, both in terms of self-sustenance and running their willow weaving business, and for which they are very thankful. This view was also reflected by another resident who told me it is important the island's children do not become blasé concerning the connections to the land since they are already immersed in it as part of their culture. He felt it is important to keep them aware that

they live in a special place that awards them the opportunity to make and utilise these connections. For example, growing food in the school garden is integrated into the children's school curriculum.

Household/individual renewable energy use

Before the island's electric grid was installed and turned on, many residents already had experience with renewable energy at a household level. This dates back to when Lord Runciman used hydro-power in the Lodge. Many residents, including most of my participants, made use of hydro-systems, solar panels and evacuated tubes and continue to do so; the latter of which are evident on many of the island's homes and were prominent throughout the visual survey. Although some, like **Marie** and **Maggie**, now rely solely on the grid for their electricity, others like **Eric** power their homes from individual systems and only switch over to the grid when the load is too much for their own supply, for example when using a washing machine. For most, the grid now services their demand adequately. However, the way energy has been supplied and used on Eigg is interesting when looked upon in terms of traditional DSM approaches and what Lutzenhiser (2014) refers to as PTEM.

It is clear that energy use on Eigg cannot be analysed using traditional models. One component of the PTEM approach was to increase the supply of electricity through the use of technology to service or allow an increase in demand and use. Eigg cannot fall under the criticism bestowed upon this model - by using technology to use more energy, rather than to reduce demand – when it previously had no supply apart from generators. Additionally, it falls outside the remit of macro-economics due to its isolation from the mainland supply. Neither is it party to the "technical elites" that Lutzenhiser (2014, p. 146) claim are embedded within the PTEM perspective and has avoided this on its journey to implement a reliable 24-hour electricity supply. Albeit this is in part through necessity and not through choice.

Although the island largely functions outside the norms and constraints of 'conventional' modern societies, it clearly accepts the "societal 'need' for energy" (Shove & Walker, 2014, p. 41). Most measures taken, whether individually or community led, and environmentally sustainable or not, have been to increase the supply of electricity. Thus, residents use modern appliances with good conscience due to the energy source. However, it is hard to hail Eigg as a model for energy reduction when it appears that energy consumption has increased. Furthermore, Rae and Bradley's (2012, p. 6502) statement that "residents are encouraged" to use less electricity should be properly contextualised; i.e. less than who or

what? Thus, a fraction exists on the island; some residents expressed disdain that others immediately bought high-energy consuming goods such as electric kettles and toasters as soon as the grid was switched on.

The increase in energy use on Eigg is due to the second newly emergent phenomena - the successful renewable grid. Therefore, if energy use is considered a base-level property to the implementation of the grid, the increase in use, or even the ability to use more energy is a demergent property – the powers within the property of energy use and demand have changed. Further, the grid can service the island's current energy requirements and therefore is a new property with its own new powers.

Individual and household fuel use (non-renewable)

Despite the island's electric grid being powered from renewable sources, the Eigg residents I spoke to still use fossil fuels. They all still use gas, kerosene, coal, and diesel for cooking, heating, and personal transport. This has long been the case, as can be seen in some of the archive photographs. According to the majority of participants, fossil fuels are necessary on Eigg. Nevertheless, they want to reduce reliance on fossil fuels for whatever reason, be it cost or the impact on the environment. However, for those who expressed concern for the environment, they face many dilemmas.

Norah, for example, called coal her "nemesis", but explained she needs it to heat the Lodge. Ironically, she used to use her electric milk float to collect coal from the pier. **Maggie**, who displays a Green Party sticker on her window, also did not like to use coal, but it is the most reliable fuel to heat her home. Indeed, it appears most residents would prefer to burn wood instead of coal, but the island currently lacks a reliable wood source. **Catherine and Pascal** refuse to burn coal despite its reliability, but use a diesel van, citing it as a "necessity". Rae and Bradley (2012, p. 6503) claim that "user education [is] an effective carbon emissions reduction tool" but even though user awareness is there, such challenges currently appear hard to overcome. In regards to transport, although two of the participants have electric vehicles, others said they would consider them but the current cost and range puts them. Furthermore, items such as electric ovens draw too much power, so fossil fuel alternatives are needed with gas or kerosene being the fuels of choice for cooking.

Property construction & renovation

Perhaps unsurprisingly, insulation was a primary consideration in regards to both new housing, and renovations. Both the climate on Eigg and the desire to use as little heating fuel as possible dictates this. Modern insulation is an effective way of achieving a greater degree

of household energy efficiency, according to Rae and Bradley (2012). However, good insulation does not come cheap and the second consideration to insulation was cost. For example, **Karl** stated that he could not have afforded the best insulation for his new build if it had not been left over from another build and he could purchase it cheaply from another resident. This also exemplifies the community spirit of Eigg that **Karl and Katrine** mentioned. Furthermore, the community in general seem to be happy to welcome newcomers who are willing to renovate old properties such as the Lodge and the Manse.

Tourism

Eigg is becoming an increasingly popular destination for tourists, whether they just stop off for a day trip, camp or stay in one of the several guest houses for a few days, or stay for longer as a conservation volunteer. Tourists have long been visiting Eigg, as the archives show. However, according to some responses there was a degree of reluctance to accept tourism on the island in the past. Perhaps this was partly due to former landlord Schellenberg turning houses that could be used for residents into holiday homes. Nevertheless, tourism now plays an important role in Eigg's economy and possibly the economic survival of the island. However, the popularity of the island as a tourist destination takes its toll on the energy supply.

Although tourism on the island was evident during the visual survey, the extra demand for energy that it brings was not. Like residents, tourists need to eat, wash, and charge their phones and laptops. They might also want to watch television, make a cup of tea, or read a book when night falls. This stresses an already limited system - from the toasters used to make breakfast at the guest houses that can use up to 2 kw/h of electricity (nearly half of the 5kw/h residential cap), to the extra washing required to clean bedsheets. Many tourists travel to Eigg for the relaxed pace of life and closeness to nature, but some cannot do without their home comforts and probably do not relish the thought of sleeping in a tent during an Atlantic gale. That said, Eigg holds many attractions and some tourists have bought holiday homes on the island or even become residents.

The Eigg residents I spoke to see the population increase on the island as positive. It is a great place to live, they said, with a great community. However, making a permanent move to Eigg is a big commitment, especially if a new resident is moving from somewhere with more amenities and services. Many of my participants were concerned that new residents did not fully understand the limitations of the island in terms of energy use, and their demand for more electricity in order to use the same appliances as on the mainland

cannot be met. Indeed, they may need to alter their everyday practices - their "routinized type of behaviour [and] ways of understanding, knowing how and learning" (Reckwitz, 2002, p. 249) to adapt to life on the island. Thus, although Eigg may appeal for a holiday, understanding the island culture and how to function in everyday life is key to making the transition to living there when so many modern practices involve energy. Furthermore, no matter how good intentions may be, such as **Steve and Do**'s desire to burn only wood, they might not be possible in practice. Nevertheless, most participants agreed that more electricity is required to meet the needs of the increasing population.

Although the grid can be expanded, it was not designed to meet the current and continuing demand for energy. According to Rae and Bradley (2012, p. 6499), a stand-alone system should "be capable of producing sufficient quantities of energy so as to meet the demands of its population." In these terms, if it fails to do so, it fails to be a true autonomous system. Thus, it is imperative to meet the demands in order to prevent the system becoming a victim of the island's increasing popularity, which was largely spurred on by the grid to begin with. Participants' opinion varied on how the increasing demand for electricity can be met and how desperate the situation is. Some thought more electricity should be produced, for example in the form of hydro or wind. Others, such as **Maggie**, who does not believe the situation is desperate and the current supply can service the new houses planned, and **Katrine,** who works for Eigg Electric, believe that more batteries and better inverters are required at first. This way more energy can be converted and stored – newer inverters are more advanced than the ones Eigg currently has. Still, there appears to be a lack of consensus among residents as to which is the best way forward and when exactly it is needed.

Eigg's popularity is in part due to the publicity accrued from: first, the community buy-out, and second, the renewable grid. However, apart from the attraction for some tourists of holidaying 'off-grid', popularity cannot be considered a causal property of the either of the above. It could be considered an emergent phenomenon, which would make both the buy-out and the grid base-level properties. Although, it does not reflect an account of strong emergence, since Eigg was already a tourist destination. If Eigg's popularity in terms of tourism, new residents, and the demand for more energy that comes with it is an emergent property, and with the grid as a base-level property, then the new technologies used to convert and store energy because of the demand becomes part of its demergent causal transformation. This highlights the anomalies with hierarchical or linear causal transformative models and whether a property should be considered base-level or higher-

level. This also demonstrates why the causal framework used here does not regulate itself to linear causality or hierarchy.

Waste management

Waste management is an ongoing challenge on small islands and Eigg is no different. This challenge is evident in the visual survey photographs. However, Eigg has recently been brought in line with the mainland in regards to household waste collection. Although not all participants spoke about the new system, opinions varied among those who did. Some were concerned that the new bins look ugly, the system was impractical for the island (hinting at a lack of empathy and foresight on the part of Highland Council), and that it is a waste of money. Others were not bothered about it or concerned but willing to try it out. Opinions also varied depending on participants' location on the island and the amount of waste they see themselves discarding. Participants also raised dilemmas surrounding waste on the island with larger items such as vehicles; islanders buy older, cheaper cars instead of investing in new and perhaps electric ones but they are hard to dispose of once they break down – an ongoing problem throughout Eigg's history. Additionally, old diesel drums rust and leak. Not only do they look bad, but can have an eventual adverse impact on the surrounding natural environment.

Nature

The wild, unspoilt nature on Eigg is largely what attracts tourists and incomers alike to the island. The archives are full of scenic photographs of Eigg that span over one hundred years. Moreover, neither do long term residents take it for granted. Most homes have stunning views and all participants appreciate their surroundings. This gives them a will to preserve their environment. Eigg's CO2 emissions fell by 47% after they switched from noisy diesel generators, according to Andrews (2014). Long term residents, i.e. those who lived on Eigg before the grid, have noticed a difference with less noise and less exhaust fumes. Nevertheless, preservation and conservation are integral to the island's development and were significant considerations when installing the grid system. Furthermore, conservation takes precedence over where and how the grid will be expanded when required.

The positive change – a cleaner and quieter environment – is down to the grid's implementation and if the grid is considered a strongly emergent property, this change is a demergent transformation. However, if the will to have a cleaner and quieter environment had been the emergent property, the renewable grid, i.e. the source of energy, as opposed to noisy and dirty generators, would have been a demergent causal transformation – from

generators to a permanent renewable grid. Whether a property is emergent or demergent highly depends on one's initial perspective, for example in this case, whether looking at motivations or impacts.

The renewable grid

Although not all participants are connected to the grid, unsurprisingly it was a significant talking point with most of them. More specifically, many discussions revolved around the inconspicuousness of the grid. The wind turbines, the hydro plants, the solar panels, and the cabling are barely visible in the visual survey photographs. There were mixed feelings about wind turbines in general. The turbines on Eigg are relatively small – smaller than I expected. While some residents said they did not mind large turbines, others pointed out that larger turbines would have worked but smaller ones were selected and located out the way to be inobtrusive and kept mostly out of sight. However, other participants told me that the small ones were the most suited to the island's wind. Since the grid was the first of its kind in the world, changes were made from the initial design and figuring out what works best is a continuous process. Thus, it is the "causal process of interaction of the parts" (Anjum & Mumford, 2017, p. 9) that will develop and sustain the grid.

According to Andrews (2014), the initial cost of installing the grid was fair, at £1,664,828, and "not out of line" for such a system. Furthermore, the higher than average cost of electricity to the consumers, which residents do not seem to mind paying, is "remarkably cheap", he states. Andrews also claims the cost of electricity on Eigg is only as low as £0.20/kWh because the island (the Isle of Eigg Heritage Trust and local residents) only paid for around 4% (£92,671) of the installation cost. However, it is unclear why Andrews writes "~4%", since if his other Figures are correct, £92,671 is around 5.5% of the capital cost – a marked difference of nearly £25,000, which would have been over £600 more per household at the time of installation than what he claims. Another contentious claim of Andrews is that the back-up diesel generators are not used when supply is low. However, residents stated that this is simply not the case. **Katrine** explained that the generators were used regularly during the month prior to my visit, since water levels were low for around four weeks. The generators are started when the batteries fall below 50% charge to supplement what the renewables produce and shut off again once the batteries reach 90% (islandsgoinggreen.org, n.d.). Andrews' opinion of renewable energy systems is clear, and like him, not everyone agrees they are the way forward. However, some of his comments about Eigg's system lack credibility.

Politics

As identified by the visual survey of Eigg and confirmed by the subsequent discussions with participants, there is a large support for Scottish independence on Eigg. One topic that arose was the UK's forthcoming exit from the European Union and the potential loss of benefits from the EU for projects such as Eigg's renewable system. However, many participants also expressed disgust at the UK government's policies on future energy production. They believe the Scottish government's policies are environmentally, socially, and economically better. The general consensus on Eigg is that large scale renewable systems have negative consequences. This echoes Rae and Bradley's (2012) sentiment that "in order to fulfil their considerable potential and meet ambitious carbon reduction targets, [low carbon and renewable energy] systems must also be applied at a smaller, localised scale." The Scottish government is a proponent of localised energy systems.

The Scottish government supports renewable energy projects, whether community owned, under shared ownership, or privately owned as long as there is a minimum amount of (unspecified) benefits to the community**.** It offers advice, resources, and funding opportunities through its Community and Renewable Energy Scheme (CARE). It also aims to have at least 50% of new renewable projects under shared ownership, i.e. community and private partnerships, by 2020 (Local Energy Scotland, 2018c). Moreover, in Section 5 of its comprehensive Community Renewable Energy Toolkit, the Scottish government states that off-grid solutions can be "the best option" when no national grid connection is present (Scottish Government, 2009). Indeed, sometimes it may be the only option.

Many recent small-scale renewable energy projects in Scotland have off-grid capabilities. Such projects include a business park in Levenmouth, Fife that can be taken off-grid with a hydrogen fuel cell (Local Energy Scotland, 2018b), and off-grid district heating in Glasgow apartment blocks (Local Energy Scotland, 2018a). This corresponds with technology researcher and molecular biologist, Armstrong's (2015) suggestion that local systems can address the uncertainties that surround future energy production. The systems that are being successfully implemented in Scotland demonstrate that those uncertainties can be addressed with small-scale or community renewable projects. As part of the causal transformative model, demonstrating how such projects successfully operate in practice strengthens their worth and further increases the public and political will and support for such schemes. Seeing leads to believing; emergence leads to demergence.

Part 2 – Motivations, impacts & expectations

The most significant drivers to using a small-scale renewable energy system on Eigg were, and largely remain economic. Moreover, economic motivations are present in various forms. In terms of the renewable grid, this is unsurprising and in line with many residents' comments that a connection to the mainland was not economically viable, potentially costing up to £4.5 million which would be hard to fund (Chmiel & Bhattacharyya, 2015; Piggot, 2003). According to one resident, if someone would have paid for laying a cable between Eigg and the mainland that would likely have been the outcome. However, the renewable aspect of the grid made it eligible for grants and awards that met most of the capital cost. Thus, external funding became an incentive to implement a renewable system. Additionally, continuing financial incentives, such as a monetary award from the Big Green Challenge, motivated individuals, albeit working together as part of the community, to reduce fossil fuel use – the money being used to expand the grid and provide more energy from extra solar panels. The financial reward benefitted both individuals and the community as a whole, enabling them to generate and subsequently use more electricity.

Stern (1986) claims the size and type of incentive contributes to the degree of participation in energy efficiency programmes. In part, this is true with Eigg, but it appears that efficiency measures are often only taken due to the limited supply of energy to begin with. By in large, cost overruled efficiency, for example with the increasing cost of kerosene and diesel – renewable energy not necessarily being a more efficient means of energy production if Andrews' (2014) claim is true, but certainly a less costly one. However, paradoxically in some cases the cost of transitioning to renewable energy had an inverse effect on the motivation to do so. Such examples include the perceived cost of installing and maintaining an independent system, as highlighted by **Karl**, the cost of connecting to the grid for **Catherine and Pascal**, and the initial cost of purchasing an electric car, although it can be charged and run at no cost to the environment and little to the individual after the initial purchase. Nevertheless, although economic factors ultimately dictated whether to move to renewables or not, with a desire to have a reliable and permanent electricity supply, the island was still able to make the choice effectively.

Islanders were left with little choice but to use renewable energy if they wanted a permanent electricity supply at a price they could afford (or would be subsidised). However, several key factors assisted their decision, i.e. the abundant natural resources on the island, their prior experience with small renewable systems, and in some cases their backgrounds, knowledge, and desires. Furthermore, the shared sense of autonomy on the island assisted

islanders to come together as a community and to make an informed and educated collective decision. Here, the island's autonomy shifted from being an emergent property with its own unique powers, to being a base-level property. However, it did not act in a vacuum. For example, supporters of community renewable systems, including the Scottish government, provided further encouragement in this direction. Although the sense of autonomy was quite possibly the key element, it should not be awarded any more strength than any of the other causal properties – removing any one of them, or an alternate interaction, could have resulted in a different scenario. This account moves beyond previous energy research in the social sciences that focussed primarily on individuals' motivations (Wilhite et al., 2000). It also surpasses the use of rational choice theory to determine the drivers – individualistic tendencies and preferences partly shaped the choice, but the community as an emergent whole took the decision through their ability to do so which was shaped by various factors. Nevertheless, the most suitable way of servicing the island's demand for a permanent and reliable energy supply was in turn the most sustainable method of production regardless of the motivation.

The hybrid renewable energy grid *has* made life easier for the residents of Eigg. It has enabled them to use modern appliances that western societies have long taken for granted. The supply is now reliable and more than what they were used to with generators or their own individual renewable systems. Furthermore, the time islanders save due to having electricity may well give them more time to think and reflect upon issues such as climate change mitigation – something they would not necessarily have done before when their primary concern was undertaking day-to-day tasks without an electricity supply. Washing clothes by hand, for example, is a time-consuming task. However, although some appliances may be considered necessary, such as washing machines, and some may be perceived as beneficial in environmental terms, such as electric cars, others such as electric toasters and kettles use a large chunk of the available electricity supply. It is questionable if such appliances are really necessary, as reflected in some of the participants views.

There is no doubt that due to such electricity hungry appliances, energy consumption on the island has risen. Additionally, it appears the new ability to use energy leads to the desire to use more. Further, this is exaggerated by the knowledge that some residents, both new and long term, believe such appliances can be used with good conscience because of the energy source. However true this may be, Sanne (2002) recognises the problem of increasing consumption and acknowledges the rebound effect technological improvement in terms of efficiency can have. Although Sanne frames this in terms of energy efficient appliances, there

are similarities with Eigg; more energy is available, more appliances can be used – and in some cases not even particularly efficient ones. Although the system has succeeded in providing a reliable and permanent electricity supply to residents, it appears to have done little to discourage energy use as Rae and Bradley (2012) claim. Transition on the island does not adhere to the objective of DSM – to reduce overall consumption. Nevertheless, the energy cap seems to play an important role.

Eigg residents appear to be more than happy with the energy cap and have no problem adhering to it. They did not give me the impression that it is an aggressive mechanism of control, as Andrews (2014) claims. Although the cap has not necessarily increased energy awareness among residents, it has taught them to spread their energy load in order to stay within their limit. This is helped by the OWL energy monitors, the likes of which Walker (2014) claims assist the realignment of demand with supply.

Part of the attraction to Eigg is the lifestyle it offers. Daily routines *can* be different from communities where demand comes at peak times, which is for example dictated by societal norms such as traditional working hours. For long term residents of Eigg this is nothing new, but for newcomers this both awards them the opportunity to, and forces them to break from "routinized type[s] of behaviour" (Reckwitz, 2002, p. 249). Thus, daily routines can be adapted, especially when not confined by societal norms; on Eigg, although there may be fewer luxuries available, needs are met, and life is supplemented by the other qualities the island has to offer. Furthermore, many may consider something like a clean local environment to be a luxury, and Eigg is both cleaner in terms of its own previous carbon emissions and those of the British mainland (Ashden Awards, 2010). The results are there to see for those who experienced the island before the system was switched on.

Other less significant indirect impacts of the system (according to the findings of this research) include increased energy awareness (although the impression is that most residents already had this from before), environmental awareness (although to a lesser extent than I anticipated – much of this was informed by individual backgrounds and the selected participants' prior knowledge of such topics), community empowerment, and support for community renewables. This strengthens both Moloney, Home, and Fien's (2010), and Shove's (2004) claim that changing energy practices can influence other processes. However, with these elements being part of what contributed to (the success of) the system in the first place, this also highlights the non-linear causal modality of the system; i.e. the parts influenced the whole, and the whole influenced the parts. Furthermore, the causal interactions that created the grid (as an emergent property) must continue to do so in order to sustain its

(perceived) success. In another scenario, it is entirely plausible that the demergent properties could in fact prevent the grid from continuing to be perceived as successful, for example if the goal is to satisfy the increasing demand for electricity and the grid fails to do so; and in another scenario it is also possible that the grid would not be perceived as successful to start with due to different manifestations between the causal parts. This should be considered before implementing a similar system elsewhere, and indeed projects of any stature when they are modelled on one unique (successful) case.

The renewable grid is now an integral part of life on Eigg. In addition to the community ownership, nature, and isolation, it defines the island to a significant degree. The grid has room to expand, and most residents agree it either needs to be to meet the increasing demand for energy, or newer technology needs to be implemented to convert or store more energy. While some efficiency measures are in place, it does appear that more steps could be taken to encourage further efficiency before more energy needs to be produced. The community has the choice not increase supply and instead try to keep within its current means by encouraging further energy efficiency measures amongst its forty or so households, regardless of the source of the energy and the carbon emissions involved. **Pascal**'s suggestion to replace all current light bulbs on the island with LEDs is one idea that will undoubtedly save energy, unless a vast amount of more light bulbs is installed. At the time, **Pascal** further commented that a simple idea like this could be promoted, for example, on a popular television soap opera with a large target audience, thus making it relevant and relatable (Wilson & Dowlatabadi, 2007). This could also avoid the need for technical and hard to understand information if presented appropriately.

Limitations are, however, evident on Eigg. This is the nature of island living. Recognising this, Eigg and the other aforementioned European islands are taking innovative steps to address concerns regarding energy, waste, employment and conservation. These measures need to be advertised in order to demonstrate how communities can adapt in the face of uncertainty, and to help develop communities in a sustainable manner. With relation to energy they can demonstrate that although supply is limited, general household life is not that far removed from life on the mainland with a national grid connection. With the appropriate adjustments it is entirely possible to reduce energy consumption. However, if Eigg continues to service residents' increasing demand for energy, it will not fully demonstrate that energy can be used more efficiently.

Eigg is just one case, and although unusual given its world-first hybrid autonomous grid, its success is largely contextual. If conditions are right, technically there is little reason

why a similar grid could not be implemented elsewhere. The technical aspect of the grid has already been analysed to see if something similar can be used in underdeveloped areas of Sub-Saharan Africa and Asia (Chmiel & Bhattacharyya, 2015). However, there is more to the technical operation of the grid that contributes to its success. The system currently works for, and is regarded as a success by islanders. However, it would be naïve to think that the same system can automatically be implemented elsewhere with the same degree of sustained or perceived success. That is not to say it cannot, but the powers that shape the outcome should be considered. They will undoubtedly differ from those at work on Eigg, so every case should further be considered within its own context.

Many factors shaped the outcome on Eigg, and in turn were reshaped *by* the outcome – positively for the most part if sustainable energy production is the goal, which in turn can shape society's views on climate change mitigation and help reduce fossil fuel use. On Eigg, a complex web of elements such as community interactions, history, knowledge and know-how, funding, attitudes, perceptions, desires, and aspirations subsequently shaped one another in a dynamic and non-linear system. Nevertheless, this case highlights that the most viable option in servicing the community's need, or desire for energy was also the most sustainable method of production. And as long as the correct interactions take place at the correct time between whatever causal powers exist, there is little reason to think why that should differ elsewhere. In terms of future research, understanding how a variety of causal properties may interact within projects such as Eigg's, and those of the other small European islands, can help build a knowledge base and use experience to provide a foundation for a smooth transition towards sustainable management techniques globally.

8. REFLECTIONS ON THE METHODOLOGY

Although the topic of small-scale renewable energy production is globally significant, the selected methods are of equal importance to this research; the science is embedded in the methodology - from the least subjective visual survey to the most subjective elicitation technique. Moreover, the methodology does not justify the topic and vice versa, but it can determine if such a novel and alternative method may supplement, enrich, or fill gaps left by previous energy research and prove fruitful for subsequent studies. Thus, I reflect upon the extent to which the methods added value to the research, along with the challenges, drawing upon some key examples from the study.

Figure 81 (Elic_039). Catherine and Pascal's house.

The visual survey was instrumental in helping identify themes. Some, such as politics, became a significant topic of discussion even if they were not overtly visible to begin with. Inversely, themes that appeared ubiquitous to the island, such as connections to the land, did not – further analysis of the narratives revealed why. Observations made throughout the visual survey offered questions to ask as the research progressed. For example, would the building styles of the new houses reflect different motivations of the respective residents? Although I had no intention of asking such questions directly due to the proposed elicitation technique, I hoped the answer would surface through the method used, and I believe it did.

Additionally, the photographs pinpointed relevant areas to discuss, for example, why Catherine and Pascal's house is on blocks, when I may have overlooked this due to my own lack of building knowledge. Without them explaining the reason while viewing the photograph (Figure 81) – to reduce the amount of cement used in the foundations – I probably would have guessed it was because of the type of ground the house was built on. Perhaps they would have offered this information with a regular interview, but maybe not unless I asked; the photograph certainly helped obtain it.

Spiralling between data collection, coding, and analysis was helped by returning home between field visits. This gave me the opportunity to print the contact sheets from the visual survey, stick them around the walls of my office, and subsequently select and print the elicitation photographs. This would have been possible in the field, but printer access and adequate space would have been necessary. Nevertheless, the methods *can* be adapted to suit the field site - carrying a simple mobile printer with me would have sufficed. Although the visual survey took a little time to complete sufficiently, I was rewarded by the information gathered. The photographs were returned to, and during coding and further scrutiny, new information surfaced that was not initially apparent. For example, small signs of fossil fuel - such as gas bottles beside houses, and small signs of support for Scottish independence – such as Maggie's Yes sign on her gate or on residents' windows, could have been missed without the aid of a photograph to revisit; the latter provoking lengthy discussions about British and European politics. The sum of these small observations leads to the bigger picture. Furthermore, walking around the island introduced me to issues such as the abundant bracken cover. This is cited in Camille Dressler's (2014) book as a problem associated with climate change.

Traversing the island while undertaking the visual survey also allowed me to experience and therefore empathise with subsequently raised concerns. These included: refuse collection (with unsuitable roads), the island's climate which hampers efforts to dry out wood for fuel, and the isolation when the ferry is cancelled due to poor weather. It also allowed me to stop and chat to residents I met and I soon became a familiar face around the island. Rather than suffering from so-called 'research fatigue', most residents appeared genuinely interested in what I was doing, how I was doing it, and why; photography was a useful tool to spark discussions even when the research was not. When I was re-photographing the archives, islanders were already aware of me and although I generally called unannounced, they welcomed me and allowed me to photograph their properties or walk through their gardens. Subsequently, and due to their hospitality, I probably spent more

time chatting and drinking cups of tea (and the occasional dram) than I should have. Nevertheless, a cup of tea was always accompanied by a story or two.

The categories that arose through the visual survey were very subjective to my own first impressions of Eigg, i.e. the themes developed according to what *I* saw that *I* thought was important to pursue in line with the research. This was also the case when selecting the archives to re-photograph. Nevertheless, the majority of visual survey photographs and archives initiated fruitful discussions. Furthermore, participants offered explanations to my observations, mostly without prompting. For example, Maggie spoke of the gas lamp still hanging from her ceiling next to the modern electric light bulb (Figure 54), and how the gas light was too dim for her to sew by. I did not notice the gas lamp until I reviewed the 2016 photograph at a later stage. When comparing the archive photographs of her house to their modern-day counterparts, Maggie also expressed her joy of having an inside toilet after the renovations – her main concern. Therefore, Maggie attributed meaning to these simple material elements of her home, the importance of which Pink (2013) professes.

Having access to such a comprehensive archive photograph collection aided the research. The collection enabled me to visualise some of what I knew of the island's history. I was also able to put faces to the names of people from Eigg's past and gain insight into family and community life throughout some of the island's history. Furthermore, having a record of past interactions and experiences with Eigg, such as Leonard Wilde's letters, informed me of how visitors perceived Eigg when tourism was in its infancy. Re-photographing some properties led to further interactions with islanders, some of whom became participants in the research. This also led to discussions about future projects that involved the archive collection and my modern-day equivalents, to provide a visual record of the changes on Eigg, such as the cultural landscape, throughout the last one hundred years or so.

During elicitation, the archives sparked interest and initiated dialogue and discussion. For example, Norah had not seen the photograph of the Lodge I presented, and found it interesting that there were no pictures of the original kitchen garden – the focus always being on the newly completed house; Marie reminisced over her childhood at Laig Farm and told me stories, such as when her granny got her finger stuck in the ringer while washing clothes; and Maggie laughed at how her hair had changed colour over the years. Thus, participants became comfortable in my presence due to our mutual interest in the historic photographs. However, the research could have benefitted from further interpretation of some archive photographs, such as the fuel sources for Mary Kirk's cookers in Figure 82 below. Time and

weather were also constraints when re-photographing the archives. An extended study could include more comparisons, lead to more participants, and therefore more interpretations.

Figure 82 (image 240). Mary Kirk in her kitchen.

Using photographs for elicitation and interpreting them along with participants connected us to the topic in a way traditional interviews would not. Moreover, visiting participants in their homes awarded me first-hand experience of elements of the research. For example, when sitting in Eric's home on a cold, dark November night and he explained that everything was running off his small hydro system. Furthermore, the view from the window of Catherine's new bedroom (Figure 71) illustrated the importance she places on being connected to the environment. Perhaps this information would not have surfaced without the photograph, and it was something I could relate to since my bedroom during the final field visit looked out to the Sgurr (Figure 83 below).

Figure 83. The Sgurr, taken from my accommodation in November 2016.

Many of the elicitation photographs evoked an emotional response from participants. In particular, Catherine's reactions ranged from pride when viewing photographs of her new home, to despair when viewing photographs of the mainland house. Norah's reaction to the same photographs was more subdued. It is difficult to convey such emotions in words alone. However, supplementary ways of disseminating the results, such as image-based digital stories[11] that use recorded narratives, would help convey the meanings, and emotions, that participants attribute to the photographs. This is worth considering for future research of a similar nature. Furthermore, the difference in interpretations highlights the individual participants' subjectivity.

Participants' perceptions varied between topics such as grid expansion, household electrical appliances, and coal use. The latter provoked different responses between even whom I would consider to be two of the most ecologically minded participants in the study – Catherine and Norah. Catherine and Pascal refuse to burn coal, but cite their diesel van as a 'necessity', while Norah and her husband do burn coal, but only use electric vehicles. These opinions are informed by participants' own subjective backgrounds and needs, and highlight

[11] Audio narratives to photographs, stemming from photo-elicitation.

the complexity of, for example, implementing a complete transition to carbon-free living in an environment such as Eigg. Other photographs that provided significantly varying opinions among participants included the new wheelie bins and the Scottish flag.

Hanson (1965) claims interpretation begins as soon as an observation is made. This is in accordance with the observer's, or viewer's own subjective interactions or knowledge of the topic. Reactions to the flag (Figure 62) highlighted this. However, to understand the participants' responses to the photograph of the flag, one would need to have knowledge of its background, what it symbolises and the ongoing debates surrounding Scottish independence. Even as a researcher, it is hard to remove oneself and observe this objectively when, for example, my own views on the flag are already shaped.

Other instances of my own subjectivity emerged throughout the research. For example, my initial impression of Karl was one of eco-mindedness. This stemmed from my own reaction when I saw the house he was building. However, as the narratives show, Karl's main concern was cost and he himself claims he is not that ecologically minded. Karl was also pleasantly surprised when I showed him real photographs, instead of using an ipad or equivalent. Of course, I could have used such a device, but the photographs could not have been spread out and viewed together as a collection – my main reason for not doing so. Furthermore, it would have been one more electronic device to charge. Nevertheless, it is something I would consider in the future if printing is not possible.

I asked very few questions during elicitation. Participants essentially led the discussions, prompted by the photographs. However, not all topics of discussion came directly from the photographs. The increasing demand for electricity, for example, surfaced indirectly – this was not something I had photographed, apart from perhaps the new houses. Furthermore, participants felt so at ease that on some occasions they provided me with information that although they did not state was off-the-record, I will not publish due to my ethical responsibilities. I have no doubt this is down to the methods and my rapport with many of them. Participants became part of the research process - working with me, instead of being simply subjects. Moreover, I greatly appreciated the time they spent with me, sometimes on more than one occasion. Catherine and Pascal, for example, were very busy between fulfilling orders for their willow weaving business and finishing off their new house. Therefore, I interviewed them in their workshop while they were working, as I did with Karl when he was outside sorting out timber to plank. However, when I later expressed my gratitude to Catherine and Pascal for their time when I met them on the ferry going back to the mainland, Pascal explained that he did not mind as he fully understood the importance of

the research. This was a key moment for me as I realised that participants were simply not just helping out a student – instead, they understood *why* I was conducting the study, and were happy to be part of it. Nevertheless, I tried not to outstay my welcome with any participants.

Recorded discussions with participants frequently became over an hour long. This resulted in a long time spent transcribing. However, I believe that although coding and transcribing was a lengthy process, and the three-tiered approach to the methodology (visual survey, archives, elicitation) took time, the narratives reflect the richness of the data gathered.

A question remains over how valid the answers are. Eigg is unique, and the data gathered relied on participants', and to an extent my own subjective interpretations. Pink was correct to question how true knowledge produced in this manner is, but hers, and my transparency is reflected in the acknowledgement of it. Future studies could help understand the causal interactions that lead to the success, or the failure, of other sustainable management projects. For example, community empowerment combined with political support could be commonplace for a sustainable management method to succeed. On the other hand, these two properties may interact differently due to the influence of other properties. The research is there to be done. Understanding how the causal properties interact can certainly help avoid failure, when success is often a perception. Exploring perceptions through a visual methodology undoubtedly helped gain insight into the causal actions of the motivations, impacts, and expectations of transitioning to and using community renewable energy production on Eigg. The photographs led to interpretations; the interpretations led to meanings; the meanings led to knowledge. Furthermore, the method is transferrable to subsequent research of a similar nature and is worth considering for not only studies about energy transitions or approaches to sustainable management, but for a wide variety of social science studies.

9. CONCLUDING REMARKS

The results of this study highlight the important role small communities can play in addressing issues such as climate uncertainty, depleting fossil fuel reserves, and social inequality. For a small community, Eigg receives a lot of attention. This is not necessarily through choice, but because of events throughout its recent history. These include the community buyout and the implementation of the renewable grid. The community's will to succeed could help it find other innovative solutions to the remaining challenges it faces. Furthermore, knowledge can come from sharing the experiences of similar communities. Understanding the causal transformations of one case may help adapt solutions to fit the context of another. Part of the answer to future energy production lies with community renewable systems such as Eigg's. Thus, despite not currently being a positive example of demand side management, Eigg *can* offer valuable lessons regarding small-scale sustainable energy generation and therefore deserves its pioneering status.

A hybrid system like Eigg's diversifies energy production. Therefore, it does not rely on a single source, but utilises several - sun, wind, and water. Although the system occasionally reverts to its back-up generators, future advances in renewable technology will allow for more energy to be stored when resources are plentiful. As the design of the grid allows for expansion, it can adapt to potential changes in the available natural resources, as well as some extra demand for energy. Additionally, it does not rely on energy produced by harmful and unsustainable means, such as coal, fracking or nuclear power – all of which many countries continue to implement. Furthermore, with the grid as a community entity, reinvesting the profits can help with the cost of expansion and new technologies, for example batteries and inverters.

The Scottish government's renewable targets are ambitious. However, localised renewable systems, whether on or off-grid, can help meet them. Moreover, decentralising energy production along with accepting it as a non-profitable commodity is part of what contributes to the success of Eigg's grid. The grid is not only an asset to the community, the community is a necessary asset to the success of the grid. Neither community autonomy, nor new energy systems, come without challenges. However, similar cases continue to follow Eigg's precedence, both in Scotland and further afield; and this is not confined to islands. Energy autonomy opens up broader debates regarding community governance. On Eigg, the social, cultural, and environmental benefits of both are visible. If Eigg continues its pioneering efforts, it will remain one of the global leaders in small-scale sustainable

management and could help other small communities adapt and follow suit, offering a viable alternative to mainstream energy discourses.

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APPENDIX I: Photography equipment

Photography equipment used was a Nikon d300s dSLR with a Tokina 80-400mm telephoto lens, a Nikon 18-200 zoom lens and a Tokina 12-24mm wide-angle zoom lens. The 1.5x crop factor (when compared to 35mm or full-frame sensors) of the Nikon d300s' sensor means that the lens' focal lengths can be multiplied by 1.5, i.e. the maximum focal length of the Tokina 80-400mm becomes the 35mm equivalent of 600mm. While some image quality is lost at this focal length, the Nikon d300s was still a good choice considering the desire to take long-range photographs, as well as it being a light, but sturdy and weather-sealed camera for travelling around an island where the weather can be unpredictable. Furthermore, the Tokina 80-400mm lens is one of lightest and most compact telephoto zoom lenses in the world – an advantage for travel photography when carrying a lot of heavy and big equipment is difficult.

The minimum focal length in the lens range, 12mm of the Tokina 12-24mm wide-angle zoom, provides a 35mm equivalent of around 18mm – a good choice for wide-angle and landscape photography where a lot of information needs to be recorded in a frame. The choice to use zoom lenses instead of prime (fixed focal length) lenses meant that less walking was required and although there is a slight loss in overall image quality, and less aperture choice, a wider range of images could be taken. In addition, a Nikon J1 compact mirrorless camera was carried for shots where the overall image quality was not as important, the dSLR was not readily available, and for its HD video capabilities. A sturdy Manfrotto tripod with a pistol grip was used to steady the cameras when required in order to avoid blurry images. A Nikon SB-800 speed light was also carried but seldom used, as making use of natural available light was preferred.

APPENDIX II: Satellite image of Eigg

Imagery ©2018 Getmapping plc, Landsat / Copernicus, DigitalGlobe, Data SIO, NOAA, U.S. Navy, NGA, GEBCO, Map data ©2018 Google

APPENDIX III:

Informed consent form

For participation in the research project - **"Community generated renewable energy; the impacts, expectations & perceptions of using small-scale renewables."** *(Working title)*

Researcher:
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Norwegian University of Life Sciences

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1430 Ås
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Thank you for agreeing to participate in this research project. The project is being carried out in conjunction with my Master's thesis in International Environmental Studies, as well as for other academic use within the university (NMBU). The material gathered will be used for academic and possible non-academic purposes, for example non-academic publications or exhibitions (non-commercial). Your participation is voluntary and you are welcome to change or end your involvement with the project at any time. You are free to ask me, Neil Davey, any questions about the research project.

This research project will explore how individuals, households and communities perceive living on small-scale renewable energy systems and how that shapes their views on environmental sustainability. This will be done through interviews and photography. Although you may not benefit directly from the project, there is currently a lack of research on the social impacts of using small-scale renewables and your participation will help provide valuable insight into the topic.

Although no negativity or controversy is anticipated towards the project, you are under no obligation to discuss topics that you feel are sensitive and you can remain anonymous if you prefer. However, you must be aware that even with anonymity you may still be identified due to the small size of the community. If you require anonymity we can choose another name for you. Any minors involved in the project will remain anonymous at all times unless further consent is obtained. Furthermore, all data gathered will be transferred, transcribed and stored securely by only me.

With your permission, you may be quoted in the thesis and any future works that use this research. Upon request you can approve any passages that quote you directly. You can also have a personal copy of the final written document if requested.

You can give written consent to participate in this research project. Minors must have written consent from a parent or legal guardian, along with their school if necessary. By giving consent you agree to voluntarily participate in the research project and indicate that you have read this form thoroughly. The consent form will be signed by the researcher (me) and participant (you) and you will receive a copy.

I, ……. (or parent/guardian/school) give consent to participate in the research project, "Community generated renewable energy; the impacts, expectations & perceptions of using small-scale renewables."

Please tick where appropriate:

Direct quotes, i.e. where your exact words are used in the final publication

I give permission to use direct quotes in this, and subsequent works that use this research ___

I give permission to use direct quotes in this, and subsequent works that use this research with prior approval ___

I give permission to use direct quotes in the thesis only ___

I do not give permission to use direct quotes ___

Photographs, i.e. of you, your property or provided by you

I give permission for any photographs of me, my personal property and/or provided by me to be published in this and any future works that use this research ___

I give permission for any photographs of me, my personal property and/or provided by me to be published in this and any future works that use this research with prior approval ___

I give permission for any photographs of me, my personal property and/or provided by me to be published in the thesis only ___

I give permission for any photographs of me, my personal property and/or provided by me to be used in the research but not published ___

Anonymity

I wish to remain anonymous ___

Participant's signature: **Date:**

Researcher's signature: **Date:**

APPENDIX IV: Tables 1-10

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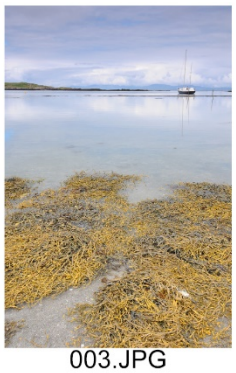

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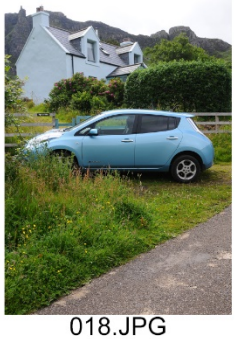

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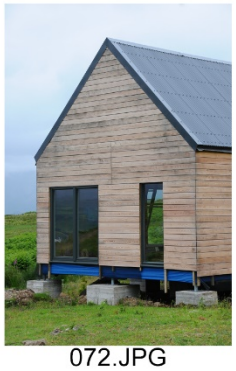

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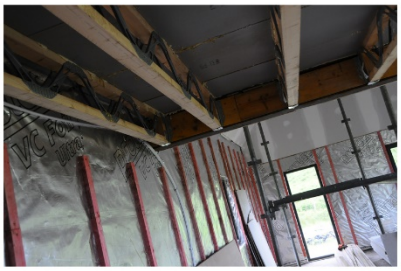

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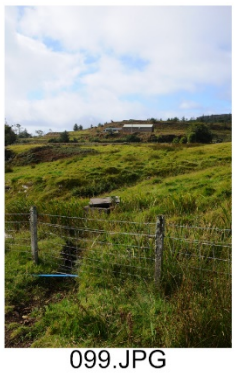

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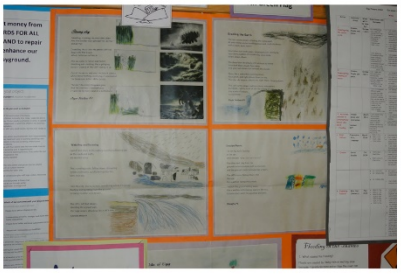

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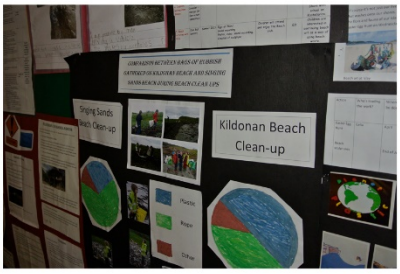

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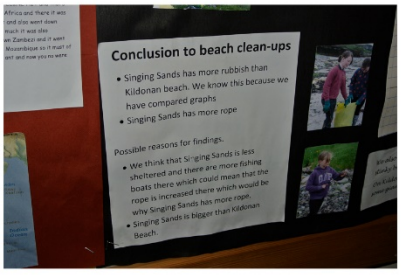

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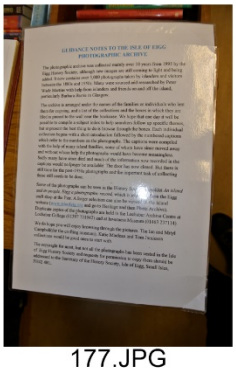

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APPENDIX V: Tables 12-19

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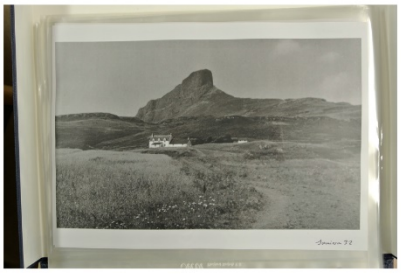

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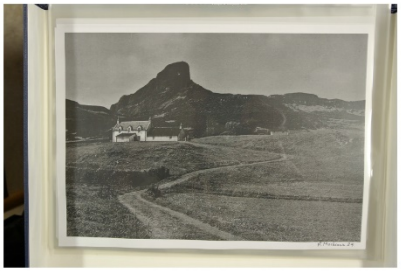

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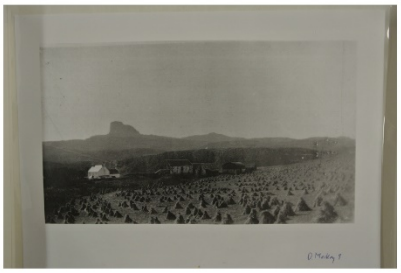

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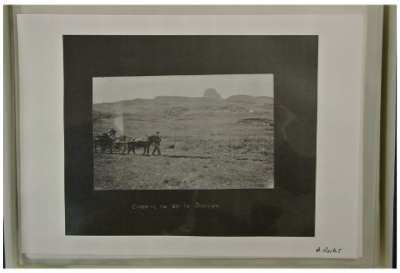

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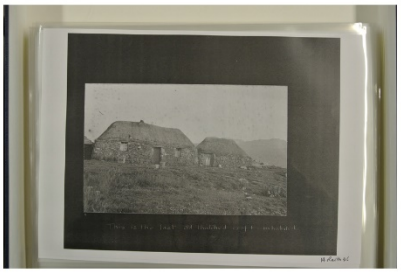

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APPENDIX VI: Letters from Leonard Wilde

*Letter dated 15.6.36

Dear Mother and Dad,

In an hour or so the post goes, and as the pillar box (yes!) has not been opened since we arrived, you will see this is an Event. We managed to wake up on Friday morning – a terrible awakening, for we set two alarm clocks just in case – at three o'clock, and got the 4.30 a.m. from Waverly. We changed at Glasgow and departed therefrom at 5.40 on a most beautiful journey. The weather was wonderful. It was rather curious to be going along in that desolate country, eating a beautiful breakfast in a walnut-panelled restaurant car. Beautiful breakfast, indeed! And Ann tucked into her portion like a Trojan, and was not charged for. Arrived Mallaig about 12, and onto Macbrayne's steamer, which is a very cosy and well-appointed affair.

At 2 o'clock you should have seen Jan's face when I pointed out a little open boat and told her we and our luggage had to transfer mid-ocean as the steamer can't get near the island! There were ten or so passengers for Eigg and sundry merchandise, including a couple who were returning from a honeymoon in Glasgow – the first wedding on the island for eight years. Dancing held till 5 a.m. (Boat goes at 6.30).

We were met by a shy youth with an aged pony who is a youngster compared with the trap he was harnessed to. The air was very good and my legs wanting exercise so I walked the four miles to the house, while the others jolted along the cart track over the moor. They had to dismount for the last stretch, which was too dangerous, said our guide. And here we are, on an exquisitely beautiful island.

I have never seen such flowers. Bluebells, primroses, foxgloves, orchids, roses, butterworts, sun-roses, and many I cannot name, to sizes I haven't seen before, and the bluebells of a most vivid blue. Our bay faces west, and opposite is Rhum, grim and forbidding, towering out of the sea. We can see in the north the tail of Skye. From the window we look on to the wonderful sands of Laig Bay that stretch in a crescent about a mile across, flat as a billiard table, and white, silver sand, with the Atlantic rollers breaking all the time. Behind us is a ridge of cliffs stretching across the island a thousand feet high, sheer, with a narrow neck for the road (!) to cross. We have visited Camus Sgiotaig, the Bay of Singing Sand, about a mile North of us, where the sand is even whiter and the scenery grander, and the sand squeaks as one walks on it. The geological Survey says there are only two other such sands in the world.

Yesterday opened with bitter wind and rain pouring, but it cleared, and the sun shone after dinner, so we walked over to the side where we landed, and back again, with the pram. On the way back I called in the Kirk, where the parson was thinking of having a service. He was due in Canna, but couldn't get in the morning on account of the weather, but not many could have realised this for only three turned up. "Let's have a short service" said he, and did. Jan went on with the pram.

We are very comfortable in this croft, where we have the best room to ourselves, peat fires, scones, home-made butter and the thickest milk I ever tasted. Ann is going browner every day and Jan has a sore place where her chest used to be owing to over exposure to the sun. We have no plumbing, and the sanitation can best be described as sufficient, with an essential simplicity. When it rains, it is better to use the bedroom!

Today started well but is now dull and wet. I have exposed four films to date. Had some shots this morning at the Atlantic breaking on the sand. Although it's comparatively calm now, the waves are very impressive.

Here comes our tea, so will close.

Love from us all,

Leonard.

*Letter dated 20.6.36

My dear Mother and Dad,

In order to answer all your questions I must refer you to my forthcoming publication. However, within the scope of a mere letter I will to deal with the gist of them.

There is one shop, The Isle of Eigg Co-operative Society, next to the Post Office, two miles from here. We bought it out of apples – three of them. It consists of one room of a cottage, with walls and floor choc-a-bloc with oddments, but no luxuries. Chocolate is now unobtainable. We bought it.

The people don't do much for a living – not as much as they might. I think they are mostly possessed of tiny incomes – pensions and such, sufficient for what has to be bought. They keep their own cows and hens, and each has a piece of land to yield field and garden produce. They get all the peat they want for the fetching, and a boat comes once a year from Glasgow with coal at 35/- a ton. There seems to be nothing in the way of making money at all. They might easily keep thousands of sheep, but our meat comes from Glasgow weekly, and I have not seen a hive in this paradise for bees. (The air is at this moment heavy with scent).

The parson is friendly enough but I don't think much of him or the Church that sent him. He is an Irishman, a confirmed bachelor (I don't wonder, by the look of his face) and has no Gaelic, and never seems to visit his parishioners, who hold him and his church in contempt. They know more about fundamental things than he does, and dogmas are rather foolish in a place like this. There's an R.C. place here too. The priest is an earnest body and is accepted as a worthy soul "but he has no depth in him – all Church and not much religion, same as the parish minister." So they look up at the Sgurr, and across to Rhum with the sun flaming behind and don't bother too much about parsons.

The school has a mistress who lives there by herself. A seemly damsel, I believe.

You will gather that the people we are living with are homely folk, crofters, like the rest, with a house better than some, three up and three down, offices outside some distance away. Father, over 70, born here, seen the world seafaring, and come back. Has his own wisdom and philosophy – a fine old man. Mother a kindly soul not yet grey, the hub of the household, has had twelve children, two of whom are still at home. Ian is the island postman, and does all sorts of things. Mary helps Mother and wishes there were more men on the island, I think.

Meals – staple food eggs. Example:-
<u>Thursday</u>. Breakfast; 2 boiled eggs. Lunch; bacon and egg, mashed potato, fruit and cream. Tea; <u>tinned</u> salmon and hard boiled egg and lettuce thinnings.
<u>Friday</u>. Breakfast; 2 poached eggs, lunch, macaroni cheese and milk and egg pudding, tea; omelette (five eggs).

Today being Saturday we start the week's joint. Also, Ian caught a fish yesterday evening, so we haven't seen an egg today. But we have about a pint each of lovely milk to go to bed with, and there's cream ad lib., and cream cheese.

Since Tuesday afternoon we have had the most glorious weather imaginable. On Thursday I set out for the hardest day the island can provide – over to the other side and up An Sgurr, then over the lochs and bens past the western crags home. I was seven hours at it and only stopped 15 minutes, to eat my piece, and was about dead when I got in. But it was well worth it. I cannot begin to describe the view from the top of Sgurr. Two blokes I met on the way, from a yacht, who seemed to have knocked about the world, were in ecstasies about it – it beats Corfu and Table Mountain, they said. Then the further scenery, anong the rough country behind Sgurr, was magnificent – amazing, for such a small island, and along the top of the western crags I began to wonder if I should lose my nerve. I looked over one, and the

sea was far below me, and on the pinnacle to the right was an eagle (yes!).

<u>Sunday.</u> (Janet writes)

Today is really so tropical that it is too hot to think or do anything at all. We've had a bathe, but the sun was uncomfortably hot afterwards when we dressed. Ann has worn a swimming suit all the time since dinner and added a sun bonnet and jacket when on "tatas". Her sleeping is as usual; How she keeps going I can't imagine. We put her to bed when we go – about 11.0 P.M. but even so, have to rock her off to sleep – she succumbs most reluctantly. She's enjoying every moment of the time, getting brown.

What a pity about Mr Claxton – he hasn't lived long enough to enjoy his retirement.

The return boat on Friday leaves here at 6.30 A.M. and we have a 4 mile walk to the alleged pier! Think of us.

Much love from us all,

Jan.

APPENDIX VII: Elicitation

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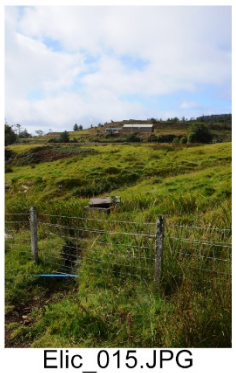

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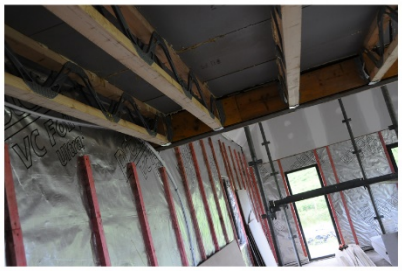

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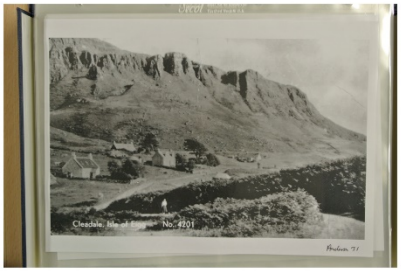

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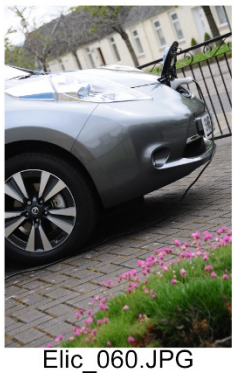

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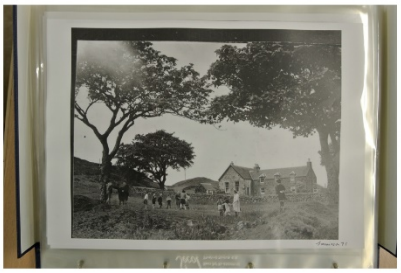

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