

‘Good farming’ beyond farmland: exploring farmers’ knowledge(s) and practices in relation to rivers and riparian environments

Thesis submitted in accordance with the requirements of the
University of Liverpool for the degree of Doctor in Philosophy
by

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October 2019

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Abstract

This thesis takes a social science perspective to consider farmers' engagements with riparian environments. It has been widely recognised in recent literature that farmers have a crucial role to play in providing more environmentally-sensitive forms of agri-environmental management. Whilst social scientists have begun to make significant contributions to these discussions, they have focused largely on terrestrial environments, with little detailed discussion of rivers and riparian environments. The thesis considers a catchment in the North West of England (UK) and uses in-depth qualitative, on-farm, interviews with 64 farmers, to make a number of contributions to our broader understandings. First, it offers a methodological contribution – reflecting on the merits and challenges of doing 'on-farm', emplaced, interviews. Specifically, the thesis contributes to the discussion of interviewer positionality – introducing the idea of 'geographical ignorance' as a way of positioning, simultaneously, as both 'insider' and 'outsider' - and also to the discussion of research emplacement by considering the challenges and benefits of interviewing on the farm. Second, the thesis observes how riparian environments' (im)materiality, unpredictability and untidiness limit their ability to generate and exhibit capital(s) and how an infrequency of direct engagement with rivers – arguably reinforced through recent regulatory changes on what farmers can and cannot do to riparian environments – mean that farmers have often not developed skills and capitals associated with rivers in the same way that they have for land. These observations are used to consider farmers' engagement with more recently introduced river health-enhancing managements and to consider whether, when taken together, we might be witnessing a shift in how riparian environments contribute to good farming and good farmer status. The thesis has also found that sustainable managements have the capacity to dovetail with pre-existing symbols of good farming, creating win-win scenario/s that benefit river health and accord with a good farmer identity. Thirdly, through a consideration of the Catchment Sensitive Farming (CSF) initiative, the thesis considers how farmers engage with, utilise and share knowledge, noting a general receptiveness to the knowledge offered by CSF advisors, but highlighting the importance of specific contexts and personal relationships within this process and how farmers may hold different knowledge practices in relation to different parts of their farm. The thesis further illustrates that specific places and spatial contexts are important to how knowledge is taken on and

reworked, and changing regulations and environmental conditions, the paper suggests, may be reshaping what knowledges farmers draw on and trust.

Acknowledgements

This thesis was produced with the help of a number of people who I wish to thank and acknowledge. Firstly, I would like to express my sincerest thanks and deepest gratitude to my supervisors, Dr Mark Riley, Dr Hugh Smith and Dr Andy Davis. I simply could not have wished for better supervisors and I am thankful for the opportunity to complete a thesis under their supervision. Mark has been invaluable in the development of the research ideas and has, throughout the course of the PhD research, provided continual support both in the form of coffee meetings and reassurance that my writing style really isn't as bad as I think it is! His ability to ensure calmness is inspirational and his knowledge unparalleled. Without him this thesis would not have been such an enjoyable experience. Hugh - although, sadly, moving on to new adventures after my first year - was vital in the early stages of the PhD providing a much-needed physical geography perspective. Andy has stepped up to take over Hugh's role and has been on hand whenever assistance has been needed particularly in the later stages.

Secondly, I would also like to thank Jack Spees and the Ribble Rivers Trust for providing invaluable assistance with data collection, helping to establish contacts amongst farmers and landowners within the Ribble catchment. This leads me to the farmers in the Ribble catchment, and I wish to thank them for all the time and trust they have given me. For anonymity reasons I will not name anyone individually, but wish to thank them for giving their time, support and encouragement.

I also wish to thank my family and friends. A special thanks to my mum, Liz, for helping with the mountain of proof-reading - although she wasn't always sure what I was writing about - my Dad David, who assured me he was happy to lose (hopefully) the title of 'the only Dr in the family', and my Gran who told me that she was so proud of me for pursuing my education and research whilst simultaneously bringing me back down to earth when she said 'will anyone even read your papers?!' I also wish to thank my partner, Ed, for the everyday emotional support, encouragement and continual supply of chocolate.

Finally, I wish to thank the Economic and Social Research Council who funded this CASE studentship.

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List of Acronyms and Abbreviations

AES	Agri-environmental Scheme
BPS	Basic Payment System
CAP	Common Agricultural Policy
CS	Countryside Stewardship
CSF	Catchment Sensitive Farming
CSFF	Countryside Stewardship Facilitation Fund
CSFO	Catchment Sensitive Farming Officer
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EC	European Commission
EFA	Ecological Focus Areas
ELS	Entry Level Stewardship
ES	Environmental Stewardship
ESA	Environmentally Sensitive Areas
EU	European Union
GAEC	Good Agricultural and Environmental Conditions
HLS	Level Stewardship
NE	Natural England
NFU	National Farmers Union
NGO	Non-Governmental Organisation
NVZ	Nitrate Vulnerable Zone
OECD	Organisation for Economic Co-operation and Development
OELS	Organic Entry Level Stewardship
RDDE	Rural Development Plan for England
SFP	Single Farm Payment
SMR	Statutory Management Requirements
SSSI	Site of Special Scientific Interest
TM	Transactional Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
WFD	Water Framework Directive

Chapter 1

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1. Introduction

The UK farming industry is in the midst of rapid change: Brexit; continued decoupling support payments from production; social change, and an increasing concern about matters of environmental protection and countryside access. The need for sustainable agriculture has never been greater. As global populations rise and diets, consumption levels, and global markets change, increasing demand is placed on food producers, whilst at the same time there is an increased emphasis on conserving the environment (Godfray et al., 2010; OECD, 2012). To tackle both environmental and food security challenges, more sustainable agricultural systems are needed worldwide.

Some 71% of the UK's land is used for agriculture and the way in which it is farmed can have environmental impacts – both positive and negative (Winter and Lobley, 2009; NFU, 2017). As such, agricultural land has the ability to deliver a wide range of essential goods and services for society, including food, fibre, timber, clean water, energy, wildlife habitats, carbon storage, flood management, employment and recreational opportunities (CISL, 2014). It can also provide other ecosystem services which benefit agriculture itself: soil formation, nutrient cycling, water regulation and purification, genetic resources, pest regulation and pollination (Natural England, 2012). However, such services will only be achieved if agricultural land is managed sustainably.

1.1 Sustainable Farming and Environmental Concern

Recognition of the damage caused by agricultural intensification has deepened in recent years, with concern focused on issues such as climate change (Burney et al., 2010), biodiversity and habitat loss (Firbank et al., 2007) and water pollution (Withers et al., 2014). Individually, each of these issues pose a challenge and, collectively, their consequences are potentially devastating. There has also been a surge of policy, and more popular commentaries, on these problems caused by modern agriculture and the solutions that may be offered. As Wynne-Jones (2016, p.533) notes “George Monbiot has been one of the most prolific and vocal commentators, writing in a range of media outlets from the Mail Online to the Guardian and Twitter”. Such comments include “Goodbye – and good riddance – to livestock farming” (Monbiot, 2017a) and “Insectageddon: farming is more catastrophic than climate breakdown” (Monbiot,

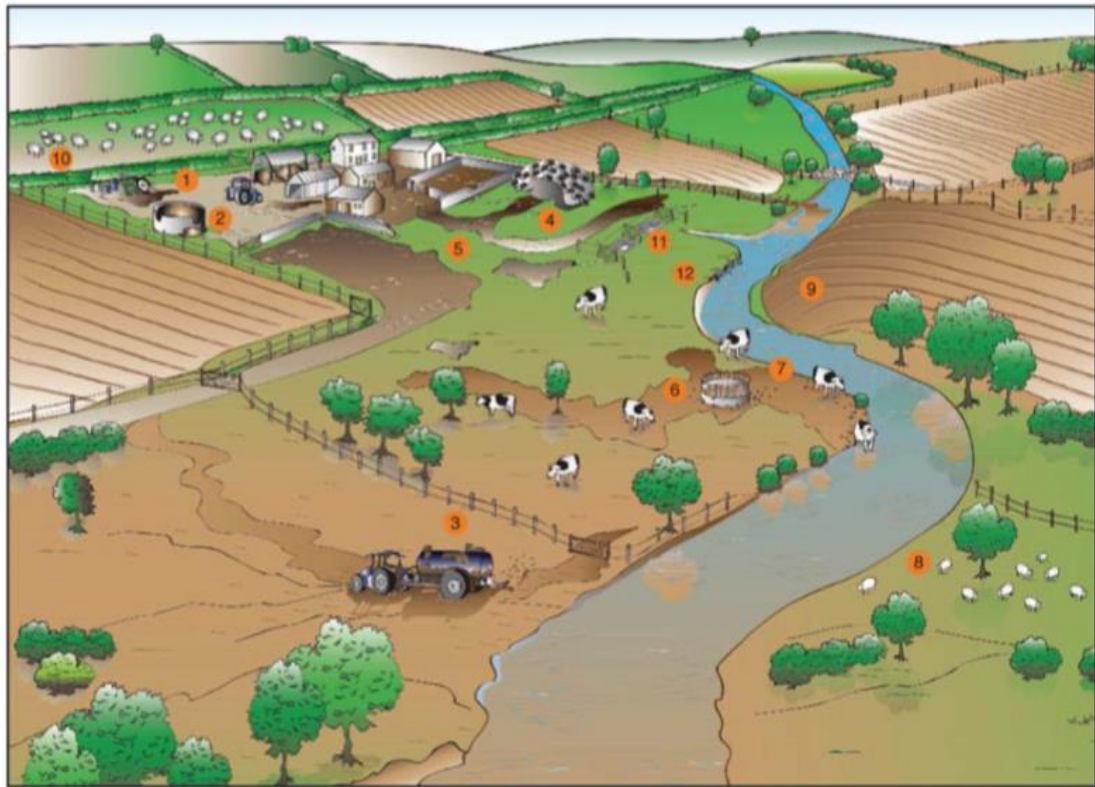
2017b). Although George Monbiot is just one commentator, his voice is part of a growing public discourse which has come to question the role of contemporary agriculture and has seen a steady repositioning of farmers not simply as producers of food, but also protectors of the environment. As a result, UK agriculture is increasingly having to adapt to new terms and conditions, largely driven by a shift in rural policy which is increasingly pushing towards the provision of public goods by directing farmers towards these new ‘post-productivist’ roles (Burton, 2004b). Agriculture is increasingly being pushed into becoming a multi-functional industry with food production and environmental protection sharing the top spot on the agenda (Winter, 1996; Warren, 2004). Farmers are subsequently in a position of responsibility and under increased pressure to use natural resources efficiently by both maximizing crop production and minimizing negative impacts on natural resources (McGuire et al., 2015).

Due to the multi-faceted nature of socio-natural systems, researchers have pointed out that the environmental concerns associated with agriculture cannot be viewed simply from a natural science perspective, but need to also include social science approaches which can help us better understand why farmers act as they do and to offer insight into how, or not, farmers might adopt conservation managements (Muro and Jeffrey, 2008). As Reimer et al. (2011, p.30) summarise, these environmental challenges require “further research to understand what motivates farmers to undertake conservation activities in order to improve existing voluntary programs for addressing environmental problems in the agricultural landscape”. Similarly, Jackson (2004, p.2) notes that “the realisation that people’s choices, behaviours and lifestyles will play a vital role in achieving sustainable development is one of the (relatively few) points of agreement to have emerged from international environmental policy debates over the last decade or so”. Such insights highlight the central role that social science has to play within sustainable resource management and how it might enable us to explore the choices and behaviours people exhibit. The most voluminous social science literature, to date, around agriculture and environmental issues is that focusing on agri-environmental schemes (AESs) (discussed in more detail in section 2.1), where research has considered themes such as initial motivations around entry into schemes (Wilson, 1997; McCracken et al., 2015), barriers to adoption (Wilson and Hart, 2000; 2001), and more recent work which has considered post-adoption experiences (Morris,

2006; Riley, 2016). Whilst this now growing literature has begun to paint a detailed picture of farmer-environment relations, the focus has been very terra-centric, with very little consideration of how farmers consider riparian environments within their agricultural and environmental management. It is to filling the research gap that the current thesis turns its attention.

1.1.1 Riparian Concerns

The OECD (2012) state that improving water quality is consistently ranked as a top environmental concern. As agriculture exists within a symbiosis of land and water, there is an increasing pressure on farmers to ensure that their activities do not adversely affect water systems – both in terms of flow and quality. Whilst agricultural production has intensified, and urban, industrial and sewage treatment improvements have occurred, the contribution of farming to the deterioration of water quality has become more prominent. The increasing awareness of the strong link between farming practices and water pollution has led to greater scientific research, as well as political focus, on water quality and agriculture (Moss, 2007; Wheeler and Evans, 2009; Holden et al., 2017). Approximately 20% of phosphorus, 75% of sediments and 55% of nitrate pollutants in watercourses are estimated to come from agricultural activity (McGonigle et al., 2012). Figure 1.1 illustrates how farming (in a UK context) can contribute to water pollution. As a result, there is an increasing need for agricultural water management to be coordinated with, and integrated into, the overall farm management, as well as the wider water management of a region in order to increase agricultural productivity whilst reducing environmental burdens.



- | | | |
|---|---|--|
| 1 Poorly maintained yard and buildings – uncovered stock gathering areas result in clean and dirty water mixing. | 5 Poorly maintained tracks can act as a pathway to the river for dirty water and animal wastes. | 9 Arable field on steep slope next to the river – no in-field grass or shrub buffer between field and river to help intercept runoff. |
| 2 Poorly maintained slurry store next to ditch – increased risk of slurry draining into the river. | 6 Poorly sited livestock feeder and gateways – poached soil prone to erosion, compaction and runoff. | 10 High stock densities and use of heavy machinery – increased risk of soil compaction, surface runoff and erosion. |
| 3 Over and untimely application of fertilisers, manures and slurries – increased nutrient loss and water pollution. | 7 Uncontrolled stock access to the river resulting in trampled and eroded river banks, direct inputs of faecal material and increased risk of water borne diseases, injury and lameness in stock. | 11 Stock handling areas such as dipping pens next to watercourse – increased risk of animal waste and insecticides entering the river. |
| 4 Silage clamp next to ditch – increased potential for leachate to drain into the river. | 8 No riverbank trees – lack of cover for wildlife and risk of high water temperatures during summer. | 12 Inappropriate, unconsented bank reinforcement can damage river habitat and increase erosion. |

Figure 1.1 - Potential ways in which agriculture can impact upon watercourses. Adapted from Eden Rivers Trust (2011).

Public concern relating to the connection between agriculture and pollution is also on the rise (Parris, 2011; McGonigle et al., 2012). Sources of water pollution are generally distinguished as point or diffuse (also known as nonpoint). Pollutants from point sources are discharged directly into receiving waters at distinct identifiable locations, such as sewage treatment works and industrial sites, whereas diffuse sources follow indirect, dispersed and often complex pathways to water bodies. The monitoring of point source pollution, in particular, has made the role of agriculture clearer, whilst diffuse pollution is recognised as one of the largest causes of river pollution due to the high concentrations of nitrogen and phosphorous over agricultural catchments

(Macgregor & Warren, 2006). Consequently, diffuse pollution from agricultural activities such as ploughing and the use of nitrogen (both organic and inorganic fertilisers) has become a widely researched and well understood problem (Krause et al., 2008; Kay et al., 2009). Diffuse pollution has been noted as harder to reduce than point source pollution as action is needed at a whole catchment level, rather than just on an individual farm – but with 71% of land in the UK being farmed, it represents a significant source of pollution (DEFRA, 2018c). Accordingly, catchment level management is becoming an increasingly popular instrument for the improvement of water quality (Macleod et al., 2007; DEFRA, 2008; Macleod et al., 2008; Daly et al., 2017). Such catchment mechanisms used include, advice provision through Catchment Sensitive Farming (CSF), Nitrate Vulnerable Zones (NVZs) and multiple voluntary initiatives (all discussed in section 1.2). Although there has been extensive research undertaken to determine the best agricultural practices for pollution control (D'Arcy and Frost, 2001; Kay et al., 2009), the implementation of such practices is only effective with the support of land owners and managers (Barnes et al., 2009; Collins et al., 2016). Any such interventions need to be understood and adopted by farmers in order to make them effective (these measures are discussed in more detail in section 1.1.1).

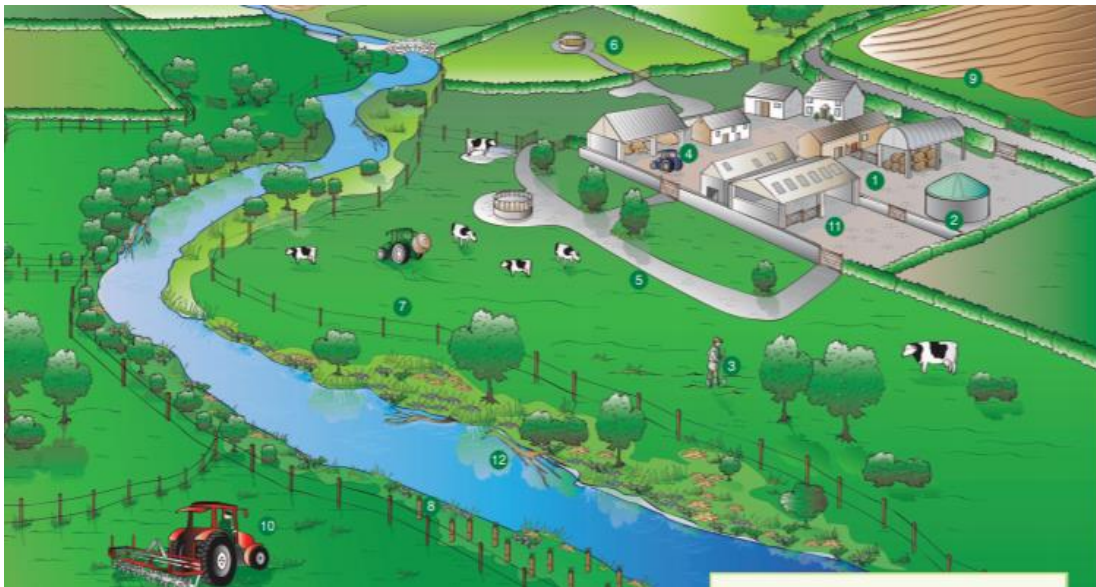
In addition to the role that farming can play – both as the cause and also the solution – to pollution, in recent years there has also been an increased consideration of farming in relation to flood risk and flood control. Sustainable flood management is increasingly moving up the policy agenda (discussed in section 1.2.2) due to the recent floods experienced in the UK and the ever increasing threat of climate change (Hall et al., 2003). Recent flood events have caused significant destruction over the UK, especially in the South-West in the winter of 2014 and the North-West in the winter of 2015. Damage included topsoil being stripped from fields and replaced by debris, damage to buildings and houses and livestock lost, with an estimated cost of £1.3bn (BBC, 2016). These events, again, brought attention to the issue of land-use in river catchments and its impact on flooding, leaving the popular press to focus attention on farmers and agriculture, with headlines including: “Careless Farming Adding To Floods” (BBC, 2014) and “How We Ended Up Paying Farmers To Flood Our Homes” (Guardian, 2014). Such narratives saw the rise of a discourse within which farmers became positioned not only as victims of such disasters but also as a group whose

negligent practices might be part of the issue. Positioning their management as ‘careless’ leads, implicitly at least, to the questioning of farmers’ understanding of the interconnectivity of the catchment system and the wider implications of their actions and behaviour. As Posthumus and Morris (2010, p.42) acknowledge, in research terms this wider public discourse has brought forward the view that “increasing awareness that an integrated approach to flood risk management at the catchment scale is needed”. This, alongside the increasing concern over water quality, highlights the importance of understanding farmers’ agri-environmental actions in river and riparian environments which is at the heart of this thesis.

1.1.1.1 Agricultural Management to Improve Riparian Areas

Riparian areas are generally defined as the areas between land and water (streams, ditches, rivers and wetlands adjacent to streams), and are characterized by distinctive soil, hydrology and biotic conditions (Naiman et al., 2005). They are the interface between terrestrial and aquatic ecosystems which might act as a buffer between the watercourse and adjacent land. Riparian areas have the potential to provide important ecosystem services to improve water quality, alleviate agricultural runoff, provide flood mitigation, and improve hydrology (Krause et al., 2008; De Sosa et al., 2018a). A number of managements have been identified which are thought to improve the health of river and riparian areas (Figure 1.2). As water flows over agricultural land to reach a watercourse, the first step in riparian protection is ensuring that land management practices across a catchment conserve soil and water resources (Schoumans et al., 2014). In-field management - such as cover crops, cultivating adjacent to slopes and controlled trafficking (reducing widespread compaction) - are important practices linked to reduced runoff, leaching and soil erosion (O’Connell et al., 2007). Fencing off watercourses to restrict livestock access is also acknowledged to provide a number of benefits, such as a reduction in soil compaction damage and destabilisation of stream banks (Bewsell et al., 2007). Following the introduction of the Farming Rules for Water in April 2018 (see section 1.2.2.4), livestock access is prohibited within 5m of a watercourse, effectively making watercourse fencing compulsory (DEFRA, 2018d). Restricting access reduces the direct deposition of faecal matter by livestock in waterways and on adjacent riparian areas - a significant source of faecal pollution (Collins et al., 2007). Fencing livestock from riparian zones that are prone to saturation and surface runoff can greatly improve microbial water

quality and reduce the amount of sediment entering the watercourse by limiting the presence of poached land.



- | | | |
|---|--|---|
| 1 Well maintained yard and buildings – rainwater storage and covered stock gathering areas. | 5 Maintained tracks with drains to dirty water system and store. | 9 Arable field located away from river on gentle slopes, with grass margins and hedgerows to intercept runoff |
| 2 Covered, well maintained slurry store with adequate capacity located away from watercourse. | 6 Gateways and livestock feeders located away from the river and drainage pathways to reduce erosion. | 10 Soil aeration can help break up compacted layers |
| 3 Regular soil monitoring and nutrient budgeting reduce the need for chemical fertilisers. | 7 Fenced river to prevent stock access - vegetated banks help intercept runoff, reduce erosion and provide cover for wildlife. Alternative livestock watering e.g. trough on hard-standing | 11 Covered stock handling pens located away from the river |
| 4 Covered silage clamp located away from the riverbank | 8 Riverside tree planting provides cover and habitat for wildlife and moderate water temperatures. | 12 Beneficial in-stream woody debris – located to reduce bank erosion and increase river habitat diversity |

Figure 1.2 - Potential ways that agriculture can positively impact upon watercourses. Adapted from Eden Rivers Trust (2011).

Restricting access also allows for vegetation to grow on the watercourse bank, creating riparian buffer strips, also referred to as riparian corridors (Fischer and Fischenich, 2000). Managed correctly, they can be effective in targeting a range of objectives for water quality, stability and habitat functions. These zones are usually an area of vegetated land that is not farmed with the role of providing an undisturbed area of land adjacent to streams to act as a filter for pollutants prior to coming into contact with the stream. Riparian vegetation is recognised as a critical zone which can prevent nutrients and sediment entering the waterway, acting as a tool for mitigating non-point source pollution (Muscutt et al., 1993; Borin et al., 2010; Larson, 2010). Where these zones

have not been established, water and nutrients move quickly into the watercourse, increasing pollution and the risk of flooding (in times of high rainfall). The land and vegetated zones can act as a sink or filter to remove sediment and suspended particles and slow the flow of water. The increased density and variety of vegetation can also provide other benefits, such as providing food and cover for wildlife, lowering water temperature by shading the water and increasing the stability of the riverbank, reducing the risk of erosion (Borin et al., 2010; Stutter et al., 2012).

1.2 Agricultural Policy in the UK

The UK joined the European Community (now the European Union – EU) in 1973, bringing new policies and regulation for British farmers through directives – such directives included the Waste Framework Directive (1975) and the Birds Directive (1979) (Winter, 1996). Launching in 1962, the Common Agricultural Policy (CAP) focused on production, encouraging farmers to produce as much as they could and depend on subsidies to support their income (Gray, 2000). Such encouragement generated an ethos of intensification and expansion, leading farmers' decisions to be driven by government policy (Burton, 1998). Following this intensification, the late 1970s and 1980s saw an escalation of overproduction in many agricultural products, becoming a problem for the European food market leading to the infamous 'milk lakes' and 'butter mountains'. In response to this, limitations such as milk quotas were introduced to curb milk production. Burton (2004a, p.359) stated that following this, "European agriculture went through a period of uncertainty as policy-makers sought solutions to the problems of unwanted agricultural (food) surpluses and budgetary over-runs". In essence, policy makers sought to change the culture from production-led to led by a demand for public goods, a desire still being pursued today.

By the 1980s, the CAP and its structural support policies were seen as responsible for overproduction of food, intensification of farming practices and a resultant loss of biodiversity and increase in habitat degradation (Bignal et al., 2001). In light of this environmental degradation resulting from agricultural activities, the 1980s saw increased pressure from within the European Community to adapt policy in order to achieve a more sustainable management of agro-ecosystems (Wilson et al., 1999). The resultant reforms to the CAP have included the provision of agri-environmental incentives which have focused on conserving natural landscapes and their wildlife and,

more pragmatically, reducing overproduction (the most recent reform is discussed in section 1.2.1.4). Since 1992, the CAP has seen multiple reforms with the most recent being in 2013 for the period of 2014-2020. Prior to this most recent reform, farmers could receive funding via income support (Pillar I), known as Single Farm Payments (SFP) (SFP was replaced by the Basic Payment Scheme (BPS) in 2015 – discussed in section 1.2.1). Following the 2003 reform of CAP, SFP was introduced in the UK in 2005, aimed at supporting farmers' incomes by removing the link between subsidies and production of specific crops and giving farmers the freedom to produce what the market wanted. As a result, farmers and landowners receive payments on a per area basis. In order to regulate farmers' practices and ensure they are eligible to receive funds (BPS), farmers are expected to abide by Cross Compliance rules (European Commission, 2015). Cross-compliance consists of a combination of Statutory Management Requirements (SMRs) and Good Agricultural and Environmental Conditions (GAECs), both of which are based around public, animal and plant health, environment, climate change, good agricultural condition of land and animal welfare. If these baseline requirements are not met, farmers will receive a reduction in payment due to non-compliance. The Cross-compliance framework includes statutory requirements related to water protection and management arising from the implementation of the Groundwater Directive and Nitrates Directive (discussed in more detail in section 1.2.1). To go beyond Pillar I legal requirements, farmers can voluntarily opt for further payments under the Rural Development Pillar II. This is the main response to address the environmental problems associated with agriculture labelled as AES. AESs¹ were introduced in 1985 in the Agricultural Structures Regulation (European Union [EU] Regulation 797/85), becoming compulsory for EU member states in 1992 in the Rural Development Pillar II of CAP. Each member state designs its own schemes (from hereafter the UK design of AESs will be discussed) (Gay et al., 2005). AESs are voluntary contracts with farmers who accept management conditions in return for annual payments (Kleijn and Sutherland, 2003; Hodge, 2014). In general terms, the schemes aim to promote land conservation by means of detailed changes in agricultural land management. They are expected to offer biodiversity and/or environmental benefits and are usually applied at field or farm scale (Díaz and

¹ For the full evolution of Agri-environmental Schemes see <http://publications.naturalengland.org.uk/publication/3567470>

Concepción, 2016). Farmers or landowners who registered in an agreement are committed for a minimum period of five years and are asked to adopt agri-environmental measures in return for payments to compensate for additional costs and income foregone. The level of uptake of AES has increased dramatically over the past 30 years (Figure 1.3).

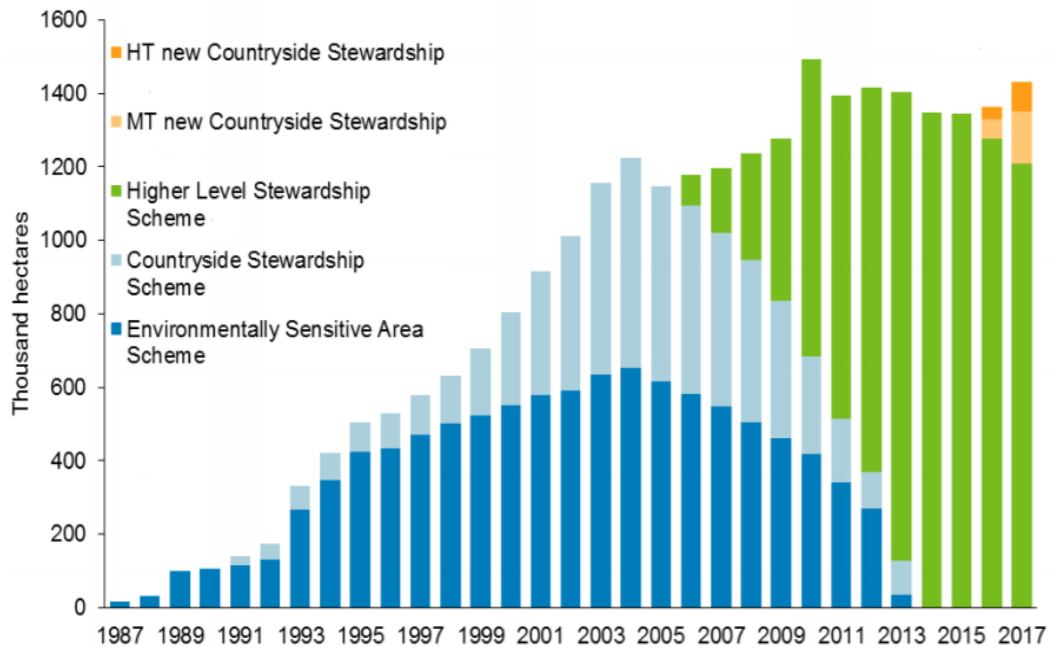


Figure 1.3 - Area of land under expiring and new targeted agri-environment scheme. Source: DEFRA (2018a).

The schemes (AESs) in England under Pillar II (at the time of this research) sit within Countryside Stewardship (CS) (the current Environmental Land Management scheme²) and are delivered at two levels (tiers):

- Mid Tier – the simplest form of agri-environmental agreements.
- Higher Tier – more demanding and focuses on top priority environmental sites such as Sites of Special Scientific Interest (SSSI), commons and woodlands.

The previous Environmental Land Management scheme, Environmental Stewardship (ES), consisted of 3 levels:

² CS replaced Environmental Stewardship in 2015. Figure 1.3 includes both the old and new Environmental Land Management schemes.

- Entry Level Stewardship (ELS) – includes Uplands ELS: simple land management agreements with priority options.
- Organic Entry Level Stewardship (OELS) – includes Uplands OELS: organic and conventional mixed farming agreements.
- Higher Level Stewardship (HLS) - more complex types of management and agreements tailored to local circumstances.

The schemes, while having the common aim of reducing and/or reversing the environmental pressure posed by intensive agricultural practices, vary in their individual objectives and level of commitment needed by farmers (Gay et al., 2005). Examples of the most common objectives of such schemes include reducing the use of inputs, such as pesticides, protecting and managing biodiversity and promoting extensification of agricultural practices.

1.2.1 CAP reform 2014 – Greening and Countryside Stewardship

The most recent reform (in 2013) of the CAP and AESs for the period 2014-2020 saw agreements in terms of new policy (European Commission, 2013). In order to address emerging challenges (such as economic and environmental issues), the new policy aims to carry on the process commenced by previous reforms of shifting support to the producers, with an additional land-based element (European Commission, 2013). This encourages land managers to meet the requirement of simultaneously maintaining natural resources while increasing the quantity of high quality food produced (European Commission, 2013). As a result, the CAP reform of 2014 brought in a suite of changes to the system of agricultural subsidies and programmes from the EU. Firstly, SFP was replaced by BPS. The BPS (CAP Pillar I) can be claimed by ‘active farmers’ with at least 5 ha of agricultural land once a year (similar to SFP). However, new additions to the CAP, such as a “greening” feature within Pillar I, meant farmers must adhere to the rules to receive part of their total BPS payment - in addition to the changed Cross Compliance GAECs and SMRs (DEFRA, 2019) (for an evaluation of the effectiveness of the greening rule in the EU see Hodge et al. (2015)). The greening payment is worth around 30% of a farmer’s total payment (BPS covers the remaining 70% of the payments). The new greening feature is targeted towards providing public goods from the environment, and subsequently contributing towards the central element of concurrently providing private and public goods (European Commission,

2013; Hodge et al., 2015). The ‘greening’ rules are made up of three key stipulations which, depending on farm type, size and land eligibility (European Commission, 2018), generally require:

1. Crop Diversification (commonly referred to as the ‘3 crop rule’) - Arable farmers must grow three different crops and the area of the main crop must not cover more than 75%.
2. Ecological Focus Areas (EFAs) – Farmers with more than 15 ha of arable land must have 5% of agricultural land as EFAs. EFA features are those which the EU has decided are beneficial for the climate and the environment. Farmers can choose which areas and/or features they will use to make up their EFA. EFAs can be made up of: buffer strips; nitrogen-fixing crops; hedges; fallow land; catch crops and cover crops (from a specified list).
3. Permanent Grassland - The area of permanent grassland (when compared to the agricultural area) must not fall by more than 5%, if it does farmers who have ploughed permanent grassland may have to re-instate it.

Following reform of Pillar I, changes to Pillar II also occurred. Although the two pillars of the CAP remain, the recent reform (CAP 2014-2020) increases the connectivity between the two, in order to provide more integrated policy support (European Commission, 2013). Under Pillar II, CS replaced ES, the England Woodland Grant Scheme and Capital Grants from Catchment Sensitive Farming in 2015 (discussed in section 1.2.2.3). The scheme is open to all eligible land managers, is competitive and is scored against local priority targets to maximise environmental benefit. There are three main elements to the scheme: Higher Tier, Mid Tier (discussed in section 1.2) and Capital Grants. The scheme also provides support for organic conversion and management, and access to a facilitation fund (discussed in section 1.2.1.1). The introduction of grants replaced the CSF capital grant and introduced more grants covering; Hedgerows and boundaries, Woodland Management Plans, Woodland Creation and Improvement and Water Capital. They can be standalone capital agreements, or you can apply within Mid Tier or Higher Tier schemes. For the context of this research, the Water Capital Grants are of most significance with a number of farmers reportedly using it to improve their farm infrastructure. The original CSF capital grant was replaced in 2015 by the new Water Capital Grant and is available to those within new target CS high priority areas (Natural England, 2017). The grants

offer farmers within the designated Water Catchment Sensitive Area to apply for funding to improve the farms infrastructure, such as concrete yards and tracks, drainage and roofing slurry stores. Similar to the previous CSF grant, up to £10,000 per farm is available, however if tied in with a new CS application, there is no limit on the grant funding amount which can be claimed.

1.2.1.1 Countryside Stewardship Facilitation Fund

In response to a landscape-approach being pushed further up the agri-environment agenda, 'Securing Biodiversity: A new framework for delivering priority habitats and species in England' (DEFRA and Natural England, 2008) identified that "an integrated approach, with a renewed focus on delivery for whole ecosystems, and at a landscape-scale" was a key policy instrument for "halting, and then reversing biodiversity loss" (p. 1). The Lawton Report (2010) (Making Space for Nature: A review of England's Wildlife Sites and Ecological Network) followed this, calling for a 'step-change' in conservation to form "a more resilient natural environment for the benefit of wildlife and ourselves" (Lawton et al., 2010, p.v). It was noted that this could be achieved through a collaborative conservation management approach "between local authorities, local communities, statutory agencies, the voluntary and private sectors, farmers, other land managers and individual citizens" (DEFRA and Natural England, 2008, p.v). From this, the Countryside Stewardship Facilitation Fund (CSFF) - emanating from the 2014 CAP reform - grew to provide support for cooperation between farmers and land managers at the landscape scale. DEFRA recognised that the already pre-existing farmer self-help groups could play a vital role in bridging the gap between policy and behaviours, and so the CSFF was born to provide some support for the groups as well as potential future groups. Since the CSFF started in 2015 there have been two national rounds plus a special round focussed on the Northern area of England impacted by the Winter storms of 2015/2016³. Now, sixty-one groups with over 1400 farmer/land manager members are working to improve the natural environment at a landscape scale (McDonald, 2017).

The CSFF provides funding for people or organisations (e.g. a lead farmer or NGO) that bring farmers, foresters and other land managers together to work cooperatively for environmental improvements at the landscape scale. The priority for this

³ 57% of the farmers within the sample used in this thesis were part of a facilitation fund.

partnership and collective approach is to deliver shared local environmental outcomes that go beyond what could be delivered by individual holdings acting in isolation. The fund encourages landowners to think beyond their own fields, meadows and woodlands and consider how environmental benefits can be achieved over a wider landscape by working on projects together (Bennett, 2015).

1.2.2 Riparian Policy

Since WWII, the UK government's water management strategy has experienced radical changes. Post-war institutional arrangements created a national system of catchment-based River Boards (River Boards Act, 1948) followed by River Authorities which controlled all water tasks, apart from supply and sewage treatment (Water Act, 1963). In 1973, control in England and Wales shifted to regional Water Authorities with comprehensive management of the entire water cycle. Financial problems arose due to such changes and led to more restructuring in the Water Act 1989 (Ofwat, 2006). A set of privatised water companies were created to provide services, whilst a new national government agency - the National Rivers Authority - was formed to police water pollution. During this time The Water Services Regulation Authority (Ofwat, 2006) was also created. Further restructuring in 1996 created the Environment Agency (EA), combining several organisations including the National Rivers Authority. Presently, the distribution of responsibility between private water companies and the EA remains the same, with the EA taking the role of command and control, penalising those who pollute (Ofwat, 2006). Ultimately, water governance in England has become regionalised and privatised for supply and treatment, but moved towards a greater central agency for pollution control.

1.2.2.1 Water Framework Directive

Throughout the changes in water governance, water quality issues have persisted and remain a challenge. In Europe, water quality policy has largely emanated from EU Directives (i.e. continental scale) whereas other policy (e.g. on water resources) has developed at a national or sub-national scale. In the UK, water quality policy is governed by the EU's Water Framework Directive (WFD) 2000/60/EC. The Directive is the most significant piece of European water legislation for over 20 years. The WFD

was introduced in October 2000⁴ with the purpose of establishing a framework for the protection of water bodies (inland, transitional, coastal and groundwater) by reducing water pollution, promoting the sustainable use of water, enhancing the status of aquatic ecosystems and preventing any further degradation of them. The aim of the WFD is to take a holistic approach to water management and for all EU Member States to implement river basin management plans to ensure that all aquatic ecosystems reach good chemical and ecological status by an initial target date of 2015. By coordinating an approach based on the concept of river basin management, the WFD signified a shift towards catchment management thinking through the acknowledgement that catchments can differ (both within socio-political and natural conditions). In 2003 the UK Government transposed the Directive into UK legislation, identifying the EA as the sole competent authority charged with the Directive's implementation in England and Wales. Although the monitoring of water quality is a devolved issue, and so separate approaches are taken in England, Wales, Scotland and Northern Ireland, compliance with European requirements is measured by the UK's overall status classification.

The WFD consists of a cyclical process where management plans are prepared, implemented and reviewed on a six-year cycle. If Member States were granted an extension beyond 2015, objectives must be met by the end of the second management cycle (2015-2021) unless they are granted an additional third management cycle (2021-2027). Plans must deliver comprehensive accounts of how the objectives set for each river basin (ecological status, quantitative status, chemical status and protected area objectives) are to be achieved within each cycle and outline a programme of actions for reaching the environmental objectives cost-effectively (for a review of the effectiveness of the first cycle of the WFD see Voulvoulis et al. (2017)). To place England in the context of the WFD requirements, in 2015 the UK commenced cycle 2, extending the time to complete plans with a new target date of 2021. In 2017, 16% of surface water bodies assessed under the WFD were in high or good status. In 2015, however, England adopted the new WFD monitoring and classification standards laid out in cycle 2 of the WFD, which may in part explain the step change in classifications (Figure 1.4 shows the data for both cycle 1 and cycle 2 in 2015) (EA, 2018b). In the

⁴ For a comprehensive description of the WFD's history see Benson and Jordan (2008).

2018 EA report on the state of the environment: *Water Quality*, it was estimated that agriculture and rural land management account for 31% of reasons for water bodies not achieving good status (EA, 2018a).

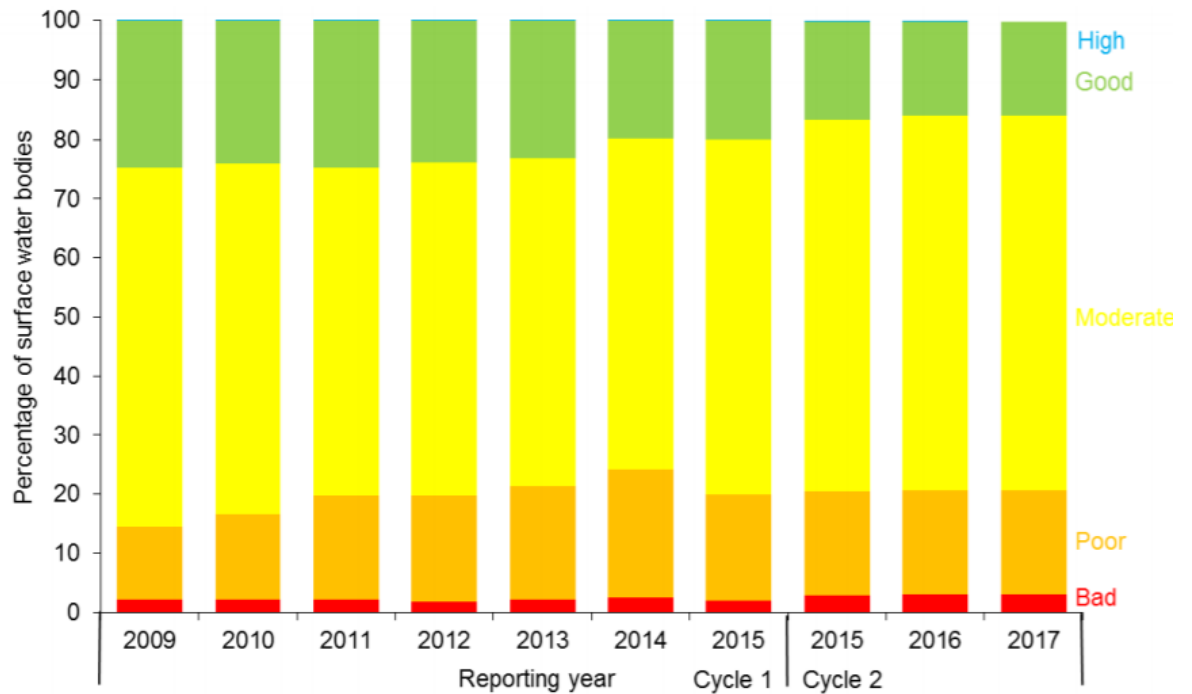


Figure 1.4 - Status classifications of surface water bodies in England under the Water Framework Directive. From EA (2018b)

Prior to the WFD, the EU had numerous Directives for water related environmental standards such as the Drinking Water Directive (80/778/EEC) and the Nitrates Directive (91/676/EEC). The WFD established a strategic framework for bringing together many of the Directives aiming to manage the water environment (inland surface waters, estuaries, coastal waters and groundwater) (Figure 1.5).

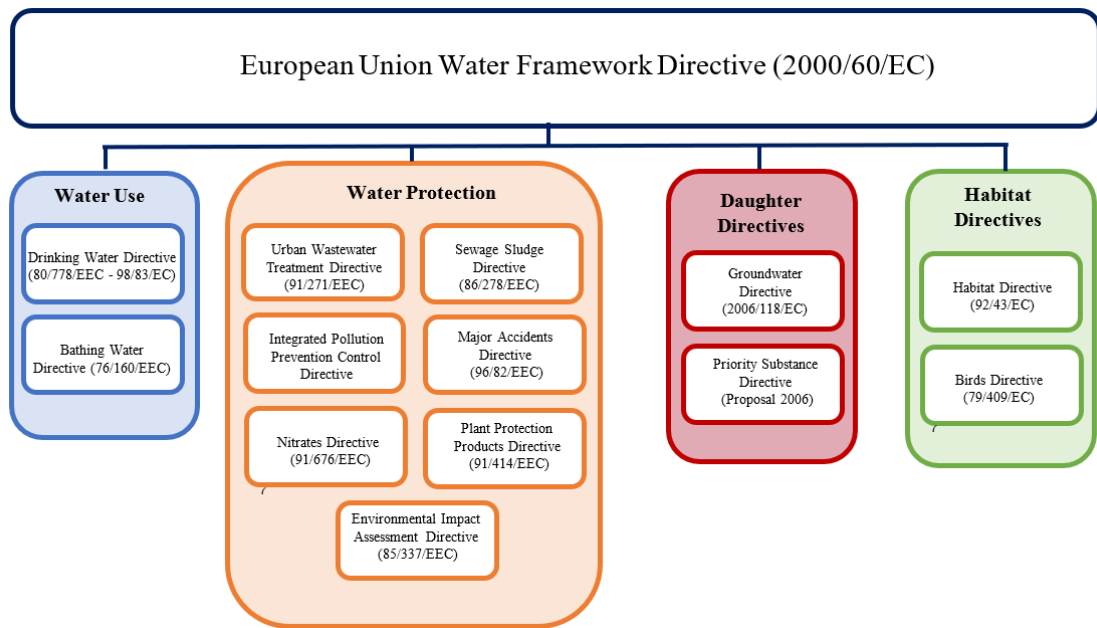


Figure 1.5 - WFD relationship to other EU Directives.

1.2.2.2 Nitrates Directive and Nitrate Vulnerable Zones

Due to the enthusiastic use of phosphate and nitrogen fertilisers, lax handling of farm effluents and inadequate slurry storage in the 1950s and 1960s, there was an increase in agricultural pollution. In response to the rising number of pollution incidents, the then Ministry of Agriculture (now DEFRA) introduced a 50% grant to encourage farmers to improve the control of pollutants through the installation of storage facilities in 1989. This was then coupled with the Environmental Protection Act 1990 which saw the introduction of fines up to £20,000 for those who did not comply (Ward et al., 1992). Following this, the EU introduced the 1991 Nitrate Directive (91/676/EEC). In accordance with the 1991 Nitrate Directive, a programme of uncompensated mandatory measures was created under the Nitrate Vulnerable Zone (NVZ) rules. The Nitrate Directive required Member States to designate NVZs by 1999 to all known areas of agricultural land that drained into waters where the nitrate concentrations exceeded 50 mg/l N, or where there was evidence of nitrate limited eutrophication (Osborn and Cook, 1997). The aim of the directive is to improve water quality by preventing nitrates from diffuse agricultural sources at a catchment level. Although it predates the WFD, it supports its wider aims and is one of the key instruments in the protection of waters against agricultural pressures. NVZs implement compulsory

action for farmland that falls into these zones resulting in the timing and amount of nitrogen applied being limited. In 2002 the area designated as NVZ covered 55% of England, being extended in 2009 to 70%, with upland areas – where there is little or no intense agriculture – excluded (Burt et al., 2010). The Nitrates Directive is interpreted and implemented at a national level; therefore, different countries have taken different action to ensure the five steps of the directive are filled. The five steps are (European Commission, 2019):

1. Identification of polluted or threatened waters
2. Designation of Nitrate Vulnerable Zones
3. Establishment of codes of good practice
4. Establishment of compulsory Action Programmes to be implemented by farmers within NVZs
5. National monitoring and reporting every four years.

As a result, countries implement their own Action Programme which farmers must comply to, resulting in some countries implementing nationwide designations for example Denmark and Northern Ireland, and others adopting regional designations for example the rest of the UK and France. Within the UK, NVZs are connected to BPS and so non-compliance can result in reduced payments. However, despite considerable effort and investment, nitrate concentrations in many rivers have remained stubbornly high (Burt et al., 2008).

1.2.2.3 Catchment Sensitive Farming

Catchment Sensitive Farming (CSF) (formerly known as ‘The England Catchment Sensitive Farming Delivery Initiative’) is a joint venture between the EA and Natural England, funded by DEFRA and the Rural Development Programme for England, working in priority catchments within England (Natural England, 2019). CSF is part of the national response to meet the requirements of the WFD and contributes towards achieving Natura 2000⁵ and Site of Special Scientific Interest (SSSI) objectives. The

⁵ Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats, listed under both the Birds Directive and the Habitats Directive.

initiative has run since 2006, aiming to raise awareness of, and reduce, water pollution from agriculture with an overarching focus on long term behaviour change. Overall, CSF has two principle aims: (i) to save farms money by introducing careful nutrient and pesticide planning, reduce soil loss and help farmers meet their statutory requirements (such as NVZs) and (ii) to deliver environmental benefits such as reducing water pollution, cleaner drinking water, thriving wildlife and lower flood risk for the whole community. Farmers and landowners in priority catchments have free access to training and advice to take action to improve the environmental performance of farms as well as offers of grants for infrastructure improvements. Each of the 79 priority catchments has a CSF Officer (CSFO) responsible for delivering confidential advice to farmers within the area (EA, 2014a). As well as advice, until 2015, CSF operated a Capital Grant scheme, financially supporting farmers to adopt sustainable practices and reduce negative environmental impacts in a transition towards a fuller application of the ‘polluter pays’ principle (DEFRA, 2018e). The grants were funded through the Farm and Forestry Productivity elements of the Rural Development Plan for England (RDPE) (Natural England, 2017). They helped to make relatively low-cost infrastructure investments to improve or install facilities that would benefit water quality (for example, yard works for clean and dirty water separation, roofing manure stores and livestock gathering areas and watercourse fencing) (EA, 2014a). Grants of up to £10,000 per holding were awarded to pay 50% of the costs, however due to limited funds, the grants were competitive and so acceptance depended of the alignment of the application to the objectives of the scheme. Following the CAP reform (agreed in 2013) alternatives to the Capital Grant scheme were implemented post 2015 (previously discussed in section 1.2.1).

Since the transition into the next phase (4) of CSF (until 2021) evaluations of the initial phases (1, 2 and 3) have highlighted how the initiative has delivered significant improvements in water quality. CSF has engaged with farmers on 19,300 farm holdings covering 2.6 million hectares of land (Middleton, 2016). 70% of the farmers who have made positive changes to water quality in the last 2 years plan more changes in the future (Middleton, 2016). This has led to pollutant loads and concentrations within these catchments to be reduced, by around 50%, in the case of pesticides (Middleton, 2016). The environmental improvements result from: the high level of farmer engagement achieved; an increased awareness of water pollution amongst

engaged farmers, and; the resulting implementation of measures to control pollution. Of the farmers involved in CSF 85% said they give water pollution a high priority now (Middleton, 2016) .

1.2.2.4 Farming Rules for Water

As de Sosa et al. (2018b, p.128) note “riparian legislation within the UK seems to be more incentivised (through the use of different agri-environment schemes and good management practices) rather than by enforcement” and as such agricultural, non-point, diffuse pollution had largely escaped direct regulation (an exception to this is those located within NVZs – discussed in section 1.2.2.2). Arnott et al. (2019) state that water related AES options only make up 3% of total option uptake, demonstrating the potential of direct policy. This lack of attention in policy changed when the “Farming Rules for Water” were introduced in April 2018 (DEFRA, 2018d). The rules require good farming practice so that all farmers manage their land to both minimise water pollution and to benefit their business - all farmers are expected to comply with them. A step-by-step checklist is provided to make sure that fertilisers are spread to meet crop and soil needs and to minimise leaching. Other rules safeguard water quality by aiming to work with farmers to address pollution risks in a proportionate and collaborative way by taking reasonable precautions to prevent diffuse pollution from occurring. Most of the rules fall under the following two categories: (i) Organic manures and manufactured fertilisers; and (ii) Soil management (for a detailed list of the rules see DEFRA (2018d)). As part of compliance to the rules, farmers are required to test soils every 5 years to inform planning for applying manures and fertilisers.

The implementation of the rules was through an advice-led approach, which meant the EA provided advice on how to comply with the new regulations. The EA carry out any checks against the rules as part of its existing risk-based, targeted farm inspections. As such compliance is assessed by the EA and the majority of non-compliance is dealt with by issuing advice and if necessary, through the imposition of civil sanctions, with prosecution reserved for where other enforcement actions have failed (for a detailed discussion on non-compliance see DEFRA (2018d)). For this study, the rules came in effect after the data collection process was completed, and as a result, not all farmers interviewed were implementing them or taking action to reduce riparian pollution –

those that had, had done so through alternative avenues (for example, voluntary, CSF or CS).

1.3 The Study and Research Focus

As discussed in the above sections, there is a growing concern around the state of both the terrestrial and aquatic environment within the UK. Agriculture is increasingly placed at the centre of environmental sustainability discussions, with both political and public discourse bringing forward the view that agriculture plays an important role in both the cause and the solution to environmental issues. As argued by de Snoo et al. (2013, p.3), “conservation in agricultural areas is also a true social challenge and what is missing is social science...to elucidate the social processes underlying successful agri-environmental management”. From the extant social science literature on farmland conservation two key, yet unanswered, questions arise which intersect with this emerging public discussion of farmers’ role in flooding and river management. The first is the extent to which financial incentives for conservation management (discussed in section 1.2) may engender a more conservation-orientated ethos on a long-term basis. Whilst conservation payments may secure specific types of environmentally-friendly management, does this lead towards a more deep-seated concern for the environment (or ‘conservation ethos’) amongst farmers? Second, and interrelated, is to what degree does the focus on specific terrestrial habitats and landscape features – the approach taken both in the government’s ‘Environmental Stewardship’ scheme and its forerunner schemes – serve to foster a prioritising of particular conservation managements over others. Particularly significant in this regard is how far the focus on terrestrial environments has overshadowed the management of river and riparian environments on farms and whether this leads to the aforementioned concern for management being ‘careless’ and a perception that subsidised farming practices might contribute to increased flooding. Whilst there is a growing literature on farmers’ social construction(s) of terrestrial habitats and features in relation to conservation, as well as the very specific geographies of these constructions (see Riley, 2008), there is little research which has sought to apply the same discussion to either riparian environments, or how such understandings intersect with wider farm management and conservation goals. This thesis takes this forward to understand farmers’ environmental behaviour and managements within river and riparian environments – something which has previously had limited attention

(discussed in more detail in Chapter 2), to understand how environmental sustainability in riparian environments can be embedded into farmers' identities.

1.3.1 Research Objectives

Given the aforementioned context, this thesis is based around the following four research objectives:

1. To explore the particular 'knowledge practices' which farmers draw upon in understanding the river and riparian environment on their farm.
2. To examine the symbolic value farmers associate with, and social capital derived from, managements (both for production and for conservation) of different features and areas of their farms.
3. To investigate the role that past conservation interventions – both in terms of AES participation and specific managements supported by the Rivers Trust – play (or not) in developing a longer-term [re]farming of the farmer's self-concept (as producer, conservationist etc).
4. To explore the potential of such conservation interventions to act as 'trigger events' to stimulating wider pro-active conservation activities amongst farmers and develop a set of recommendations for how these might be employed beyond the case study area.

1.4 Outline of the Thesis

This thesis is organised in seven chapters. **Chapter 1** has introduced the current concerns relating to riparian environments and agriculture's role within these. It has also presented the objectives of the research.

Chapter 2 reviews the extant social science literature on farming communities and, specifically, that relating to the agri-environment. It explores the pre-existing approaches in which social aspects of farming have been studied and reviews the literature on a number of emerging themes: farming communities, farming behaviour, farming in riparian environments, farming identities and farming knowledge(s). Following this, the chapter goes on to develop the conceptual framing of the research. The overarching conceptual framing draws on Bourdieu's ideas of habitus, field and capital – and specifically takes forward the ideas presented in what has become known as the 'good farmer' literature which has applied Bourdieu's thinking to the context of

agriculture. The chapter concludes with a presentation of the research focus which will underpin the chapters which follow.

Chapter 3 explores the methodological approach taken to achieving the objectives of the research. The chapter considers the selection of the Ribble Valley as the study area, noting how this area of study was chosen because of its recent fluctuations in annual rainfall and severe flooding as well as its designation as a national pilot for the implementation of the EU Water Framework Directive. The chapter outlines the rationale for the use of in-depth semi-structured qualitative interviews (both static and walking) as the principal method of data collection. The chapter also considers the sampling strategy in which farmers, their partners, other family members and farm workers were of primary interest to this study. Following this, the chapter discusses how the interview guide was designed to fulfil the research aims and objectives. The interviews were transcribed verbatim and manually coded to identify themes in relation to the research aims and objectives. The chapter also offers some reflections on lessons learnt while researching the farming community together with a discussion on emerging ethical issues and positionality.

Chapter 4 draws on the findings of the research and the research process to consider the methodological challenges of interviewing farmers about their lived experiences of, and perspectives on, rivers and riparian environments. In particular, this chapter draws upon recent debates around researcher positionality, demonstrating how to play the role of insider and outsider and gain the benefits from both positions. The chapter goes on to explore the significance of the emplaced interview encounter, noting how interview structure and being in-place can help with farmers articulation of narratives about riparian spaces.

Chapter 5 draws upon Bourdieu's ideas of habitus, field and capital together with the application of these concepts in understanding the notion of the 'good farmer' (Burton, 2004b; Burton et al., 2008; Sutherland and Burton, 2011). This chapter aims to explore how farmers' engagement with riparian environments on their farms feature in, and are (re)shaped by, notions of good farming. It highlights how the (im)materiality, unpredictability and untidiness of riparian environments limit their ability to generate capital and farmers' relatively infrequent direct engagement with rivers mean they do not develop skills and capital associated with rivers – like that of land. The chapter

then goes on to explore farmers involvement with recently introduced river health-enhancing managements, concluding that we might be observing a shift in how riparian environments contribute to good farming and good farmer status.

Chapter 6 brings together the conceptual discussion of the good farmer developed in Chapter 5 with the literature on farming knowledge(s) to consider how farmers utilise and share knowledge, and how knowledge can gain credibility, salience and legitimacy in different contexts. This is done so through a focus on the Catchment Sensitive Farming (CSF) initiative (discussed previously in section 1.2.2.3). Previous research has noted that whilst sometimes the farmer-advisor relationship may be one of potential conflict, others have noted how it too can also be a relationship of productive dialogue (Morris, 2006). This chapter builds upon the latter noting the importance of specific contexts and personal relationships within farmer-advisor knowledge sharing. Expanding on this, the chapter highlights how farmers may hold different knowledge practices in relation to different parts of their farm and specific places, and spatial contexts are important to how knowledge is taken on and reworked. Finally, the chapter explores how changing regulations and environmental conditions may be reshaping what knowledges farmers draw on and trust.

Chapter 7 draws together the contributions of this research to the wider understandings of farming communities beyond that of the particular locality under study. The chapter also outlines some implications for policy as well as avenues for future research in this field.

Chapter 2

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2. Review and Conceptual Framing

2.1 Rural research and research approaches

In surveying past research on farming, there is now a growing literature within which social scientists, and geographers in particular, have paid significant attention to farmers' engagement with, and participation in, sustainable land management, both within the UK and globally (Burton et al., 2008; Greiner and Gregg, 2011; Mills et al., 2017). It is widely documented that Agri-Environment Schemes (AESs) are an important instrument in the delivery of sustainable countryside management within the UK (Riley, 2011) and much literature has, accordingly, focused on farmers' decisions and reasoning behind (non)adoption of AESs and the broader effectiveness of such schemes (Burton and Schwarz, 2013; Batary et al., 2015). AESs are designed as a uniform and transparent framework using a 'one size fits all' approach, so that they can be applicable to the largest audience of participants possible. The production of knowledge that underlies these schemes has been largely based upon the development of knowledge in one location and transposing it to another. Several studies have, accordingly, emerged around the potential challenges and limitations of such a geographically uniform approach when it is applied to diverse agricultural landscapes and communities (Stuiver et al., 2004; Pavlis et al., 2016). Siebert et al. (2006), for example, have demonstrated the complex realities of the conservation of European biodiversity, noting how it is impacted by a mix of locality and context-specific issues such as agronomic, cultural, social and psychological factors. Due to the heterogeneous nature of farming and farm communities, farmers' decision-making in relation to their farm and land differs from that of other farmers and also, potentially, between different areas of the same farm (Busck, 2002). This complexity is further compounded by geospatial differences and the varying importance that the above factors have in national, regional and specific farm contexts.

Several scholars have offered a critical reflection on policy design (Hodge and McNally, 1998; Mauchline et al., 2012) and there is now a burgeoning literature which debated the successfulness of the AES's, with economic (Mettepenningen et al., 2009), ecological (Kleijn and Sutherland, 2003) and multi-disciplinary (Carey et al., 2003) approaches adopted to evaluate the schemes and their effectiveness. A range of outcomes have been reported in terms of the ecological benefits of the schemes, with

studies presenting both positive and negative outcomes (Kleijn and Sutherland, 2003). Previous research has drawn upon a wide range of theoretical perspectives and investigated multiple geographical contexts, highlighting a variety of influences on AES adoption. Such studies have highlighted situational characteristics, farmer demographics, scheme factors⁶ and wider socio-cultural contexts as elements which individually and collectively play a large role in scheme participation (Siebert et al., 2006; Riley, 2011; Riley, 2016a). Within many of the studies the ‘successfulness’ of the schemes has been gauged by farmers’ participation in schemes, on the basis that farmers play a significant role in the preservation and stewardship of the countryside.

Early research of AESs explored the interrelation between farmers’ ‘ability’ and ‘willingness’ to partake, focusing more specifically on individual factors such as farm size (Gasson and Potter, 1988). Wilson (1996), for example, argues that farmers’ dispositions toward conservation and participation in the Environmentally Sensitive Areas (ESA)⁷ scheme can be explained through a farmer’s age, education, length of residency, farming philosophy and the existence of remnant semi-natural habitats on the farm. As Siebert et al. (2006, p.319) demonstrate “the reality of the conservation of European biodiversity is a much more complex set of issues” and, as such, research has gone on to highlight the multiplicity of factors thought to influence AES (non)participation, importantly recognising the socio-cultural factors impacting uptake. Wynn et al. (2001) recognised this complexity and categorised influences on uptake into four groupings: i) physical farm factors (e.g. farm size, farm type); ii) farmer characteristics (e.g. age, conservation interest and engagement, succession status); iii) business factors (e.g. percentage of income from farming, tenure status) and iv) situational factors (e.g. availability and appropriateness of information about schemes).

Several conclusions have been drawn from research of AES uptake, with a prominent observation being that economic factors are the most important when deciding to participate in AESs (Morris and Potter, 1995; Wilson and Hart, 2000; Siebert et al.,

⁶ Such factors, for example, could include the extend of change needed to qualify for the scheme and the alignment of the physical characteristics of the farm and scheme prescriptions.

⁷ ESA was a scheme designated to protect agricultural areas due to its landscape, wildlife or historical value was introduced in 1987. Signing up to a 10-year contract, farmers were expected to adopt environmentally friendly agricultural practices. In 2005 the scheme was superseded by Environmental Stewardship and closed to new entrants.

2006; Riley, 2011). Importantly, Siebert et al. (2006, p.327) note that “although economic reasons are almost always brought up in interviews, they are accompanied by other reasons and explanations”. Some studies have found that amongst farmers who have taken up AESs, the shifts in behaviour needed to perform the conservation-orientated activities have actually led farmers to experience more than just financial losses (Burton, 2004b; Yarwood and Evans, 2006). As a result, it has been suggested that intrinsic, political and ethical motivations around land stewardship might often take precedent over financial incentives (Ryan et al., 2003; Thomas and Blakemore, 2007) - demonstrating how the financial inducements offered do not always guarantee AES uptake and can discourage uptake in the future. Indeed it has also been noted that providing these extrinsic rewards (e.g. financial incentives) can sometimes weaken intrinsic motivations towards conservation-orientated behaviour rather than strengthen them (Deci et al., 1999). This can arguably be due to the schemes restricting farmer behaviour and doing little to foster commitment to conservation (Burton and Schwarz, 2013; dos Santos et al., 2015). Placing restrictions on activity (particularly through approaches such as NVZs), perhaps predictably, has been seen to stimulate a negative response from the farming community (Adcock, 2003). Studies focusing on water quality have particularly seen this negative response from farmers when regulations have been enforced. Barnes et al. (2011) note that the reason for such negativity is a scepticism towards the scientific work that underlies the regulations and the view that local resource requirements and geographical differences are ignored by the national regulations (Macgregor and Warren, 2006). A number of researchers have also noted that when taken together, these restrictions on behaviour and scepticism towards the scientific basis can act as a disincentive for schemes uptake (Wilson and Hart, 2001; Vickery et al., 2004). Such studies highlight that economic rewards not only negatively impact upon the uptake of the schemes but also fail to induce the attitudinal or cultural change required for long-term behavioural change (Burton and Paragahawewa, 2011; Burton and Schwarz, 2013). An underlying critique emanating from these studies is that many of these policies fail to show a full understanding of the lives of farmers and the specific cultural contexts in which they operate (Barnsley, 2014).

It has been noted by multiple researchers that AESs must establish a supportive, positive attitude towards conservation-orientated activities within the farming community for them to have a long-term and successful impact (Carey et al., 2003; de

Snoo et al., 2013; Barnsley, 2014). Additionally, Barnsley (2014) note that the practices involved in AES participation must contribute to the farmers' own personal goals for their land for adoption of the schemes to occur, as their goals are linked to how farmers view the environment and what they aim to achieve from it. Barnsley (2014, p.2) suggests that farmers consider the environment in "terms how they can achieve these objectives and broader goals and, only when conservation innovations continue to allow goal advancement, will land managers consider adopting them". As a result, the uptake of schemes is linked to how well a scheme aligns with elements such as farm management programmes, personal goals and local values. It has also been noted that scheme uptake is also affected by the level of financial investment needed before a farm is eligible for a scheme. Many farmers - particularly those in the Welsh equivalent of Environmental Stewardship (Tir Gofal) - have found that significant financial investment is required before they can qualify for the scheme (Jones, 2013). Even the basic (entry) scheme has resulted in farmers being out of pocket before they even enter into the scheme and therefore adds unpredictability to whether they will recoup their financial inputs. Jones (2013) has also argued that the timescales in which farmers have to make adjustments so that they can qualify for the schemes are unrealistic - adding to the pressure that many farmers are already placed under. Whilst some farmers have been willing to make financial investment, both Posthumus and Morris (2010) and Arnott et al. (2019) have highlighted that non-eligibility and difficulty in 'earning' enough points provided for entry pose another barrier to participation in both the Welsh and English variations of AESs. Eligibility is seen, often, to be hindered by farm size or land/habitat type (Arnott et al., 2019). Expanding on this, Arnott et al. (2019) noted that non-eligibility is more likely to affect lowland farmers, especially farmers whose land cannot deliver the same environmental benefits that are attainable from upland habitats.

As AESs have now been in place for over two decades in many areas of Europe, and have exhibited relatively high levels of uptake, several authors have questioned whether we should now be noting a more environmentally-friendly disposition amongst farmers. Nearly 20 years ago, Ward et al. (1998b, p.271) noted that it would be reasonable to expect "that there would already be discernible changes in farmers' attitudes, and even farming cultures, from participation in agri-environmental schemes". This same presumption was made about the voluntary schemes in both New

Zealand (Valentine et al., 2007) and Australia (Curtis and De Lacy, 1996). Many argued that there should be changes taking place in the attitudes of farmers as well as in farming cultures. However, it has been widely acknowledged that AESs prompt minimal changes in attitudes towards productivist agriculture in conventional farming communities not only in the UK but across Europe (Burton and Wilson, 2006; Burton et al., 2008; Burton and Paragahawewa, 2011). Recent monitoring data across England and Wales has also indicated that this minimal change in attitude is accompanied by little, if any, improvement in water quality and, more critically, has failed to halt environmental degradation and species decline (Macleod et al., 2007).

It should be noted that some other studies have noted that farmers' motivations *can* see a shift from prominently financially driven to intrinsic environmental motivations over long periods of engagement in agri-environmental schemes (Fish et al., 2003; Morris, 2004). Fish et al. (2003), for example, observed that 'styles of participation and nonparticipation' are not necessarily associated with specific land-manager types and that concern for conservation often interlinked with economic concerns to produce different attitudes and practices. As such, farmers displayed an extensive and diverse range of attachments to the landscape and interests in landscape conservation, many of which extended beyond the purely economic. Further to this, Morris (2004) found that although some participants were originally attracted by financial inducements, their possession of, and ready access to, necessary knowledge and equipment made their willingness to participate more forthcoming. Burton and Paragahawewa (2011) caution, however, that such findings are limited to very specific cases and question whether their findings are likely to be more widely applicable.

Whilst previous studies have argued that intrinsic rewards (such as pride or a sense of purpose) can be used to understand and explain farmers' non-profit-maximising behaviour, the cultural turn within the social sciences has encouraged several scholars to develop conceptual frameworks which pay greater attention to the role of the cultural value of farming (Burton, 2004b; Yarwood and Evans, 2006; Burton et al., 2008). Albeit using slightly different terminology within their respective approaches, such studies have suggested that Bourdieu's idea of capital (cultural, social and economic capital) (discussed in more detail in section 2.3) and habitus can offer a useful framing to explore these culturally informed value-systems. Burton et al. (2008), for example, have discussed how conservation-orientated behaviour limits the

potential of farmers to display or develop skilled performance, which is a vital part of their generation of cultural capital. The problem, as Pretty (2003, p.1914) notes, is that “without changes in social norms, people often revert to old ways when incentives end or regulations are no longer enforced, and so long-term protection may be compromised”. Consequently, this is problematic for the integration of conservation into farming cultures as it has a reduced effect on future behaviours and reiterates the view that AESs and other environmental policy measures may only achieve short-term success. de Snoo et al. (2013) concur that AESs may be an unsustainable way of promoting and enhancing the conservation of ecosystem services, and go on to suggest that in order to successfully integrate conservation into agriculture, AES’s (and environmental policy in general) need to have a more overt social dimension. They argue – based on the assumption that reversal of the negative impacts of agriculture on the environment can only be achieved with long term active support from the farming community - that “to change farmers’ behaviours toward more sustainable conservation of farmland biodiversity, incentives should aim to influence individual farmer’s motivation and behaviour” (de Snoo et al., 2013, p.66).

A further complicating issue of AES participation is whether they require actual change from land managers. Posthumus and Morris (2010, p.50), for example, have concluded that AESs are being increasingly adopted by more farmers, but that “most participants enter these schemes based on existing features, without changing farming practices”. Rather than seeing a change in activity, it is suggested, AESs merely serve to maintain the *status quo* (Whitby, 1994; Wilson, 1996; Wilson and Hart, 2001). More recently, however, following the latest CAP reform in 2013, cross-compliance⁸ was further tightened through the introduction of so-called ‘greening’ measures. This has resulted in thirty per cent of the direct payments now conditional on three environmental management practices (previously discussed in section 1.2.1) (see EU, 2013). This has led Thomas et al. (2019c) to suggest that farmers may even opt out of the direct payments supplied by CAP. Others have argued that a further weakness of AESs is that, because payments are annual, they only create a temporary contract which does not involve personal involvement or a change to farm management strategies and, therefore, farmers’ overall attitudes towards conservation are unlikely

⁸ Cross-compliance was originally introduced in EU in 2005 (see https://ec.europa.eu/agriculture/envir/cross-compliance_en) (discussed in more detail in section 1.2).

to be changed (de Snoo et al., 2013). In this vein, Ruto and Garrod (2009) investigated farmers' opinions around the design of AESs and noted their preferences for larger financial incentives for schemes that offered little flexibility or large amounts of paperwork. Contrary to other research, they also concluded that farmers did, on average, prefer shorter rather than longer contracts.

Burton et al. (2008) have discussed how long-term support of AESs by farmers can be achieved and they have concluded that AES's must generate cultural capital on their farm, whereby farmers can enact and demonstrate their skill. In taking this idea forward, Burton and Paragahawewa (2011) have suggested two ways of accounting for cultural capital within scheme creation. The first focuses on quantifying cultural capital - as "there is [currently] no standard way of measuring the concept of cultural capital" (Robson, 2009, p.109) - to enable its integration into the economic models that underlie agri-environmental policy decisions. This, they argue, might shift cultural capital from a peripheral to a more central issue within scheme participation. Through measuring cultural capital, the loss of both economic and cultural capital can be calculated and could potentially be compensated for making the schemes more appealing to the wider farming community. Secondly, they propose that a complete rethink of the schemes, and the way that AESs are approached, is needed. They suggest that, through this process, schemes could be redirected to encourage the generation of cultural capital and so make them more culturally sustainable. Specifically, Burton and Paragahawewa (2011) suggest a pay-by-results approach - allowing farmers to experiment in achieving the required results, and so "providing tangible indicators of the success of management practices, and allowing easy comparison of results between farmers" (Burton and Paragahawewa, 2011, p.101). They label this approach as 'productivist agri-environmentalism' and the idea is based largely upon the thinking that status is ultimately achieved through the process of comparison with others.

2.1.1 Understanding farmers conservation behaviour

A number of studies exploring behavioural change in agriculture have drawn upon attitudinal theories (Artikov et al., 2006; Fielding et al., 2008) such as the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) – later superseded by the Theory of Planned Behaviour (TPB) (Ajzen and Madden, 1986). TRA and TPB has been widely applied to the discussion of behaviour and behaviour intentions, and have been

noted as useful for identifying where and how to target strategies for changing behaviour (Madden et al., 1992). The underlying assumption of TRA and TPB is that the best predictor of behaviour is intention – something determined by attitudes toward, and social normative perceptions of, a behaviour. The TPB (following TRA) includes an additional construct – perceived control over the performance of a behaviour (for a detailed discussion of the differences between TRA and TPB see Madden et al. (1992)). Although these theories have attracted considerable interest (discussed in more detail in section 2.2.2) and have been of value in exploring the attitudes, motivations and values of farmers, they have also attracted some criticisms. The theory, for example, has been criticised for its exclusive focus on rational reasoning, excluding unconscious influences on behaviour (Sheeran et al., 2013) and the role of emotions beyond anticipated affective outcomes (Conner et al., 2013) (for a fuller discussion of behavioural approaches see Burton (2004a)).

Alternative approaches to understanding farmers' attitudes and behaviours relating to environmental management has taken insight from social psychological approaches (Burton, 2004a; Burton and Wilson, 2006). These approaches are based on the idea that the individual and society are interlinked, with the individual striving to meet the needs of society and society supporting the individual to attain their goals. Such approaches take into account the social and cultural influences affecting farmer behaviour and the farmer's self-concept (Burton, 2004a). Such an approach has been useful when exploring how to change farmer behaviour to become more environmentally positive through AESs. The UK's approach to encouraging this type of behaviour takes three forms: regulation, incentives and voluntarism. It has been noted that although regulation and economic incentives have been effective in achieving *some* environmental management behavioural change amongst farmers, it is suggested that these will only reach a certain level of change with limited long-term sustainability (Mills et al., 2017). Their inability to provide long-term changes has been attributed to their lack of focus on farming cultures – specifically in altering them so that environmental assets or acts generate status and self-esteem within the community, and farmers gain social as well as financial rewards from them. Regulations (such as NVZs) - restricting farmers' behaviour - have been shown to be fairly ineffective both in reducing nitrate levels in water courses (Worrall et al., 2009; Kay et al., 2012) and in fostering farmers' commitment to environmental conservation

(Barnes et al., 2009; Hall et al., 2014). Economic incentives have been shown to be more effective than regulation in inducing positive environmental behaviour, however this can be achieved either with or without a corresponding change in attitude and hence giving economic incentives their unsustainable label (if the incentive ceases to continue). As such, to promote long-term changes it has been suggested that encouraging an ongoing culture of learning and business development, as well as in a collective setting – the perceived effectiveness of change is increased when it is a group response (Dwyer et al., 2007; Mills et al., 2008; Posthumus and Morris, 2010) - will help to facilitate an increased receptiveness to change in behaviour and management (Burton and Paragahawewa, 2011). These critiques push the call for more flexible responses to environmental measures that acknowledge farmers' motivations and practices (Greiner et al., 2009; Greiner and Gregg, 2011). Voluntary initiatives are a response that opens the possibility for farmers to take a more influential role in environmental management. Voluntary schemes have received less attention within literature, however those studies that have focused on this aspect have highlighted their potential for influencing farmers' environmental behaviour. An example of voluntary change in behaviour has been demonstrated by the Pontbren farmer co-operative in Mid-Wales (Mills et al., 2008). The group of ten neighbouring farmers have demonstrated how working collectively, using woodland management and tree planting, can improve the efficiency of upland livestock farming. It is important to note that the co-operative was in receipt of government funding, but initial impetus and commitment was driven by the farmers in the hope of improving the efficiency of upland livestock farming. The benefits of the collaborative approach not only improved farm businesses and wildlife habitats but also reduced water run-off during heavy rainfall. Crucially, it has been noted that the central factor in the success of project has been the farmers – collaborating as a group, cooperating with the scientists, but each remaining firmly in control of the management decisions on their own land (Keenleyside, 2013). Additional examples of voluntary schemes include Catchment Sensitive Farming (CSF) - however studies exploring this initiative are very sparse and, as such, is an area where this thesis hopes to offer fresh insights (see Chapter 6). Voluntary initiatives provide a pathway through which farmer led changes in behaviour can be achieved, recognising the significance of collective behaviour and that advice needs to be provided and utilised within a network of a community.

2.1.2 Riparian environments and farming

Although not always intersecting with the aforementioned literature on AESs participation, there is a smaller, but growing, body of work which has focused on farmers' water-management activities. Within this literature, themes of pollution and water quality have tended to dominate the field (Barnes et al., 2009; Inman et al., 2018). Since the post-war intensification of British agriculture, there has been a new and emerging category of 'agricultural pollution' which has led to the regulation of farming activities through policies and measures to encourage (and financially persuade) farmers into 'keeping matter in its place' (Douglas, 2003). Given the regulatory background (discussed in Chapter 1), academic literature relating to agriculture and water is focused most specifically on water pollution. As Moss (2007, p.659) has cautioned in the discussion of pollution: "simply to consider how substances emanating from agriculture affect receiving waters, the old concept of pollution, is to misunderstand most of the problem". It has been documented by many researchers that farmers are driven by, and make decisions within, a care-based ethic rather than simply reacting to financial opportunities (Greiner and Gregg, 2011; Reimer et al., 2011). This is largely due to productivity and marketing being considered as the primary motivators for the maintenance and conservation of the environment, particularly with regards to agricultural pollution. Exploring the adoption of biodiversity conservation practices, Mendham et al. (2007, p. 45) note how farmers can take one of two perspectives; either a stewardship point of view – "obligation to leave what you have been involved in, in the best condition", or a business point of view – "there's no incentive there to [take land out of production] – you can't derive an income [by doing that]". Such observations may offer some insight into why research on farming pollution gleans differing results and how the issue of pollution is viewed quite differently within the farming community. Brodt et al. (2006), however, argued that farm management styles can go beyond this simple 'business versus lifestyle' dichotomy, noting how some of the farmers they interviewed believed that environmental stewardship and profitability are not inherently incompatible, with some taking the either/or view, that reducing nitrogen input decreases costs could also serve to help the environment. Whilst it has been widely noted that farmers see themselves as 'stewards of the environment', Macgregor and Warren (2006) have also observed the lack of a stewardship ethic, and noted that

farmers viewed the terrestrial environment as more important than the aquatic environment. In their study of the motivations and management practices of Scottish farmers, Macgregor and Warren (2006, p.115) note that although catchments are inherently linked in an ecosystem context, “this linkage is certainly not established in the minds of land managers”. As such, they attributed this to the proximity and familiarity of farmers to the two environments - terrestrial environments were ‘close to home’ and linked to personal investments, whereas riparian environments were ‘out of sight, out of mind’.

Various studies have focused on the relationship between farmers, agricultural practices and water pollution. This research has been undertaken in a range of geographical contexts including Illinois (Yoshida et al., 2018); Iowa (McGuire et al., 2013); Sweden (Bratt, 2002) and Scotland (Barnes et al., 2013; Macgregor and Warren, 2016). Utilising farm surveys and interviews, Yoshida et al. (2018) explored farmers’ human–nature relations. They observed that farmers experienced an obligation to the land - emphasising that stewardship ideals were motivators to conservation efforts - but noted that production-orientated pressures of the agricultural industry limited their efforts to act upon personal perspectives. Taking the same methodological approach, McGuire et al. (2013) explored how performance-based environmental management process can be used to influence the farmer’s social identity. They observed how a feedback loop in performance-based environmental management can help to activate farmers’ conservationist identities on both a personal, and social level. As such, farmers experienced a dampening of their productivist identity as they began to adopt conservation practices that addressed soil and water vulnerabilities. Using telephone interviews, Bratt (2002) analysed Swedish farmers’ individual choices on management practices for the reduction of nutrient releases with the aim of reducing nutrient pollution at a catchment level. Bratt (2002) notes that farmers are starting to form a new awareness about nutrient use, viewing manure as a resource instead of being the waste product that it had been considered in the past. Additionally, Bratt (2002) highlights that information is needed in both formal and informal arenas to boost opportunities for nutrient reduction, as well as economic incentives being fundamental for the reduction of nutrient pollution. Barnes et al. (2013) took a wider scale approach to look at farmers’ responses to voluntary and compulsory compliance in a water quality management regime. They highlighted that

enforced regulation, with increased policing and financial threats, effects behaviours negatively and an approach that increases social capital of farmers within a community might help to engender long-term behavioural change.

Other research on water has focused upon themes such as perceptions of, and responsibility for, water quality and sources of water pollution (McDermaid, 2005), the reconfiguration of farm practices to become more sustainable (Ward et al., 1998a), the links between water quality and livestock farming (Hooda et al., 2000), and the effectiveness of nutrient runoff management practices (Popp et al., 2007). In general, many of the studies highlight that farmers acknowledge the existence of pollution and water quality problems, and that agriculture contributes to it. However, they also observed farmers' aversion of responsibility of being a source of pollution and contributing to water pollution problems. In addition there was also a reluctance to accept responsibility for reducing water pollution problems, as the adoption of reduction measures and practices often interfered with their production practices (Morton, 2007; Barnes et al., 2009; Greiner et al., 2009; Barnes et al., 2013). This has been argued to be driven by the desire of farmers to be left to manage their land how they see fit, with little acknowledgement of the effect their actions have beyond the boundaries of their farm (Hall et al., 2014). Nonetheless, some studies have noted that farmers do have the knowledge of how to reduce pollution through the reduction in nitrogen application and there are some farmers that are willing to adopt measures which aim to reduce pollution (McDermaid, 2005; Barnes et al., 2011; Hall et al., 2014). Hall et al. (2014), for example, explored farmers' attitudes to NVZ regulations, and they observed that although farmers were reluctant to accept responsibility for water quality issues, they had a clear sense of what practices caused nitrate pollution problems. A number of studies have noted that the adoption and acceptance of schemes is more likely when economic incentives are offered and perceived to be sufficient enough to allow farmers to change practices (Bratt, 2002; Kleijn and Sutherland, 2003; Posthumus et al., 2011). Ahnström et al. (2009) have identified subsidies as a main influence on agriculture's effect on biodiversity. They state that financial incentives provide a baseline from which farmers' thinking – combined with education and extension – can be changed to benefit biodiversity. Kleijn and Sutherland (2003) observed a similar response to financial incentives, noting that schemes with a

‘reasonable’ payment promoting farmer knowledge were more likely to be successful on a long-term basis.

As in many parts of the world, the quality of water bodies remains a major policy concern in the UK (McGonigle et al., 2012). A number of UK-specific studies have explored the structure, effectiveness and uptake of policy schemes (Holden et al., 2017; de Sosa et al., 2018b). AESs do not solely focus on riparian environments, for example, issues such as water quality and flood risk are embedded into the scheme alongside the promotion of biodiversity and helping wildlife⁹. Although the AES’s aim to tackle riparian issues and reduce flood risk, flooding and associated pollution is still a major issue for the UK especially in light of climate change issues. The winter flooding of 2015 (discussed in Chapter 1) brought about critical discussion of the role of AES’s and government agencies on flood management. As part of the higher tier in the ES scheme, the restoration of floodplains is designed to reduce flood risk. However, studies have shown that this approach to reducing flood risk has mixed responses – being successful in some scenarios and less so in others. For example, Acreman et al. (2003) found that floodplain restoration reduced peak flow by 10 – 15%, whereas in another study Acreman et al. (2007) established that restoring floodplains can have a negative impact as it can reduce the storage capacity thus enhancing the effects of flooding. This demonstrates the need for targeted and area specific AES’s that are flexible in order for them to suit the needs of individual sites. Previously, some restrictions of these schemes did not allow farmers to dredge ditches and many feel “they had their hands tied behind their back when it came to protecting homes and business and maximising environmental benefit” (Farmers Guardian, 2016, p.4). Such examples are arguably a further demonstration of the lack of success that AES’s are having in terms of flood risk, although it is a major aim of many AES’s, it is proving ineffective¹⁰.

Focusing more specifically on structured water policy, Barnes et al. (2009) noted that farmers within NVZs in Scotland displayed attitudes which were more production and

⁹ Farmers in CSF or NVZ targeted areas have a more structured and enforced regulation that directly targets water and riparian issues. From 2018 new rules were brought in to specially target agricultural water issues (see <https://www.gov.uk/guidance/rules-for-farmers-and-land-managers-to-prevent-water-pollution>)

¹⁰ In light of this, it has been proposed by DEFRA that farmers will have more control over waterways passing through their land. From April 2016, farmers have been able to maintain ditches and are allowed to dredge up to 1.5km of agricultural ditches, something which previously they needed a permit for (Farmers Guardian, 2016).

profit-orientated, and less sympathetic to water management, environmental and social goals. They concur with the observation made in the aforementioned AES research, that production-orientated farming remains important to farmers and conclude that it is a potential driver of pollution. They go on to call for a more integrated approach to water management at the catchment level so that water quality goals can become embedded into farmers' cultural framework of decision-making and increase compliance with water regulations. Ward and Lowe (1994), in their study of how new influences on environmental consciousness affects succession of family farm values, noted that the process of succession on a family farm is linked to how the farm (and water therein) is managed. This approach was taken on the presumption that the presence of a successor will likely to lead to the intensification of production. It was also highlighted by Ward and Lowe (1995) that the presence of a successor meant that farmers were more likely to invest in capital equipment and change management practices to improve effluent management and reduce the risk of water pollution, demonstrating the connection between family farms and water pollution. Taken together, both Barnes et al. (2009) and Ward and Lowe (1995) indicate that wider social and structural issues are important within research on the management and conservation of water and riparian environments in the farmed landscape, and so should be taken into consideration when exploring farmers agri-environmental actions.

2.2 Geographical research and the farmed environment

As Argent (2019) notes, the study of agriculture has been a central part of rural geography and several conceptual approaches have been harnessed within this work. As Cloke has eloquently observed in reviewing the different conceptual approaches taken "rural studies has witnessed a series of different conceptual fascinations, the result often being an interesting hybridization between them rather than any clear paradigmatic shift from one to the other" (Cloke, 1997, p.369) For agricultural social science research specifically, three approaches have been particularly important in the post-war period: political economy approaches, behavioural approaches and cultural approaches. These frameworks of analysis have sought to gain clearer understandings of agricultural change and develop systems of explanation which move beyond the more descriptive empirical approaches taken within earlier agricultural work within geography. The fluid and dynamic timeline of approaches referred to by Cloke (1997) highlights how the growth of new approaches (for example the behavioural approach

in the 1970s) did not result in the exclusion of the former approach (for example political economy and economic perspectives). Ilbery (1986, p.33) notes that as agricultural land-use patterns are the result of an amalgamation of complex inter-meshing factors (economic, physical and behavioural), the research prior to that of the 1970s, raises problems as “individual researchers have tended to concentrate on one approach, to the exclusion of other perspectives”. This introduction of various frameworks for analysis (political economy, behavioural and cultural perspectives) reflected the changes occurring within the discipline of human geography at that time, as well as mirroring the transformations occurring in agricultural production and the agri-food industry in the developed world (Robinson, 2014).

2.2.1 Structural Approaches and the Political Economy of Agriculture

The political economy approach was founded on a critique of some of the conventional notions of rural sociological theory – particularly studies of rural community which tended to overlook agriculture in preference to abstractions such as ‘rural society’ (Buttel and Goodman, 1989). As such the political economy approach sought to go beyond the purely economic (such as that evidenced in the previous approaches), extending analysis into the political sphere and taking into account more social and political considerations. The political economy approach is argued by Mannion and Bowlby (1992, p.15) to “suggest that if the social relationships and processes of change within a given society are to be understood, then it is necessary to examine the nature of the economy and the power relationships that it sustains”. Political economy approaches recognise the role of historical specificity of social formations within the overarching aim of understanding structural variation within a coherent interpretive framework (Redclift, 1984). Emanating from Marxist thought, political economy approaches aim to gain a greater understanding of changes taking place by increasingly engaging with structuralism in an attempt to engender increased theoretical thought and rigour. Such structuralist approaches are based upon arguments presented by Karl Marx (1971, p.21) that “the mode of production of material life conditions the general process of social, political and intellectual life... Changes in the economic foundation lead sooner or later to the transformation of the whole immense superstructure”. Within agricultural geography this translates into a structural approach which seeks to gain an understanding of the development of agriculture in a capitalist society.

The inclusion of political economy approaches within agricultural geography has commonly been attributed to Kautsky's (1976) *The Agrarian Question* and Blaikie's (1985) *The political economy of soil erosion in Developing Countries* (Marsden et al., 1996; Robinson, 2014). It has been argued that such approaches reached agricultural geographers through Anglo-American rural sociologists (Marsden, 1988) due to their applicability to the consideration of contemporary capitalist agriculture. Buttel and Goodman (1989), at the time, argued that political economy approaches represented a major step forward in the development of a more comprehensive perspective on agricultural change. Some researchers have used a broad definition of this approach, largely focussing on the study of agricultural production and change, in terms of the benefits and costs they carry, and the significance of social classes within these processes (Redclift, 1984; Marsden, 1988). As such, the political economy of agriculture can therefore be broadly defined as a structural approach to interpreting the development of agriculture in a capitalist society. The most established and popular theory is that of agrarian development in Marxian political economy which advanced in the late 1970s (Jackson, 2011). It is based on the Marxist assumption that the capitalist mode of production, in advanced societies, gives rise to the political and macro-economic forces which transform agriculture. Marsden et al. (1986) note that a key element of this is that, within advanced capitalist societies, the impetus associated with the circulation of capital tends to restructure the ownership of capital within the industry and result in fewer full-time farm businesses. Under this approach, the role of the State in agriculture, uneven regional redevelopment, the agrarian class structure and property relations, and the concentration and accumulation of capital, are all considered as important processes in changing agricultural production relations (Marsden, 1981). As such, the development, structures and changes that political economy aimed to understand co-aligned with those seen within agricultural studies with Bowler and Ilbery (1987, p.340) noting: "agricultural change cannot be explained without consideration of social and economic processes arising out of the capitalist and socialist modes of production". Additionally, Bowler and Ilbery (1987) argued that the traditional geographical approaches to agriculture had overlooked the link between the production sector and the larger food system with little acknowledgement of the individual components of the agri-food system. The political economy approach served to fill this gap by acknowledging the farm as part of, and embedded within, the

multi-faceted web of economic, social, cultural, technological and political dimensions of the larger agri-food chain (Marsden, 1988; Robinson, 2014).

2.2.2 Behavioural Approaches to the Study of Agriculture

The application of more behaviouralist approaches was part of a larger movement in human geography whereby concern shifted from research “interested primarily in classifying and categorising phenomena” derived from “a theoretical and quantitative revolution that sought to build normative models” to research which was “a process-driven search for knowledge of our spatial existence” focusing “on things such as learning, thinking, forming attitudes, perceiving, sensing, giving meaning and value, imagining, representing, and using spatial knowledge” (Golledge and Stimson, 1987, p.3). As Golledge and Stimson (1987) suggest, the development of this ‘non-normative’ approach was a reaction to the failure of the normative rationalisation of economic theory to explain the individual variations of human action. As such, the introduction of behavioural approaches in the rural environment were largely developed as a challenge to the economic-centred models and to “reassert of the importance of locality and the specificity of agricultural systems” (Moran et al., 1993, p.39). Ilbery (1986) argued that such economic models were unrealistic as farmers cannot make perfect economic decisions, only if it were by chance, suggesting that farmers can only react to perceived conditions within an uncertain environment to make informed, but potentially erroneous, decisions. Patterns and changes in agricultural land use are complex in both nature and causation, reflecting the outcome of many managerial decisions made by multiple farmers. Tarrant (1974, p.11) suggested that “the economic facts of agricultural life never act in an entirely deterministic way but rather set limits within which farmers are able to operate”, demonstrating that within the economic boundaries, agricultural practice is influenced further by various other factors such as individual behaviour and the environment. Just as behaviourists argue, farmers do not necessarily indulge in economically optimal decision-making, but instead may optimise social, intrinsic or expressive goals (Ilbery, 1978; Potter, 1986). Such observations gave rise to the critique of economic models that they cannot explain 100% of the spatial variation in agricultural practice. Therefore, as Lynne et al. (1995, p.73) argues, for an approach to be able to take personal, social, political and other influences into account, it ought to “look to the social psychologists”.

The recognition of such complexities led to a greater consideration of the role of behavioural factors in affecting the spatial structure of agriculture (Gillmor, 1986). In recognising that there were multiple factors (beyond the economic) that affected farmers' actions, behaviourally-orientated approaches offered "actor orientated, largely questionnaire based methodology[ies], [that] focused on the motives, values and attitudes that determine the decision-making processes of individual farmers" (Burton, 2004, p.359). The approach took a viewpoint of the relationship between the environment and spatial behaviour as a negotiation of cognitive and decision-making factors. As a result, such relationships require the application of a 'psychological understanding' to gain a fuller interpretation of agricultural activities. As Harvey (1966) summarised:

"If we recognise the all-important fact that geographical patterns are the result of human decisions, then it follows that any theoretical model developed to explain agricultural location patterns must take account of psychological and sociological realities, and this can only be achieved if the normative theories of agricultural location are made more flexible and blended with the insights provided by models of behaviour." (Harvey, 1966, p.373).

Although becoming popular in the 1970s, it is argued that the emergence of Simon's (1957) 'satisfying' concept was pivotal in the introduction of the behavioural perspective (Gillmor, 1986; Burton, 2004a). As Burton noted "people do not necessarily indulge in economically optimal decision-making, but instead may optimise social, intrinsic and/or expressive goals" (Burton, 2004a, p.360). The satisfier concept argues that when farmers make decisions in times when there is insufficient information available, the decision-making process is simplified by opting for the first satisfactory strategy that they encounter. It was therefore suggested that decisions were not purely made on an economically rational basis, with Wolpert (1964, p.537) stating that the "value of theory predicated upon the existence of an omniscient and single-directed rational being" was being questioned to an increasing degree. The 1970s and 1980s thus saw a growth of new approaches reflecting this increased concern with the processes underlying agricultural practice and patterns.

There are several ways in which the behavioural approach has been implemented. A number of investigations employing the behavioural approach were carried out at the micro-level in the 1970s and 1980s. These attempted to understand individual actors' decisions and behaviour (Ilbery, 1977), or what Golledge and Stimson (1987) term 'the subject and unobservable'. Some studies take the individual as the locus of behaviour, where behaviour is viewed as a rational decision making process, and the outcome of such behaviour is a result of a set of competing factors decided upon by the individual (Morris et al., 2012; Wilson, 2013). The behaviour is preceded by an individual's intention to act. This intention is characterised by a set of internal or external prompts, attitudes and values constructed within certain constraints (Jackson, 2004). This approach allows external factors such as society or technology have some impact, but places emphasis on individual agency. Within this, individual behaviour is conceptualised either as somewhere on a scale (Beedell and Rehman, 2000), or at a stage of adopting a behaviour. A scale or continuum method is useful to predict how likely or how often an action will occur, and so how often an individual conducts that behaviour (Gillmor, 1986). The stage method is useful when exploring how particular factors influence an individual's choice or behaviours at various points in adopting a behaviour or more broadly across their lifetime. The latter is particularly relevant when researching family farms and succession as there are links to conservation adoption and the presence of a successor (Ward and Lowe, 1994). Other research has tended to focus on behaviour as an outcome of complex inter-relationships and shared social practice. From this perspective, individuals perform or reproduce behaviours that are themselves a product of relationships between people, the environment, and the technology around them and so the objects and environments become active in the production of an individual's behaviour (Gillmor, 1986). As economic behaviour cannot be solely explained through the availability of resources (Wolpert, 1964), this recognition and appreciation of social conditions and human motivations, attitudes and values, are vital to understand how behaviour effects agricultural change. By combining personal characteristics within the behavioural approach, it changed how patterns of agricultural land use were viewed, and continued to be explained through the complex, interlinking dynamics of economic, physical and behavioural influences. The publishing of seminal works such as Gasson's (1973) classification of farmers' goals and values, non-economic factors in decision-making such as cultural, social,

and psychological influences, should have been a considerable boost for behavioural approaches, however they continued to be viewed mainly as an additional component to the original economic models. It was the development in social psychology of the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) in the mid-1970s, which boosted the popularity of this approach. TRA was the first model that demonstrated the connection between attitudes and behaviour reliably. Behaviour or action is either viewed as reflecting a personal belief and interest or reflecting social influences, however TRA goes beyond the measures of attitude and subjective norm to understand why people hold certain attitudes and norms. It achieved such understanding through examining peoples' beliefs, as it is based on the argument that behaviour is best represented by a person's intentions and how surrounding others influence such intentions (Willock et al., 1999).

Within agricultural geography, the behavioural approach and the TRA have been useful in understanding conservation-orientated behaviours, actions and attitudes of farmers (Lynne et al., 1995; Vogel, 1996; Beedell and Rehman, 1999; 2000). There is a considerable body of behavioural investigations of agriculture, most notably studies of farmers goals, values and attitudes (Newby et al., 1977; Ilbery, 1978; Gillmor, 1986). The majority of studies exploring the influence of motivations on behaviour have highlighted that the decision-making process is affected by a 'balancing' and weighting of a number of factors (Beedell and Rehman, 1999). A study by Potter (1986, p187), examining farmers' investment decisions in land improvement and landscape maintenance, highlights how changes within the landscape are "both 'determined' by policy, institutional and family influences and 'intentioned' by the farmer acting as a problem-solving individual [sic]". Employing a survey approach, Potter (1986) formulated three 'investment styles' based on the extent of land improvement investment: i) programmatic (high-profile land improvers who carry out extensive, carefully planned and executed programmes); ii) incremental (long-term, but small scale, opportunistic investors confined by financial constraints or lack of motivation), and iii) mixed (switched from an incremental to a more programmatic investment style, commonly due to a change of circumstance). They concluded that farmers are "far from being 'policy dopes'" (Potter, 1986, p.194) and respond to problems originating both from within and outside of the farm business and thus loss of conservation value is "best seen as an unintended consequence of behaviour which

is knowledgeable and usually goal-oriented”. Taking this forward, Gasson and Potter (1988, p.342) in their study of farmers’ willingness to participate in conservation practices, argued that “any explanation of conservation behaviour needs to take account of both ability to invest and the farmer’s interest”. Similarly, Lynne and Rola (1988) noted that conservation practice and actions were related to a positive attitude towards the environment and a higher income in the USA. Beedell and Rehman (2000) similarly adopted TPB to investigate farmers’ underlying determinants of behaviour and to comprehend farmers’ attitude. Despite emerging criticisms (see below), they defended their choice of theoretical framework stating that it: i) offered a structure and theoretically rational, replicable methodology; ii) recognised beliefs that influence attitudes and motivations; and iii) connected behaviour to its underlying beliefs. They observed that neither succession status of a farm nor policy alone could fully explain the agri-environmental processes occurring within the agricultural landscape. They concluded that farmers who were members of an advisory group, and therefore has greater environmental awareness, were influenced more by conservation-related concerns, and less by farm management, than farmers outside of the group.

An alternative theoretical framework, which some suggest avoids many of the potential limitations of the TRA, is a transactional model (TM) (Willock et al., 1999). In a TM “humans are active participants in their environment – thinking, feeling and acting – leading to the attribution of meaning and valuing of specific places” (Brown and Kyttä, 2014, p.127). Under this presumption, it is assumed that characteristics of a person and their environment are significant antecedents of behaviour (Austin et al., 1998). Within this model there are three types of variable; (i) antecedent – trait-like characteristics of a person and features of the environment (for example, the level of social support); (ii) mediating – cognitive constructs (for example coping styles and appraisals); and (iii) outcome – an individual’s behaviour (this can be influenced by attitudes – commonly deemed to be antecedent variables – either directly or mediated by goals and objectives) (Willock et al., 1999). Using a TM to explore human-landscape relationships, Zube (1987) observed that patterns of land-use activities are significant sources of information that influence the development of landscapes perceptions. These perceptions can vary between individuals depending on their experiences in that place. Zube (1987) also highlighted that individuals are supportive of changes in land use when such changes are compatible with their personal utility

functions and value orientations. Commenting on his use of TM he noted that although this framework helps to obtain useful information about human-landscape transactions, it was limiting due to its reliance on individuals' self-reports and other 'paper-and-pencil' gathering techniques. This results in a lack of recordings of actual behaviour *in* landscapes – something important when explaining changes in the landscape.

Although political economy, the behavioural approach and theories such as TRA and TM, have attracted considerable interest and been useful in exploring the attitudes, motivations and values of farmers, there have been several critiques offered. Wilson (2001, p.86), for example, notes that the preoccupation with political economy approaches put greater emphasis on state and policies, suggesting that: “the farming community has often been viewed as responding almost entirely to outside forces, with little acknowledgement of possible changes from within”. Similarly, Morris and Evans (1999) argued that agricultural geography contains greater diversity than the dominant political economy discourse would suggest. Likewise, purely behaviouralist approaches were criticised for treating the humans too individualistically, viewing the individual mind as a ‘black box’, overlooking the social and cultural context of human activity, in a manner akin to earlier critiques of structural approaches (Bunting and Guelke, 1979). Although it has been recognised that social and cultural factors influence behaviours, there is an overwhelming emphasis on attitude being the main motivational determinant of behaviour within these approaches. This ‘ignorance’ of other influences is described by Burton (2004a) as a ‘distinct weakness’ and ‘common problem’ with studies concerning agricultural behaviour. Burton (2004a) also notes how this sole reliance on attitudes is widely recognised within the social psychology literature as inappropriate and unlikely to reveal any influence and relationship with behaviour. Additionally, it has been argued that the approach has failed to be sufficiently sensitive towards the differences between people and places, which led to a call for more consideration of the cultural aspects of farming in the recognition that there had been limited research on the “nature of farmers and farming as cultural constructions” (Robinson, 2014, p.41). The cultural turn has gone some way in informing in this debate, shifting emphasis away from realist perspectives on the environment to “explore cultures of nature(s); the spatially and temporally contingent ways in which people come to understand and apply meaning to nature and the

environment” (Morris and Evans, 2004, p.102). This thesis takes forwards the contribution of the ‘cultural turn’ by rural social scientists and is where this section turns to next.

2.2.3 The Cultural Turn in Human Geography

As the previous sections in this chapter suggest, chronologically reviewing the different approaches is difficult as these approaches inevitably evolve and become less distinct from one another. The discussion of the ‘cultural turn’ in geography is no exception, both in its emergence in geographical research and the nature and its extent of its influence (Matless, 1995). Barnett (1998, p.381) suggests that the cultural turn within geography can be located within the period when “the wider set of debates that emerged in the late 1980s around postmodernism” were established. These, he argues, “in large part were the vehicles for geography’s entry into new fields of cultural theory”. During this period, rural studies saw an influx of more culturally-informed approaches, and behavioural approaches became increasingly side-lined (although as Walmsley and Lewis (2014) note, there are still many contemporary studies of AES uptake which utilise these behavioural approaches). Important to note, although there are criticisms of the behavioural approach, many of the underlying reasons for the development of the approach still stand within research. Such reasons include: the recognition of the importance of human consciousness in influencing human responses to the environment; the recognition of the role the approach could hold in studies around social and moral concern and its influence on policy-making. Walmsley and Lewis (2014) argue that the behavioural approach is becoming increasingly recognised and more widely accepted today due to the acknowledgement of “the rapidity of environmental change in contemporary society and of the need for behaviour to change as a consequence” (Walmsley and Lewis, 2012, p. 134).

The ‘cultural turn’ was driven by a desire to understand language, meaning, representation, identity and difference, and acknowledge the role of culture as a process in the negotiation of aspects of life (Valentine, 2001). Work informed by the cultural turn sought to break down barriers between the sub-categories of geography, such as economic and political, to demonstrate that “common human traits and behaviour patterns underpin most of life and thus are inscribed in spatial structure which constrain and facilitate further action” (Johnston, 2006, p.10). Understanding

was largely achieved through the introduction of qualitative methodologies (ethnography, discourse analysis, participant observation) as a reaction to the quantitative approaches which had dominated much of the discipline in the 1970s and 1980s. The early 1990s saw rural studies employing postmodernist thinking and stressing the importance of heterogeneity, particularity and uniqueness and taking “seriously the complexity of human beings as creative individuals” (Cloke et al., 1991, p.17). It was built on the criticism that behavioural geographers confined themselves to “a fairly narrow conception of how human beings think and act” (Cloke et al., 1991, p.67). Through this, geographers were now offered a multitude of approaches to explore cultural dimensions of society and began to not only rethink the relationships between humans and nature, but also a wide range of other, material ‘things’. The approaches were described by Cloke et al. (2013) as a method to:

“Avoid the easy and ultimately dull options of retreating into worlds of compiled fact or modelled fantasy. It engages with real life and real lives, embracing their wonderful complexity. It seeks to do more than record or model; it tries to explain, understand, question, interpret and maybe even improve these human geographies” (p. ix)

Morris and Evans (2004) note how rural studies has fully embraced the ‘cultural turn’ whereas agricultural geography represents an “awkward” case when discussing the influence that the cultural turn has had. With agricultural geography, Morris and Evans (2004) suggest, the ‘cultural turn’ was slow to take off with behaviourally grounded studies in a post-structuralist context dominating the main research avenues of agri-environmental policy. Morris and Evans (1999) and Burton (2004a) have noted how this is understandable due to research being delivered within a ‘policy evaluation mould’ and government agencies demanding questionnaire-based approaches to focus on the principle decision makers to inform policy development. However, as Short (1992, p.42) argues: “‘culture’ is at the heart of farm development: that history, locality, and social values all have the potential to divert conventional ‘rational’ trajectories of change” prompting agricultural geography to become more sensitive of the role of culture as a mediating factor of all aspects of a farmers’ life. Cloke (1997) argues that the ‘cultural turn’ has added respectability and excitement to rural research - coining it the “most exciting period of rural studies” (Cloke, 1997, p.371). Cloke (1997) also identifies three main foci for cultural studies in a rural context; landscape,

otherness and the spatiality of nature - which have become accepted, if not central part of rural geography. The new interest in landscape was central in exploring the role of rural landscapes in constructing national identities (Nogué and Vicente, 2004; Wallwork and Dixon, 2004). The second focused on marginalised groups and spaces within rural areas, such as rural women, children, homosexuals, travellers and ethnic minorities (Bell and Valentine, 1995; Cloke and Little, 1997). This echoed the (much cited) call made by Philo (1992) for increased engagement in rural geography with 'neglected rural others'. Finally, the third focus relates to studies attempting to understand the relationships between human and non-human agency in nature.

Looking closer at the agricultural context, cultural approaches highlighted the social embeddedness of agricultural production and role of culture in facilitating technical and economical drivers of change (McCarthy, 2005). Previous research has demonstrated that there are various 'types' of farmers. Such farmer typologies are varied with some based on farmers' perceptions about themselves, while others are based on their actual farming practices (Sulemana and James Jr, 2014). Such typologies have been established to distinguish between groups of farmers - usually described through the interrelationships between attributes - as a means of making sense of the complex relationships between multiple factors that can influence farmer behaviour (Darnhofer and Walder, 2014). For example, Darnhofer et al. (2005) - in the hope of providing a detailed picture of farmers' decision making - utilised the decision tree method to explore farmers' rationale for converting to organic farming. They examined farmers' decision making process when choosing their farming method and recognised five 'types' of farmer; three conventional ('committed conventional', the 'pragmatic conventional', the 'environment-conscious but not organic') and two organic (the 'pragmatic organic' and the 'committed organic'). The 'types' highlight the relations between the surrounding environment and the human dimension of the agricultural system, illustrating how each farmer makes decisions based on various cultural and social influences. It has been suggested that farmer typologies are useful for researchers and policymakers as they give insight into how farmers' perceptions about themselves affect their decisions regarding farming practice. Blackstock et al. (2010, p.5634) note that:

“whilst policies and economics are important, there is also a need to look at social and cultural issues in specific geographical or social contexts in

order to better understand farmer behaviour [...] as individual decisions and actions do not take place in a social vacuum, but are shaped by ideas and practices negotiated by the social groups in which they are necessarily embedded.”

As such, the outcomes of the cultural turn have been useful in helping to understand farmer behaviour by acknowledging the cultural value of farming activities and how farmers gain capital and status in everyday farming activities (Burton, 2004b; Yarwood and Evans, 2006). Whilst the cultural approach has been useful in understanding farmers’ environmental behaviour, there has been limited attention to the cultural aspects of water and riparian management (with the exception of some, such as Ison et al. (2007); Blackstock et al. (2010) and (McGuire et al., 2013)). This is something this thesis hopes to address. In framing the current study, two specific strands of this culturally-inflected work are significant – that working on farming identities, and that focused on knowledge(s).

2.2.3.1 Farming identities

Existing academic research has highlighted the importance of identity for the farming community. Glover and Reay (2015) have noted that maintaining their farming identity and enjoying the lifestyle allows farmers to be content with a somewhat lower income. As such, farmers’ adherence to this way of life often serves as a ‘cultural explanation’ for why farmers tend to continue despite decreasing economic viability (Sutherland and Darnhofer, 2012). Important for these, however, is the idea that farmers derive non-economic benefits from farming and actively *being* farmers. For farmers, their land, its location and its management are a vital resource not only for its productive value but as a basis for identity. Farmers are individuals yet part of a community, with a shared social identity, operating in a public sphere amid of rapid social, economic and policy change.

Identities have been described as providing an individual with a ‘frame of reference’ for understanding the suitability and relevance of a given behaviour as a member of a particular group, or role in society (Burke and Reitzes, 1981; Burke and Stets, 2009). Whilst reviewing the literature on farmers’ attitudes towards conservation practices, Ahnström et al. (2009) note that farmer identity can be defined by the farmers themselves (i.e. as dairy farmers, arable farmers and so on) or by the surrounding

society (e.g. small, large, old or young), and as such there is the possibility for multiple farmer identities. What social group an individual identifies with will determine what norms and behaviours are followed. In this case “behaviour is guided by the individual’s self-categorization (e.g., “I am a farmer”) and their desire to comply with the norms of that particular social category (e.g., “farmers do... ”), with motivation to comply being higher for identities that are more personally relevant or salient” (de Snoo et al., 2013, p.68). As such, researchers applying social psychological approaches to agri-environmental decision making have noted significant evidence that identities are influential determinants of farming behaviour (Burton and Wilson, 2006). Mills et al. (2017) examined farmers’ qualitative responses in order to explore the underlying reasons and explanations for farmers’ motivations towards environmental management. They found that farms that have a limited network or lack presence in a social grouping and a subsequent lack of information, are more resistant to wider community level influences. As such they noted that these conditions make it less likely to change norms and self-identity through advice and support programmes.

In an effort to broaden understandings of motivation and accommodate the heterogeneity of farmer preferences, studies on conservation-orientated behaviour and AES adoption have demonstrated the influence of identity and cultural norms. Studies exploring agri-environment policy have noted that where social and cultural identity is placed under threat by policy changes, those changes may be resisted, and agri-environmental goals are not met (Burton, 2004b; Siebert et al., 2006; Burton et al., 2008; Burton and Paragahawewa, 2011). Burton and Paragahawewa (2011) acknowledged this in their work exploring how to create culturally sustainable AESs. They noted that ‘farmers’ do not comprise a homogeneous group with standardised attitudes and behaviours, and as such when policy encourages activity that is not indicative of ‘good farming’, farmers are resistant to change their practices. In understanding this resistance, it is important to understand the farmer as culturally situated and that farmers attach values to their farming behaviour, and not solely rejecting AESs on grounds of rational decision-making. They are instead resisted for the reason that they represent a potential erosion of identity associated with being a ‘good’ productivist farmer (Burton, 2004b). McGuire et al. (2013, p. 57) highlight this noting that "there is a body of literature that suggests the productivist identity

dominates the decision-making process thereby putting water quality and other environmental goals at risk". This suggests that the conservationist identity is secondary, or suppressed, for many farmers. Further to this, McGuire et al. (2013) explored how performance-based environmental management processes might shift the overall identity of being a 'good farmer' towards a stronger conservationist orientation. Of the farmers they interviewed, McGuire et al. (2013, p.57) noted that within what they see as 'good farming', there were elements of conservation-orientated thinking, but they often needed to be "activated to rebalance the production-conservation meanings they give to their roles in society". As such, elements of some farmers behaviour indicated they have started to integrate their conservation identity within their good farmer identity.

Numerous researchers have recognised the prevalence of multiple farming identities and have highlighted that a farmer's identity needs to be taken into account when attempting to facilitate change at a farm level, most specifically that the identity as a food producer is an important cultural norm within the farming community (Burton, 2004b; Burton et al., 2008; Sutherland and Darnhofer, 2012). Burton has been a significant contributor to the discussion on farmer identity (Burton, 2004b; Burton and Wilson, 2006; Burton et al., 2008; Burton and Paragahawewa, 2011; Burton, 2012). Whilst exploring the social symbolism of behaviours from the perspective of both the individual farmer and the intergenerational farm identity, Burton (2004b) highlighted that farmers' role identities are closely linked to their personal identities. The farmers are not only represented by these personal identities but also those of their family's past, present and future. As such, Burton (2004b, p.207) observed that "farm families may adopt the name of the farm as a self-referent label to refer to the collective symbolic displays of generations of family members", in the same way that individuals adopt identity labels to display their self-image and guide social action. In this thinking, the adopted identity provides individuals with shared meanings and understandings of behaviours and events, and simultaneously, this farm identity already has a predefined social position within the community of farm identities. As such, Burton (2004b) observes that the farming identity – due to its intergenerational workforce – is constructed around the reputation of the farm itself and not necessarily around individual family members. This emphasis on the farm as a whole is due to the land allowing the expression of identity for the farming family and becoming essential

for the family to construct a ‘farmer’ identity. Its intergenerational characteristics act as a store for symbolic capital and any new family member can upon the farm environment to support their identity as a farmer. Burton (2004b) highlights the importance of this store of symbolic capital to an individual’s farming performance noting that although an “individual farmer may be poor [at farming], this will not necessarily detract from the cumulative efforts of previous generations, thus while the farmer’s reputation may not be good, the reputation of the farm as an identity is slow to decline” (p.201). Furthermore, Glover (2010) highlights how the relationship between the farm and the farmer (their dependency on one another) may allow the farm to develop an identity of its own, representing a cumulative role-play of previous generations of farmers, and a means by which a farmer can display significant symbols of farmer identity. With this thinking, “the boundaries between the identities of the farmer, the farm family and the farm itself become blurred” (Burton, 1998, p.238). Other researchers have highlighted the significance of the family farm in shaping farmers’ identities (Riley, 2009; Fischer and Burton, 2014). Fischer and Burton (2014) undertook two-generational interviews to explore farm succession and the development of successor identity. They highlight that there is a connection between what happens on the farm and the development of identity, in that particular successor identities contribute to the reconstruction of family farm realities in particular ways. This then provides an alternative framing by which further reconstruction of identities can occur, creating a cycle where successor identities and farm realities are co-constructed. Fischer and Burton (2014) concluded that this co-construction of a ‘succeedable’ farm and a successor identity is an important basis for ties to form between the farm and the successor allowing the farm to remain a ‘family farm’.

The importance of identity has also been noted when trying to understand farmers conservation-orientated behaviour (Stock, 2007; McGuire et al., 2015). Using the social psychological framework of identity theory (see Burke and Stets, 2009), McGuire et al. (2015) implemented a mixed methods approach of in-depth interviews and postal surveys, to explore farmers’ identities and responses to the social-biophysical environment and gain an insight to how farmers view themselves as they perform their role as a farmer. It resulted in four identities being recognised; Productivist (aims to produce the greatest amount of crop yield per acre), Conservationist (aims to balance productivity with caring for the biophysical

environment), Civic-minded (believes their role includes community leadership and responsibilities to be an active, and engaged member of the local community) and Naturalist (aims to balance farm production with a strong interest in wildlife). Through examining the identities that are activated when making production decisions in varied environmental and social situations, two categories were formed. The first - in which Productivist, Conservationist, and Naturalist identities fell - were activated in policy scenarios relating to soil and water conservation, suggesting these identities were more likely to opt in to schemes. The second - in which Civic-minded identities fell - were not seen to be activated by soil and water conservation and were negatively affected by financial incentives, on the pretence money meant more regulation. They concluded that that the biophysical environment impacts upon a farmer's identity, influencing their position within the group's hierarchy and impacting upon farmers' management decisions that contribute to soil erosion and water pollution. In exploring environmental dispositions in a different context, Stock (2007) considered organic food producers in the US Midwest and noted that following the adoption of organic production methods, farmers internalised their concern for health as part of their identity and farming practices. In doing so they "internalised the idea of stewardship through their shared identity of trying to live up to the concept of 'good farmer'" (Stock, 2007, p.94). Stock (2007) labelled these farmers as reflexive producers (after Lockie and Collie, 1999) - farmers who self-identify as good farmers that incorporate ideas often associated with reflexive consumption into their production habits and as such are concerned with protecting the environment and the health of their customers and people in general.

Increasingly, farmers' identities and self-esteem as producers are being challenged. Recent regulation and public expectation are seeking to encourage farmers to see themselves not simply as producers of food, but also as stewardships of the environment, sustainably producing food whilst providing public goods. As such, farmers are being encouraged to change their management and behaviour and are implicitly offered a new identity and new set of social norms (Ahnström et al., 2009). In their review paper, Ahnström et al. (2009) highlight how these changes in management can also be challenged by the identity and norms that the farmers already possessed, and as such farmers' may be reluctant to adopt certain practices or partake in schemes as their motivations do not necessarily align with that being introduced.

Recently, farmers' identities have been increasingly challenged in media attention with the role of the farmer in the countryside being questioned (Wynne-Jones, 2016): "Careless Farming Adding To Floods" (BBC, 2014). Exploring the impacts of media coverage of flooding on the farming community, Wynne-Jones (2016) focuses on the experiences of the Pontbren farmers in Mid Wales. She argues that the good-will and engagement of farmers to help relieve issues, such as flooding, is often undermined by media sensationalism, and "conflation of the science around the issue" (Wynne-Jones, 2016, p.533). She notes that farmers have been strong advocates of land-use changes that help to reduce flood risk, but recent media coverage has inaccurately portrayed farmer's motivations, alienating them and the wider farming community. As such, the farmers interviewed had shifted their motivations and their identities were no longer purely food producers, but the recent media has failed to acknowledge this, placing increasing pressure on the farming community, further questioning and challenging their identity. Darragh and Emery (2018) have acknowledged a similar theme, noting that farmers' valuable knowledge is often overlooked, sometimes resulting in poor environmental decisions, and farmers believing their identity as managers of the countryside is being threatened and belittled. They further note how farmers will then protect their collective identity and represent behaviours as 'conservation' in a bid to challenge the opinion of others (such as the media and policymakers). Finally, they suggest that farmers' perceive their 'bad name' to be demotivating and recognise that wider societal moral discourses and impressions of farming had shifted far more than the actual practices of farming warranted.

2.2.3.2 Knowledge

The aforementioned transition towards sustainable agriculture - which seeks to redefine the role of farmers as providers of public goods and environmental care - has brought forward an allied literature on farming knowledge(s). This literature seeks to uncover the nature and complexities of farmers' knowledge - both relating to how they understand their farm environments as well as the potential knowledge conflicts that may arise when farmers come into contact with other, conservation-focused, environmental knowledges (Riley, 2008; Reed et al., 2010). As noted by McHenry (1998, p.1039), "facts, values, and personal experiences are all bound up together so that nature and its conservation are social and cultural constructs" and as such

exploring farmers' understandings of the environment reveals much about their knowledge and identity (discussed previously).

Traditional approaches (dominant in the 1970s and 1980s) to understanding knowledge assumed that innovations and knowledge originated from science and were transferred to non-experts i.e. farmers (Black, 2000). This notion of a 'one-way' sequential path has since been met with criticism (Buttel, 2001) which include: that the approach is no longer suitable for modern, multi-functional, agriculture; it is not reflective of how farmers adopt and use information, and; there is limited consideration of the influences on knowledge and advice uptake (Blackstock et al., 2010). As such, this linear approach does not acknowledge the various sources from which knowledge is generated (from both expert and non-expert sources) and calls have been made to give attention to the validity of non-expert forms of understanding - including farmers' local knowledge - on the basis that local knowledge is more suited to sustainable agricultures as it is more ecosystem-sensitive and context-dependant possessing important knowledge about the biophysical and socio-economic system (Roling and Wagemakers, 2000; Voinov and Gaddis, 2008).

Earlier work that sought to move beyond this singular focus on scientific knowledge considered the importance of local/tacit knowledge and its relationship to scientific knowledge. Scientific knowledge - generally described to be explicit, systemised and decontextualized - is widely transferable. Described by Lundvall and Johnson (1994) as 'know-why', scientific knowledge is largely based upon the exploration and understanding of basic principles and theory behind phenomena. Conversely, local knowledge is understood to be primarily tacit, informal, context-dependent knowledge formed upon years of experience of observation and action, labelled by Lundvall and Johnson (1994) as the 'know-how'. The latter form of knowledge has tended to add to an "increasing legitimacy of farmers themselves as 'experts,' and to a growing acceptance (by 'outsiders') of their informal knowledge as legitimate knowledge" (Allan, 2005, p.6). There has been a recent growth within research which has sought to go beyond the dichotomy of expert-lay knowledge to understand how each source draws upon one another. This research considers in particular, 'non-institutional' knowledge – something that has ignored and underrepresented in society¹¹ (Clark and

¹¹ Such discussion - as Tsouvalis et al. (2000) elaborate on - has been progressed by postmodern concerns for difference, and the need to better accommodate various marginalised Others within society and the analysis of it.

Murdoch, 1997; Riley, 2008). Research in this area has recognised the porosity of the boundary between these two forms of knowledge, demonstrating that farmers value multiple knowledge forms, including those developed in a more scientific environment as well as those developed through practical, agricultural experience (Morris, 2006). In understanding this boundary between state-led and farmer approaches to knowing nature, Morris (2006) undertook two large scale, countrywide surveys of farmers in two AESs. Morris (2006) observed that farmers are both environmental scientists *and* agricultural scientists, and this is possibly due to the length of time some farmers have been engaged in environmental management. As such, it was concluded that the constructive interchanges between farmers and AES advisors demonstrated the considerable degree of negotiation between policy and agrarian knowledge cultures - signalling the increasing sharing between knowledge forms and the breakdown of dichotomous framings of knowledge.

Moving beyond the 'one-way' model of knowledge transfer, previous research has called for a more collaborative approach where a joint form of knowledge is produced where all actors are recognised as knowledge producers and users, with all knowledge forms being valued equally (Phillipson and Liddon, 2007). Farming knowledge is usually an amalgamation of information passed through generations and secured through continuous engagement with the land and, as such, farmers hold a wealth of local and site-specific knowledge (Setten, 2001). Such knowledge has facilitated the recognition that local, tacit knowledge should be equally valued alongside scientific, 'expert' knowledge (Darragh and Emery, 2018). This has also been highlighted by Grudens-Schuck (2000) in their study of a Canadian sustainable agriculture education program. They observed that farmers (who have previously been positioned as a 'user' of knowledge rather than as a source of knowledge) provided leadership, rather than government, in solving environmental issues and encouraging environmental farming. In this way, farmers demonstrated how the role of the "knowledge sharer" is not static and an individual can take on both roles in different situations (the user and the sharer). This sharing and engagement between similar individuals is important as tacit knowledge is "difficult, if not impossible to communicate other than through personal interaction in a context of shared experiences" (Morgan and Murdoch, 2000, p.161).

More recently this idea of sharing or exchanging knowledge between knowledge producers (usually researchers/scientists) and knowledge users (usually farmers or

landowners) has gained more interest (Reed, 2007). As a result of their origins, the two forms of knowledge can complement one another forming a more ‘complete knowledge’ (Reed, 2008) or hybrid form of knowledge (Stringer and Reed, 2007). By integrating scientific rigour and accuracy with context specific and sensitivity from local knowledge bases, Stringer and Reed (2007) argue that the resultant ‘hybrid knowledges’ allow scientists, local actors and their individual understandings to cooperate to produce more relevant and effective policy and practice. This same sharing of knowledge is not necessarily solely limited to scientific and local knowledge, but all forms of knowledge brought forward by different stakeholders (Wójcik et al., 2019). The benefits of applying local, along with expert, knowledge have been widely demonstrated in various research studies (Tsouvalis et al., 2000; Baars, 2011). In their development of watershed and water quality models to address water resource issues, Voinov and Gaddis (2008) note how the combination of farmer knowledge with expert technical knowledge of watershed processes is key to identifying new and appropriate solution to environmental problems. Using participatory modelling as a platform for integrating scientific knowledge with local knowledge, they highlight how this process can provide a value-neutral space for a diverse group of stakeholders to contribute information regarding water resource issues. As such, effective water catchment management and the development of effective partnerships between scientists and landowners, requires a contribution from both scientific and social processes.

Some studies that have investigated these various ways of understanding and forms of knowledge have done so through the conceptual frameworks brought together in the discussion of ‘knowledge cultures’ (Tsouvalis et al., 2000; Morris, 2006). Key to the concept of knowledge cultures, is that knowledge is a social achievement and something that is produced through social interaction. As such, the notion refers to the socially negotiated structures of meaning and can be seen as a relational outcome when different groups come together in articulating the social meaning of things (Tsouvalis et al., 2000; Riley, 2016a). Tsouvalis et al. (2000, p. 912) argue that “knowledge cultures are characterised by the practical understanding... referred to as knowing from within”. A knowledge culture:

“is therefore not a form of knowledge; it is neither a ‘knowing that’
(or a theoretical form of knowledge that provides facts or theoretical

principles), nor a ‘knowing-how’ (or a technical form of knowledge of a craft or a skill)... it... continuously links diverse knowing-thats and knowing-hows to one’s practical, everyday undertakings. Knowing from within provides a blueprint for relating and responding” (Tsouvalis et al., 2000, p. 912).

A number of researchers have used this framework to explore farmers’ understandings and justifications behind their actions and management practices (Tsouvalis et al., 2000; Morris, 2006; Burton et al., 2008; Riley, 2008; Riley, 2016a). Others have sought to extend upon this concept. Morris (2006), for example, makes reference to ‘policy knowledge culture(s)’ associated with contemporary AESs and distinguishable from ‘agrarian knowledge culture(s)’. Recognising these two types, it enables investigation of how exchange is taking place between knowledge cultures and more specifically how the policy knowledge culture is adapting to and accommodating aspects of the pre-existing forms of agrarian knowledge culture. Fundamentally, the knowledge culture framework helps to recognise the various forms and sources of knowledge to improve exchange between actors or groups to meet environmental goals.

Although there is recognition of the importance of lay knowledge in environmental management, many studies have revealed that farmers’ knowledge of environmental problems generally does not extend beyond their farm boundaries or indeed beyond issues directly related to productivity on-farm (McDermaid, 2005; Popp et al., 2007). Accordingly, a number of advisory services have attempted to extend farmers’ knowledge beyond their farm boundaries in the hope of (re)shaping the nature of their knowledge practices. As a result there has been plethora of research that has sought to understand to effectiveness of advisory services¹² within the farming community (Ingram and Morris, 2007; Ingram, 2008b; Ingram, 2008a; Sutherland et al., 2013). Exploring knowledge exchanges between agricultural advisors (agronomists) and farmers, Ingram (2008a) noted the process of advisors visiting individual farms remains one of the most effective and influential methods of communication in the farming community. They argue that previous research has cast the role of the advisor

¹² Such services have been implemented both through the private and public sector providing specialist support and policy advice.

as an expert disseminating information and policy and thus feeding into the traditional top-down approach to agricultural extension and sustaining the “treadmill” of farming. Utilising semi structured interviews, Ingram (2008a) observed that knowledge exchange between agronomists and farmers is characterized by the interaction of knowledge and power, noting that expert knowledge encounters occur within a broad spectrum. They recognise three positions: i) at one end, “proactive experts” – where farmers defer to expert advice; ii) in the middle, “interactive encounters” – characterised by divergence of knowledge, and iii) at the other end agronomists merely react to farmers’ demands. Finally, Ingram recognises facilitative knowledge exchanges, whereby agronomists and farmers are placed in more equal positions, working in a partnership combining their experience and knowledge, developing based on the farmers’ needs. Within literature on advisor-farmer relationships, information from trusted sources are more likely to influence behaviour, as Blackstock et al. (2010, p.5632) notes “in general, the higher the source credibility the higher the persuasion factor will be”. Taking forward the importance of trust, Sutherland et al. (2013) explore how trust is established in agri-environmental agricultural advisory services in England. Their findings suggest that longevity and expertise in service provision are key factors in engendering trust and as such consistent long-standing service providers are more likely to influence farmer behaviour. In addition, they observed that farmers placed trust in services that were perceived to be ‘impartial’ or actively ‘pro-agriculture’ and caution that advisors may be incentivised to provide information on easy access grants rather than information with the most environmental benefit.

2.3 Establishing a Conceptual Framing

In achieving its objectives, this research adopts a conceptual framing which utilises Pierre Bourdieu’s conceptual ideas of habitus, field, capital and the rules of the game. These concepts are synthesised with literatures from two key areas: i) the Bourdieusian-inspired literature on the ‘good farmer’ and ii) and the aforementioned literature relating to farming knowledge(s).

2.3.1 Bourdieu’s habitus, field, rules of the game and capital

A central focus of Bourdieu’s understanding of the social world is that it is a “two-way relationship between objective structures (those of social fields) and incorporated structures (those of the habitus)” (Bourdieu, 1998, p.vii). As such he developed the

concept of *habitus* – a framework of perception, appreciation and action, through which we can start to understand the ways in which a discourse is produced, and they become recognised as a form of knowledge. For Bourdieu (1977, p.82) habitus is:

“a system of lasting, transposable dispositions which, integrating past experiences, functions at every moment as a matrix of perceptions, appreciations, and actions and makes possible the achievement of infinitely diversified tasks”.

In this thesis, the habitus is defined as the accumulation of the farmer's life experiences, encompassing certain ways of thinking, speaking, acting and reacting to situations. Bourdieu's notion of habitus invokes a process whereby there is an interplay between free will and dominant modes of thought over time, and they become internalised by the individual through continual social interactions and experience. Subsequently it acts as a template for action and change as it is a product of history which reinforces the active presence of past experiences by shaping current practices and structures (Maton, 2008) and, as a result, “ensure[s] that individuals are more disposed to act in some ways than others” (Painter, 2000, p.242). As such, habitus is the internalisation of the objective structures of the '*field*' – a socially structured space in which actors play out their engagements with each other. It stems from the subconscious - informed by '*a feel for the game*' - and the socialised norms and expectations shaping the individuals 'disposition to act' towards culturally accepted standards. In this research these standards and characteristics are aligned to that of being a 'good farmer' (discussed in more detail in section 2.3.2) Accordingly, for Bourdieu, habitus, capital and field are necessarily interrelated, both conceptually and empirically (Bourdieu and Wacquant, 1992) – “such notions as habitus, field... can be defined, but only within the theoretical system they constitute, not in isolation” (Bourdieu and Wacquant, 1992, p.96). As Maton expands: “to talk of *habitus* without *field* and to claim to analyse “habitus” without analysing “field” is thus to fetishize habitus, abstracting it from the very contexts which give it meaning and in which it works.” (2008, p.60), and so it is important to highlight the relationship between *habitus* and *field*.

Bourdieu used the football field as a metaphor to exemplify the relationship between habitus and the field - including the physical characteristics of the pitch that, in turn, shapes the 'rules of the game' of football. The habitus is the internalisation of the

field by, for example, individual football players, as they develop a ‘feel for the game’. Each player on the field has a position which either attacks or defends, and a set of rules to adhere to which, according to Bourdieu, are generally conformed to. Each position within the field is determined by the individual’s habitus; their past performance, skills, education, social class and upbringing all asserting influence. For Bourdieu:

“The habitus is this kind of practical sense of what is to be done in a given situation – what is called in sport a “feel” for the game, that is, the art of anticipating the future of the game, which, is inscribed in the present way of play” (Bourdieu 1998, p.25).

Bourdieu goes on to note that in order to interact in the *field*, individuals and institutions rely on a series of resources to ideally obtain power and a position of superiority. Bourdieu introduces these resources as “capital.” As such the field is a relational concept - a structured space of positions - which are determined by the uneven distribution of the various forms of capital.

Bourdieu (1986, p.280) stresses the importance of understanding capital ‘in all its forms’, defining it as ‘accumulated labour’. In Bourdieu’s effort to go beyond the purely economic and redefine capital, he recognised other forms of exchange as noneconomic, where the *transubstantiation* of the “most material types of capital – those which are economic in the restricted sense – can present themselves in the immaterial form of cultural or social capital” (Bourdieu, 1986, p.241). To conceptualise the non-economic rewards in farming it is therefore useful to adopt Bourdieu’s theory of capital and view capital in three fundamental forms: economic (material property), social (networks of social connections and responsibility) and cultural capital (skills, knowledge and dispositions which may be gained by education and socialisation). Bourdieu also describes symbolic capital, itself not a specific kind of capital but instead is the form that “various species of capital assume when they are perceived and recognised as legitimate” (1989, p.17). He goes on to argue that social life may be conceived as a multi-dimensional status game (within which there are struggles for power), whereby all forms of capital are drawn upon by individuals in order to compete for status (Anderson and Miller, 2003). Accordingly, symbolic capital consists of the “prestige and renown attached to a family and a name” (1977,

p.179). Bourdieu suggests that symbolic capital is the most valuable form of capital accumulation in a society, as symbolic capital is the only legitimate means of accumulating resources – resources that can potentially be utilised for economic advancement (Bourdieu, 1977).

Bourdieu's ideas have been extensively used in a number of disciplines including economics and sociology, and more recently rural studies have adopted Bourdieu's notions of capital as a framework (Phillips and Gray, 1995; Raedeke et al., 2003). The use of Bourdieu's thinking has been beneficial in the discussion of agriculture, when understanding the symbolic capital gained from noneconomic interactions and other intangible cultural values within the farming community and how these become to be recognised as legitimate and gain 'good farmer' status (Riley, 2016a), as for Bourdieu the production of capital is central to social relations and standing. Blackstock et al. (2010) note that farmers attach symbolic meaning to the decisions they make and the behaviours and actions they perform, indicating how farmers are allocated symbolic capital for the visual demonstration of such values and gain a status as a 'good farmer'. This understanding has been useful in exploring the uptake of agri-environmental incentives across multiple geographical regions (Burton et al., 2008; Burton and Schwarz, 2013).

2.3.1.1 Cultural capital

Cultural capital, according to Bourdieu, affects the relations between groups "depending on the conditions in which they acquired their cultural capital and the markets in which they can derive most profit from it" (1984, p. 12). Bourdieu (1986) states that cultural capital can be broken down into three forms: *institutionalised* (involving the certification of cultural competence, often associated with agricultural organisations), *objectified* (associated with high status objects, which might include agricultural buildings and machinery (Sutherland and Burton, 2011) and high crop yields (Sutherland, 2013)), and *embodied cultural capital* (in the form of farming skills associated with, for example, crop and livestock management). Institutional cultural capital is the 'institutionally recognised' capital that is gained through the achievement of qualifications or recognitions and awards from agricultural organisations such as the National Farmers Union, reputable farming press and breed societies (Yarwood and Evans, 2006; Holloway and Morris, 2014). Objectified

cultural capital is capital associated with material objects of high value or status, for example this could be in the form of farming equipment or aesthetically pleasing ‘tidy’ fields (Burton, 2012). Nevertheless, Bourdieu (1986, p.285) writes that objectified cultural capital can have a “number of properties which are defined only in the relationship with cultural capital in its embodied form”. Burton and Paragahawewa (2011, p.97) also highlight that the value of this form of capital is “dependant on its use in accordance with a specific purpose as actioned through the embodied cultural capital of the agent” (Bourdieu, 1986). Embodied cultural capital is cultural capital in its fundamental state, consisting of knowledge, perceptions, ability and learned skills. In this vein, Bourdieu (1986, p.282) defines embodied cultural capital as “long-lasting dispositions of the mind and body” and is “work on oneself (self-improvement)” (Bourdieu, 1986, p.283). This form of capital cannot, therefore, be transmitted instantaneously, like material objects, but it can be inherited over time through socialisation and from the family unit. As such, family relations and socialisation are two common forms of cultural capital. In *Distinction* (2013), Bourdieu states that:

“The embodied cultural capital of the previous generations functions as a sort of advance (both a head start and a credit) which, by providing from the outset the example of culture incarnated in familiar models, enables the newcomer to start acquiring the basic elements of the legitimate culture, from the beginning, that is, in the most unconscious and impalpable way, and to dispense with the labour of deculturation, correction and retraining that is needed to undo the effects of inappropriate learning.” (pp. 70-71)

The generation and transfer of cultural capital is especially important within family farms. Cultural capital can be transferable from one family member to another through the transfer of skills between generations and the established cultural capital of the farming family (Burton et al., 2008). As a result, the use of cultural capital within agricultural studies has been popular due to “cultural capital’s ability to generate symbolic capital and the ability of this symbolic capital, in turn, to establish and strengthen social relations, that explain why cultural capital is a valuable asset in farming communities” (Burton and Paragahawewa, 2011, p.97). Burton and Paragahawewa (2011) also note how the successor will inherit the reputation the farm

business previously possessed as well as the cultural significant objects related to production. Family farms are a dominant form of business organisation throughout the world and as a result there is a large potential for these farms to “accumulate high levels of cultural capital through intergenerational transfer” (Burton and Paragahawewa, 2011, p.96). In order to transmit this embodied cultural capital so that the ‘embodied skills’ can be acknowledged by other farmers, it is reliant on the development of “identical categories of perception and appreciation” (Burton et al., 2008, p.20). Once the skill or behaviour has been recognised by the others, it allows the farmer to be rewarded with other forms of capital, such as enhancing the individual’s status within the community and generating social capital. Holt (2008) highlights how cultural capital is vital to the generation of social capital:

“embodied cultural capital inculcates within individuals the dispositions and manners that facilitate the types of appropriate sociability which allow the ‘alchemy of consecration’ to transform contingent relationships into relations of mutual obligation” (Holt, 2008, p.232).

Cultural capital has been shown to have symbolic value in agriculture (Burton 2004). Bourdieu writes that because “the social condition of its transmission and acquisition are more disguised than those of economic capital, it is predisposed to function as symbolic capital” (Bourdieu, 1986, p.282). As such, cultural capital is convertible in certain conditions to economic and social capital and, by creating social value, can distinguish its owner from their peers. Interactions between farmers and their peers, over daily farming practices as well as inventions, build social capital between farmers of similar embodied cultural capital, i.e. similar levels of understanding and skills, and by implication, economic capital (Bourdieu, 1986). Likewise, cultural and social capital can be converted into economic capital (for example access to markets).

2.3.1.2 Social capital

For Bourdieu, social capital is the access people have to resources from their durable social networks of which they are members. Specifically, Bourdieu (1986, p.286) defines social capital as:

“the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectively-owned capital”.

It is important to note that there are many theoretical interpretations of social capital. Although this research focuses on that of Bourdieu, Coleman (1988; 1990) and Putnam (1993; 2000) also propose various depictions of social capital. Despite having a slightly different focus and differing terminology, there are similarities between their depictions which are useful for understanding interactions within farming communities. Putnam (1995, 2000) provides insight on the role of moral obligation and norms, social values and social networks, whilst Coleman (1988, 1990) acknowledges social capital’s fungible characteristics enabling it to be accumulated, replaced and exchanged, defining it by its function rather than a single entity. Taking a socio-economic perspective, Bourdieu (1986) emphasises the distinction between resource availability and social structures available to an individual and how these affect their collectively-owned capital.

Although all three authors provide useful insight into social capital, Bourdieu’s approach will be drawn on more extensively in this research. The thesis focuses attention on Bourdieu’s depiction of capital exchange - taking account of the importance of social capital (emanating out of, and reaffirmed by, social contacts) – arguing it provides a fruitful way to explore how farmers interact and ultimately how they share knowledge and adopt water conservation managements. Bourdieu’s insights have proved useful when exploring capital beyond just the economic and allows an appreciation of both the observable (often formal and institutionalised) and the more informal exchanges that can take place at a farm level - something that Putnam and Coleman been accused of underplaying (Burton and Paragahawewa, 2011; Sutherland and Burton, 2011).

Importantly, and central to this research, Bourdieu offers insights into both the measurement and the (re)production of social capital. It is theoretically possible to measure an individual’s social capital, given:

“The volume of the social capital possessed by a given agent... depends on the size of the network of connections he [sic] can effectively mobilize and on the volume of the capital (economic, cultural or symbolic) possessed in his [sic] own right by each of those to whom he [sic] is connected” (Bourdieu, 1986, p.250).

Those who possess higher levels of economic and cultural capital tend to have higher levels of social capital, however it is still possible for subordinate groups with strong social capital to thrive despite the absence of economic and cultural capital – providing importance to the ability to measure an individual’s social capital. It has been acknowledged that the farming community is a group where social and cultural capital plays a large role and is sometimes prioritised ahead of economic capital (Burton and Paragahawewa, 2011) as social relations, Bourdieu (1986) argues, can be usable in terms of access to material and symbolic profits. Social ties – resulting from an individual’s status – are a valued resource, exercising great power on decision-making, not only influencing their individual farm but the wider farming community. As a result, social capital can generate cultural capital and vice versa. Through this process, embodied cultural capital promotes sociability, and can be (subconsciously or consciously) deployed for the purpose of “establishing or reproducing social relationships that are directly usable in the short and long term” (Bourdieu 1986, p.52).

The expanding body of work on social capital has developed a theoretical synthesis of how social capital works at multiple levels (community, regional and national) (Adler and Kwon, 2002; Burton et al., 2005; Fisher, 2013). There have been multiple perspectives on the nature of social capital however it widely acknowledged “that economic and social transactions are promoted through the quality of the interactions within a community or network” (Sutherland and Burton, 2011, p.239). Bourdieu (1986) viewed social capital within the wider system of capital exchange, being one of the forms of capital (economic, cultural and social), whereas for Coleman (1988) social capital acted as an enabler for exchange within communities ultimately leading to the construction of human capital. For many, and in the general usage of the term, social capital is largely acknowledged as the structures, networks, norms and values that work to assist people to work collectively within a community (Kilpatrick, 2002). These social connections are operationalised in the interactions between people, with social capital being embedded in the relations among people. It has been

acknowledged that the farming community is a group where social and cultural capital plays a large role and is sometimes prioritised ahead of economic capital (Burton and Paragahawewa, 2011). The trade-offs between these forms of capital become embedded in habitus.

Previous research has demonstrated how the cultural behaviours that farmers perform generate social capital and may thus promote co-operation and knowledge exchange within the surrounding farming community. Such social capital has played an important role in the appearance and maintenance of the landscape and natural resources (Burton, 2012). The complex process of making decisions about these behaviours and actions is strongly influenced by the surrounding farming community and the ability to maintain or gain the status of a 'good farmer'. Sutherland and Burton (2011) have noted that there are two key influences on gaining the reputation of a good farmer; demonstrating farming ability and complying with unwritten reciprocal agreements. Burton and Paragahawewa (2011, p.98) suggest that "social networks and social capital in agriculture are not grounded predominantly in highbrow cultural pursuits, nor in 'pre-existing' social capital, but rather in the practical skills and abilities necessary for being recognised as a 'good farmer'". This emphasises the need to demonstrate practices associated with good farming in order to gain a reputable status of a 'good farmer' (discussed in more detail in the following section). Through gaining a reputation for compliance, this can be viewed as a form of social capital as it has facilitated the increase of an individual's trustworthiness. The associated networks, norms of reciprocity and trust of social capital lowers the transactional costs between farmers within the community, facilitating the access of social capital and the interaction between other good farmers with confidence in the outcome of their actions (Blackstock et al., 2010). The likelihood of this interaction is increased when a farmer can continually produce symbols of good farming, as well as increasing the likelihood of labour and machinery exchange, further enabling the generation of social capital.

Just as the generation of social capital can occur, the loss of social capital can also arise through the inattentiveness to livestock, damaged machinery or the non-compliance with group norms leading to the development of a bad reputation (Blackstock et al., 2010; Burton and Paragahawewa, 2011). Therefore, activities not associated with good farming could restrict the production of cultural capital and damage the farmers' reputation subsequently lowering their access to social capital.

Additionally, Sutherland and Burton (2011) have highlighted that although cultural capital influences the generation of social capital, the technological treadmill element of 'good farming' discourages the informal sharing of machinery amongst large-scale farms. It was also noted that larger farms are run usually by good farmers, which is largely linked to the economic success underlying the good farmer concept. They also note that social capital is an important resource for small-scale farmers however for large, highly commercial farms social capital is not a value resource due to commercial exchange being embedded in the farming culture. As a result the larger farms are less likely to draw upon social capital to undertake farming tasks, it is the smaller and less visibly successful farmers who will actively develop and operate within these social capital relationships, particularly due to their access to labour.

2.3.2 Applying Bourdieu's ideas – the 'Good Farmer'

In applying Bourdieu's conceptualisation of the social world, rural research has used this framing to explore the importance of 'good farming' ideals and the subject position of the 'good farmer', and how it is continually shaped by cultural and social influences. Research within the farming community has considered how behaviours may become consistent when farmers recognise and internalise the 'rules of the game' within that particular field. Farmers with a similar habitus give similar value and meaning to symbols associated with being a 'good farmer' (Saunders, 2016). When an individual holds cultural capital appropriate to a particular social field, this cultural capital can be employed for the purpose of "establishing or reproducing social relationships that are directly usable in the short or long-term" (Bourdieu, 1986, p.52). Following Bourdieu's (1986) framework, individuals who possess field relevant cultural capital are able to behave in ways which are appropriate to the social field and possess knowledge, skills and culturally important possessions that facilitate their inclusion and position in the social networks and field. Burton (2004b) has noted that the most desirable and productive relationships within the farming community are those with other 'good farmers', judged on their levels of capital as described above. Central to this discussion is that farmers will seek to accrue good farmer capital (Gray, 1998; Burton, 2004b; Haggerty et al., 2009).

Of the forms of capital that Bourdieu introduced, cultural capital is the most commonly applied within discussions of the 'good farmer' (Sutherland and Burton, 2011;

Sutherland and Darnhofer, 2012). Burton et al. (2008) suggests that the progression to becoming a 'good farmer' is a process of self-improvement involving continual repetition of actions on a seasonal basis to ultimately improve the skills required to efficiently and effectively manage the farm and land. They note how the habitus developed through this cyclical process is determined by a multitude of factors: farm structure – e.g. hill farms, arable and dairy farms would lead to different habitus'; family farm heritage – transfer of skills among generations and finally, personal investment into the farm – “opportunities for skill expression, development and embodiment” (Burton et al., 2008, p.20). In order for farming activities to exhibit embodied cultural capital to other farmers, Burton et al. (2008) suggests three conditions are required. Firstly, skills performed must be able to be distinguishable as a 'poor' or 'good' performance. Secondly, there must be an outward sign that effective or efficient behaviour has been performed and, finally, these performances must be visually accessible to the farming community – “a highly judgemental peer group” (Seabrook and Higgins, 1988, p.103). This visual performance can be commonly achieved through the appearance of crops and livestock from the roadside – 'roadside farming' (Seabrook and Higgins, 1988; Seabrook et al., 2008). The openness of fields makes the appearance of crops or livestock an easy target for the assessment of others and in Goffman's (1959) terminology at the 'front stage'. The appearance of crops and livestock has been associated within the literature with 'tidy farming', with specific examples of 'good farming' being the application of fertilisers and the 'correct' way of performing agricultural duties such as ploughing and cultivating (Burton, 2008; 2012). One example of 'good' and 'correct' farming could be seen in the production of parallel lines (Burel and Baudry (1995) [France], Egoz et al. (2001) [New Zealand], Burton (2004b) [England]). Parallel lines are seen as an important part of the management of the farm through the prevention of over or under application of fertiliser, pesticide and so on. It is these signs of embodied farming skills that permit the farmer to being socially acknowledged as a 'good farmer' and facilitate “the transformation of the symbols of cultural competence into usable social relations” (Burton and Paraghawewa, 2011 p.99) In understanding the informal exchange relationships between farmers, Sutherland and Burton (2011) use Bourdieu's conceptualisations of both social and cultural capital. They specifically bring together these forms of capital with 'good farming' to understand how the generation of social capital may overcome the potential disincentive – created by the technological

treadmill characteristic of ‘good farming’ – of informally sharing resources, such as machinery, amongst farmers. They suggest, however, that for this sharing to occur, the economic necessity of the farmer and the social capital level amongst the community need to be sufficient enough to guarantee that social competitiveness in this field is not an issue. As such, an important indicator of good farming has historically been the ability to buy and maintain an array of machinery, which in part is driven by farmers’ strong sense of independence – also a key element of being a ‘good farmer’. The ability to farm independently and demonstrate autonomy feeds into the wider symbols of good farming (for example successfully harvesting a crop at the ideal time), generating the growth of both cultural and economic capital (Riley et al., 2018).

Studies have highlighted the importance of cultural capital within farming communities and the recognition of good farming practices in multiple countries - for example in the UK (Burgess et al., 2000; Burton, 2004b), Germany (Stoll-Kleemann, 2001) and New Zealand (Haggerty et al., 2009). The studies suggest that experienced-based rules – or what Bourdieu refers to as ‘rules of the game’ - are developed by farming communities around agricultural practices and it is these locally specific practices and rules are partly responsible for the development of the ‘good farmer’ label, and the association of specific behaviours with ‘good farming’ (Burton et al., 2008). Burton and Paragahawewa (2011) highlight the importance of cultural capital within farming by drawing upon Bourdieu’s (1986, p.52) acknowledgement that this form of capital will be deployed in order to “establish or reproduce social relationships that are directly usable in the short or long-term”. The ‘good farmer’ concept has also been applied to orchardists in New Zealand – something which are open and visible to the public (Hunt, 2010). Hunt (2010) emphasises how the appearance of the orchard provides symbolic capital (just like that of tidy fields for arable farmers) for displaying how a kiwifruit orchard should be. As Hunt (2010, p.420) notes, unkempt land is “an anathema to farmers’ sense of their professional identity and expertise... tidiness reflects attitudes imbued from the days of New Zealand’s colonization, when land had to be broken in and control exercised over the wildness”.

Shortall et al. (2018) have taken the good farmer and social capital framing into the discussion of animal welfare and biosecurity. Based upon interviews with vets and dairy farmers, Shortall et al. (2018) use these ideas to compare how vets and dairy farmers define good farming for biosecurity. They noted that a lack of desire by

farmers to build social capital with vets and farmers prioritised the cultural capital status as a good farmer over developing social capital with the vet. As such, many vets viewed the imbalance of social capital between vets and farmers (poorly developed), and farmers and farmers (well developed), as incompatible with good biosecurity and increased the risk of disease transmission. Extending the concept of the good farmer into discussions of water quality, McGuire et al. (2013) highlighted that the farmers they interviewed had little knowledge of their watershed and its boundaries until it had been designated an impaired waterbody. After this designation, McGuire et al. (2013) noted that farmers failed to accept that they were responsible for the pollution, rejecting this externally ascribed identity. They highlighted that due to the diffuse pollution (non-traceable pollution) all farmers in the water catchment were branded as 'polluters' – including those adopting soil and water conservation management practices – and thus impacting upon their good farmer identity. This “crisis” of being branded a polluter led to the creation of a volunteer group, allowing farmers to protect their identity from the external threat to their autonomy as farmers. McGuire et al. (2013) concluded that being a “polluter” led to a modification of locally accepted rules and norms for good farm management, and as such farmers with strong productivist identities adjusted their identity to align with conservation *and* production goals, thus elevating the conservationist identity to a higher level in their identity hierarchy.

2.3.2.1 Understanding AES uptake using the 'good farmer' concept

The 'good farmer' concept has been a useful tool in the discussion of AES uptake, largely drawn upon to understand how conservation-orientated behaviour and practices can become embedded into the farming culture. In presenting a theoretical account on how to make agri-environmental schemes more culturally sustainable, Burton and Paragahawewa (2011) highlight that to induce change from productivist identities and culturally embed the environmental values and beliefs underlying the AESs or similar, approaches need to move beyond simple payments toward facilitating the generation of cultural and social capital within the communities alongside the economic compensation. They argue that “the most desirable social relationships [in farming] (in terms of their utility) are those with other 'good farmers'” (Burton and Paragahawewa, 2011, p.98). As current productivist symbols - such as high yields - provide the main source of cultural capital, schemes need to offer an alternative form or source of 'income' of cultural capital or they may be rendered as “culturally

unsustainable” (Riley, 2016b, p.65). As a result, Dwyer et al. (2007) argue that attempts at behavioural change need to target whole cultures of farming rather than simply individual farmers, or the conservation oriented practices will continue to play a minor role in the social field of agriculture. By exploring the relationship between conservation, ‘good farming’ and social capital, it can aid in the understanding of the adoption of conservation efforts and illustrated how they can act as ‘trigger events’ to stimulating wider pro-active conservation activities amongst local farmers (Sutherland et al., 2012).

Whilst many have acknowledged that AESs must contribute towards the generation of cultural capital if they are to be more successful at embedding environmental attitudes in the cultural of conventional agriculture, Burton et al. (2008) have taken this further and offered two key components that affect the integration of AESs, and change in environmental attitudes, in the farming culture. The first involves the field management that is prescribed by the schemes and the second that AES uptake involves the designation of specific areas for conservation work. In relation to the first, Kaljonen (2006, p.214) notes that although the schemes are voluntary, they “do not promote any voluntary actions for environmental protection; they just force farmers to follow the standard rule”. Additionally Deuffic and Candau (2006, p.574) have noted that “there is no reward for doing anything more than the minimum necessary to qualify for the subsidies” and conclude that this therefore limits the ability of the farmer to display any long-term skilled performance. Skill may be required for the initial set up, but once the farm is performing to the standard required by the scheme the ability to display any further skill is limited. This lack of opportunity to display skills whilst performing conservation-orientated behaviours directly affects the farmers ability to display ‘good farming’ skills and gain the status as a ‘good farmer’. Burton et al. (2008, p.26) notes that conservation projects “become a static display in the landscape [something that is] radically different from the renewable seasonal display possible with cropped land uses”. This forms the argument that the restrictions and strict management practices enforced through the schemes create a general lack of interest in agri-environmental work largely due to their limited chances to display ‘good farmer’ behaviour. This further accentuates the challenge of trying to integrate conservation into farming culture and the important role that restrictions play on the uptake on AESs as it shows there is not only economic costs involved but also social

costs. Looking at the second component, Burton et al. (2008) suggest that farmers disown personal responsibility for land that is under the schemes, deeming them a result and the responsibility of the AESs, allowing them to focus on production on the remaining areas on the farm (the land that contributes to the production of symbolic capital). As a result, it was concluded that farmers tended to evaluate AESs based on traditional productivist symbols of 'good farming' rather than their conservational value.

2.4 Conclusion: developing the research focus

It has been argued in this chapter that Bourdieu's thinking provides a versatile tool that allows the researcher to explore farmer behaviour and the unique properties of agriculture, especially social, cultural and symbolic contributions. For the current thesis, these ideas are useful in several ways. Firstly, Bourdieu's forms of capital allow the appraisal of not only economic capital but social, cultural and symbolic capital. This enables a greater understanding of the non-economic interactions within the farming community and the importance of these within farming relationships. Secondly Bourdieu's ideas allow the exploration of the family farm in a way that does not separate the social institution into either the family or the business activity. Bourdieu's thinking exposes the social, cultural and symbolic factors inherent in the family farm business and this is useful for understanding farmers likelihood of adopting conservation practices. Finally, Bourdieu's concepts are useful in recognising the heterogeneity of the farming community. His concepts allow the researcher to consider each individual's levels of capital coupled with their own habitus - the accumulation of an individual's life experiences, encompassing certain ways of thinking, speaking, acting and reacting to situations - whilst understanding their position within the wider community. In framing the following thesis, and extending the conceptual literature on the good farmer, the thesis brings the good farmer concept together with the discussion of farming knowledge. Specifically, it takes the idea that better understanding farmers' knowledge(s) and learning processes is a central goal in the move towards more sustainable agricultural practices. Through the consideration of good farming and good farming capitals, this thesis hopes to understand how different knowledge(s) may be developed, valued and shared by understanding the importance of social context and social relations. Bourdieu's (1977, 1986) understandings of capital, habitus and field and their application to the concepts of the

‘good farmer’ and ‘good farming’ are central to framing these social relations and how knowledge is perceived and recognised as legitimate. Bourdieu’s understandings of capital development and exchange helps this thesis to explore an individual’s positioning relative to others within the field and as a result the social underpinning to farming knowledge(s). Taking this framing will help the thesis to contribute to the call to understand more collective forms of environmental management and farmer-to-farmer knowledge relations.

By adopting the above framing, the thesis hopes to focus on three main areas. First, the thesis seeks to move forward understandings of the good farmer by considering how it might be applied to, and developed in light of, the discussion of riparian environments. Through exploring how discussions of good farming might be expanded to encompass riparian environments, an examination of what, or if, capitals are symbolically valued in these environments and their management. Secondly, the thesis considers how riparian environments on farms fit within notions of good farming, specifically how farmers’ engagement with riparian environments on their farms feature in, and are (re)shaped by, notions of good farming. Taking forward this understanding of how farmers interact with riparian environments on their farm, the third focus aims to better understand farmers’ knowledge to gain insight into their actions and managements. More specifically, this focus explores how farmers’ knowledge is developed, shaped and influenced by social contexts and social relations, through which is it hoped an understanding is gained of how farmers engage in different knowledge practices in relation to different parts of their farms. By fusing together the themes of knowledge and the good farmer identity, it offers a useful lens for understanding how farmers’ social interactions may be shaped by farmers’ adherence to locally-recognised practices, symbols and performances of ‘good farming’ and how these are informed by different sources of knowledge. After discussing the methods and methodologies used for examining these themes in Chapter 3, the thesis will move on to discuss the findings of this research and how these may help us (re)develop the concepts and themes which have been reviewed in this chapter.

Chapter 3

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3. Methodology

The previous chapter reviewed the main literature relating to farming in riparian environments, the Bourdieusian-inspired notion of the ‘good farmer’ and the previous literatures on farming knowledge(s) which help conceptually frame the thesis. The current chapter discusses how the theoretical perspective of the research is translated into an appropriate methodology to achieve the aims of the study. In particular, to meet these aims (outlined in Chapter 1), this chapter explores the reasoning behind choosing a qualitative approach for the study – an in-depth case study of farming in the River Ribble Valley. The chapter first addresses the selection of methodology, followed by a discussion of the specifics of the research processes and some reflections on the ethical and practical issues of undertaking qualitative research with farmers.

3.1 Methodological approach

In human geography there is a longstanding debate around whether quantitative or qualitative methodologies are most appropriate for research in the social world (Davies and Dwyer, 2007). In rural studies, however, there has been a long – albeit not necessarily continuous - history of applying qualitative approaches to research in farming lives and agricultural practices (Williams, 1956; Evans, 1970). As Reimer et al. (2011, p.29) argue, quantitative studies on sustainable conservation and farmer behaviour have been “largely inconclusive” because the notion of sustainable management is “much more complex than the way it is traditionally measured in quantitative studies... [and] the interplay between on-farm and off-farm benefits to practice adoption is an issue that quantitative studies largely do not address”. Both scholars and practitioners have been prompted, by the multi-faceted nature of socio-natural systems, to call for wider use of social science approaches to address the complexity of sustainable natural resource management. Whilst recent research has sought to assess sustainable management in economic and ecological terms (Kleijn and Sutherland, 2003; Carey et al., 2004), de Snoo et al. (2013, p.3) have argued that “conservation in agricultural areas is also a true social challenge and what is missing is social science...to elucidate the social processes underlying successful agri-environmental management”. The argument for the importance of social sciences within catchment management is increasingly being recognised (Allen et al., 2011; de Snoo et al., 2013). Many authors advocate the need for interdisciplinary approaches,

incorporating social science aspects to complement data from the ‘hard sciences’ (such as water quality and soil chemistry (Pahl-Wostl et al., 2008; Lowe et al., 2013; McCracken et al., 2015)). Geographers and other social scientists are rising to this challenge and have played a significant role in highlighting, for example, that farmers cannot simply be viewed as ‘rational’ *homo economicus* – and that a whole plethora of social, cultural and contextual factors serve to shape farmers conservation activities ‘on the ground’ (see Riley (2011) for a review).

The aim and objectives of this thesis (outlined in Chapter 1) stated that the research seeks to understand farmers actual understandings and management(s) and in doing so explores the social and cultural context in which these are embedded. To fulfil such an aim, the research sought to examine the everyday lived experiences, views and practices of farmers (Hitchings, 2012), giving the participants the opportunity to give their own narrative of farming and associated riparian environments. The research took a qualitative approach drawing upon the methodological insights from recent socio-cultural approaches recently taken to explore farmers’ activities (Riley, 2010). Using such approaches, the research sought to provide a more nuanced account of the social and cultural contexts which iteratively shape the role of the farmer in sustainable water management. To achieve this, it was considered appropriate for a case study approach to be adopted, allowing a greater understanding of farm lives and management embedded within a priority catchment¹³. For example, it has been suggested that a case study approach facilitates the production of in-depth, context-specific knowledge, revealing the complexities of everyday life (Flyvbjerg, 2006; Starman, 2013). Previous authors have criticised the case study approach, arguing that it does not produce generalisable knowledge, and as such is unable to be transferred to another area (Bryman, 2011). This criticism, however, has been challenged with Flyvbjerg (2011, p.304) noting that “concrete case knowledge is more valuable for social sciences than the vain search for predictive theories and universals.” Further to this, Yin (2017) notes how a case study approach can allow the researcher to concentrate on the wider contexts whilst simultaneously exploring the diversity of how people make sense of particularities and complexities. As such this approach has the advantage of facilitating the understanding of theoretical and conceptual ideas in a specific space or community,

¹³At the time of interviewing, the catchment was designated a priority area within the Catchment Sensitive Farming programme.

which can be further explored in other places. In light of this, it is anticipated that the findings from this research can be transferred from one area to another (for example to another CSF priority area) on the conceptual level.

3.2 Selecting the sample

3.2.1 Selection of the study area

As discussed in the introduction of this thesis, riparian environments are a key focus of this thesis. To fulfil the aims of the research, the River Ribble Valley (Figure 3.1) was chosen as the area in which to situate the study. The reasons for this are twofold. Firstly, the Ribble catchment has a history of flooding, with 40 significant events having been recorded since 1600 (Environment Agency, 2009), with the most recent being in March 2019 (Figure 3.2). A report by the EA noted that 6,400 properties across the catchment have a 1% chance of flooding from rivers¹⁴ (with this expected to rise to 12,400 properties by 2100), as well as numerous sites of critical infrastructure (for example the city of Preston and numerous water treatment plants alongside the river) also at risk within the catchment in a 1% flood event (Environment Agency, 2009). The winter of 2015 brought severe flooding to the valley (as well as many other areas in the UK (Barker et al., 2016)), causing major damage and disruption for the main urban centre of Preston and the village of Ribchester. Following the flooding in 2015, Lancashire County Council were required - as Lead Local Flood Authority - to investigate the event and publish the results (Lancashire County Council, 2016). The report outlined possible opportunities where flood risk could be reduced and landowners with riparian environments were identified as an area where action could take place but required cooperation and collaboration with multiple landowners. Whilst this recognition of landowner collaboration was not introduced by this report (Posthumus et al., 2008; Howgate and Kenyon, 2009), the flooding brought increased pressure by government organisations to address flood risk in river basins. Secondly, the Ribble catchment has been used as a national pilot for the implementation of the EU Water Framework Directive (Watson and Howe, 2006). The implementation of the WFD demonstrates the widely accepted notion that the desired transition to sustainability will not be achieved by governments acting alone, and that participation

¹⁴ This is labelled by the EA as land having a 1 in 100 or greater annual probability of river flooding. This falls under Zone 3 in the EA flood risk assessment constituting a high probability of flooding.

of stakeholders must become a fundamental characteristic toward the integrated land-water management and sustainable use of river basin systems. As part of the WFD, public participation is one of the key legal requirements and as the Ribble catchment is dominated by agricultural land (EA, 2014b), farmers and landowners are a significant community in which engagement is critical in achieving the WFD objectives¹⁵. Such efforts – both nationally and locally driven - in the Ribble catchment offered two advantages for this study: first, the possibility of finding respondents engaged in land management tailored to sustainable water management, or who had knowledge or exposure to possible opportunities and second, the possibility of finding specific examples of land-water management which had been implemented in light of policy changes and recent flooding, which could be further analysed in light of the findings of this study.

¹⁵ For more information on the WFD objectives see: <http://ec.europa.eu/environment/water/water-framework/>

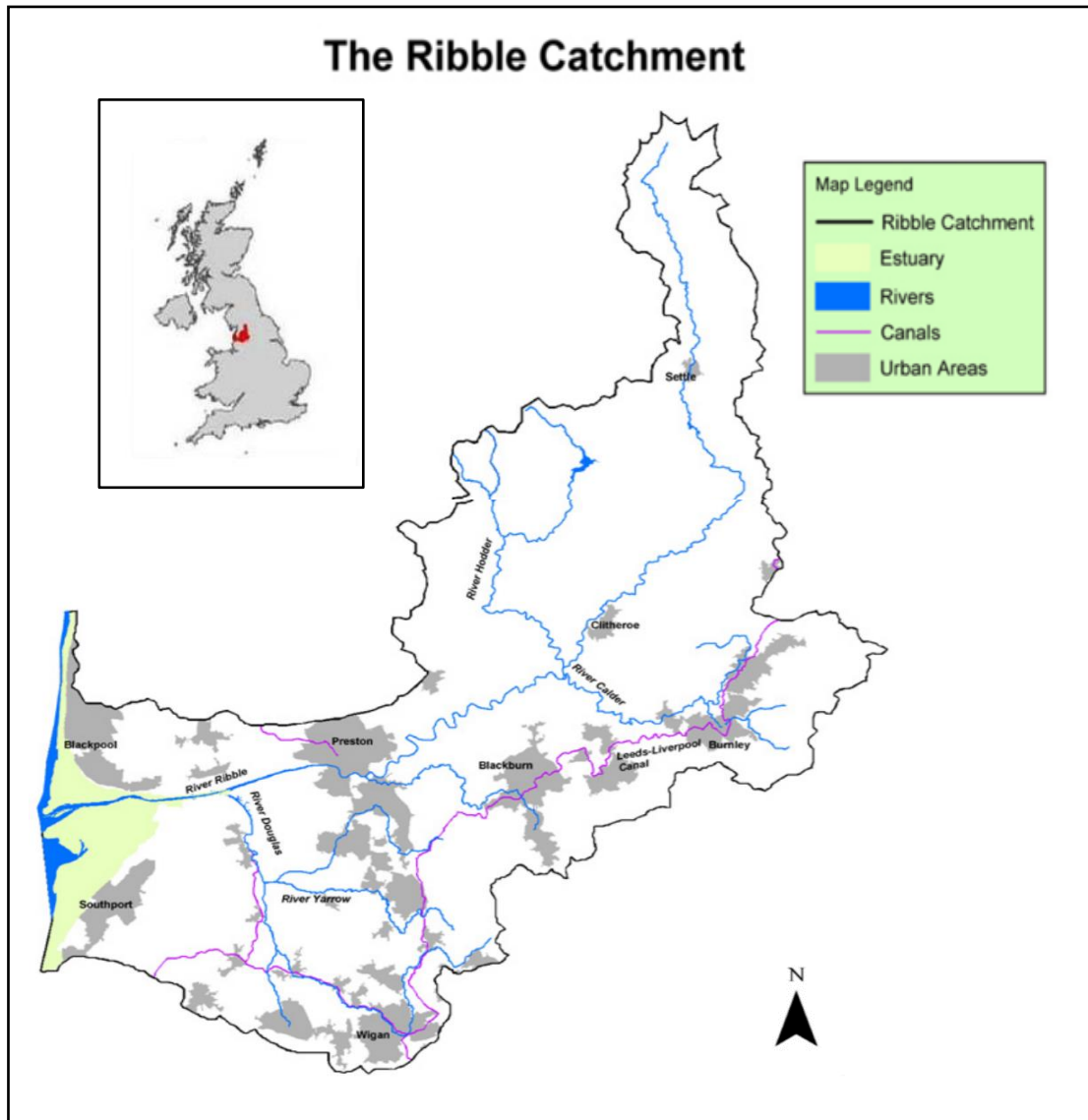


Figure 3.1 Map of the River Ribble Catchment. Source: Main map adapted from Mersey Basin Campaign (2006), insert from Crabtree et al. (2009).



Figure 3.2 - A comparison to show the extent of flooding in the catchment in March 2019.

As one of the largest catchments in the North West of England, the River Ribble basin includes five smaller river systems (the Hodder, Calder, Darwin, Douglas and Yarrow) and the Crossens drainage network, all of which discharge into the estuary to the west of the city of Preston. The river's tributaries drain an area of 2568 km², from high moorland to lowland plains (Watson and Howe, 2006) (Figure 3.3). The large network of watercourses throughout the catchment creates a landscape suitable for a range of farming types – uplands comprised of sheep-grazed fells and wide glacial valleys where dairy farming is prevalent - generated the opportunity to include participants from a wide range of farm type, location (i.e. located on small tributaries or on the main river) and management.



Figure 3.3 - Typical land use in the upper Ribble Valley

After identifying this area as a potential site for the study, initial contacts were established with a local Rivers Trust. As a result of the discussion with the Trust, it was decided that the River Ribble basin offered not only a site of potential relevance but also suitable location to consider how sustainable agricultural water management may be achieved in other catchments. Once this suitable location for the study had been chosen, it was necessary to refine suitable methodological techniques for the study.

3.2.2 Selection of respondents

As the research aimed at exploring farmers' understandings of the river and riparian environments on their farms, the target population was anyone involved in working farms in the area. Previous research amongst farming populations has used British Telecom's *Yellow Pages*® as a method of contacting potential participants (Macgregor

and Warren, 2006; Riley, 2016b), however, as stated by many other authors, the use of this directory as a sampling frame creates a number of biases. Burton and Wilson (1999) note how the *Yellow Pages* may exclude less-commercial or 'life-style' farmers and that although they may derive their main income from farming, it is argued that these farmers are more likely to be more conservation-orientated in their farm management. This exclusion of smaller less-commercial farmers (a farm type that is dominant across the River Ribble (Natural England, 2013)) represents what Heckathorn (2002) has referred to as 'hidden populations' – a population that was valuable to this research due their dominance in the catchment. As a result, and due to this research focusing on water conservation management and exploring all farm types, the *Yellow Pages* were deemed a less appropriate method of recruiting research participants.

An alternative sampling frame used for agricultural studies (in the UK) is the use of the DEFRA holding lists¹⁶ (Paiba et al., 1999; Thomas et al., 2003). DEFRA annually gathers data for agriculture and horticulture in England and Wales through The Agricultural and Horticultural Survey covering 99% of the total agricultural area. As a result, the data can be used to contact farmers, however the use of the lists is dependent on official approval from the department and subsequently results in restrictions on the questions asked and the following use of the data. For the above reasons, DEFRA holding lists were also deemed a less appropriate method of recruiting participants.

In light of the issues identified above with using the Yellow pages and DEFRA holding lists, and constraints of time and cost, it was decided to recruit participants through the local Rivers Trust. Initial contact was made with the Trust to gain access to the first wave of respondents and chain-referral sampling (Heckathorn, 2002) - a nonprobability sampling technique where existing study subjects recruit future subjects from among their acquaintances - was used to locate subsequent respondents. Whilst there have been a number of problems identified with using chain-referral samples (Biernacki and Waldorf, 1981; Johnson, 2014), the technique is widely used for agricultural research, and in this research a number of steps were taken to minimise

¹⁶ Formerly known as MAFF (Ministry of Agriculture, Fisheries and Food) holding lists. MAFF was dissolved on 27 March 2002, when the Ministry of Agriculture, Fisheries and Food (Dissolution) Order 2002 (S.I. 2002/794) came into force (<https://www.legislation.gov.uk/ukSI/2002/794/introduction>).

the risk of having respondents from only a single close network. To ensure that not only farmers who had environmental interests (or who had adopted environmentally-sensitive management practices) were interviewed, and to gain a wide range of views, chain-referral sampling was used by asking participants for further contacts of friends or neighbours, including those who had less involvement or interest in the themes of the study. This method proved successful as respondents understood why this was important and ensured a representative sample was achieved, thus minimising sample bias. Additionally, a chain of respondents was followed rather than, for example, only interviewing farmers provided by the first respondent (Ritchie et al., 2013). An additional method of recruitment involved attending farm discussion groups in two sub-catchments within the Ribble to introduce the research and invite attendees to take part within the research and agree to an interview. Through these pathways, multiple contacts were made through the catchment representing all farm types and locations within the sample. Taking this approach to sampling and establishing contacts with as many farmers as possible, helped to speed up access to participants and provided a continuous chain of farmers to participate in the study (Crag and Cook, 2007). Due to the nature and scale of rivers, it was important for the research to take a catchment-wide approach, whilst researching areas within the catchment to ensure an understanding was gained on a more local scale. This continual chain-referral approach resulted in a widespread sample of participants within various positions in the catchment and a range of farming types included. A total of 42 farms (64 respondents) were interviewed with the sample reflecting the range of farming types in the catchment (6 dairy and sheep farms (10 respondents); 7 beef and sheep farms (8 respondents); 15 sheep farms (17 respondents); 11 dairy farms (24 respondents); 3 dairy, beef and sheep farms (5 respondents)).

3.3 Researching in farming communities

3.3.1 Semi-structured qualitative interviews

Previous research has highlighted the effectiveness of interviews, especially semi-structured, when researching farming communities (Riley, 2010; Kuehne, 2016). Interviews facilitate the exploration and understanding of farmers deeply held values, attitudes and beliefs because the information that they generate comes from the

perspective of the interviewees (Rubin and Rubin, 2011). Unlike other research methods (for example structured interviews or questionnaires), semi-structured interviews offer farmers the opportunity to describe their own world, and offer their opinions, in their own narrative, which enables them to highlight what is, or is not, important to them and their farm. Additionally, Nunkoosing (2005) emphasized the importance of interview as a method of data collection enabling individuals to think and to talk about their predicaments, needs, expectations, experiences, and understandings. Using this unstructured method allows the interviewee the possibility to describe their experiences in detail – or as much as they wish to – without putting them either under any pressure to respond in a particular way, as much is practicable, or indeed to push them in any particular directions. Burrell and Morgan (1979, p.6) stress “the importance of letting one’s subject unfold its nature and characteristics during the process of investigation” enabling individuals to think and talk about their predicaments, needs, expectations, experiences and understandings (Nunkoosing, 2005). Accordingly interviews give the researcher ‘rich’ detailed data (Yates, 2003). Fundamentally, semi-structured interviews allow the development of an equal and shared understanding of the participant’s views between the interviewee and the interviewer (Becker et al., 2012) – something which was central to the objectives of the current research.

To gather data from which themes could emerge and be drawn, the interviews were conducted with a set of objectives and open questions (question topics are listed in Table 3.1). In the first section, the interview focused on gaining an understanding of the farm and its background, asking the farmers to give a context and history of their farm. The second section started to investigate farm management more specifically and considered farmers’ perspectives on conservation-orientated management. This first part of the interview employed a conservation history interview approach, which aimed to fuse together conventional farm management interviews with farm life history (Riley, 2010; Riley, 2014). A central aspect of this approach is to make the history of the farm itself central, rather than focusing on just the associated biography of one farmer. As Riley (2010) notes, the farm is an intersection of many individuals and different generations and the farm life approach was aimed at taking all of these perspectives into account where possible. The third section aimed to delve deeper to understand the evolution and cumulative development of farming identities and self-

concepts relating to conservation activities, and how these intersect with other farming identities/subject positions. The fourth section aimed to understand farming relationships with conservation advisors and how, or if, knowledge was shared between farmers and advisors, and farmers and farmers. The final section aimed to explore how this knowledge had, or had not, become part of what it is to be a farmer and how farming identities may or may not have changed.

Table 3.1 - Question topics for the semi-structured interviews with farmers

1	Farm background and history
2	Farm management and agricultural practices
3	Agri-environmental schemes or other conservation orientated agreements and how these integrated into farm management
4	Farm advice and other knowledge sources
5	Farming identity and conservation

The interview aimed to cover the themes described above (not necessarily in the order presented), whilst allowing farmers to offer their opinion and steer the direction of the interview¹⁷. Open questions were an important feature of the interview process, as they were used to gain an insight into farm managements and how these were, or were not, orientated towards sustainable water management. This approach allowed the researcher to gain what Gilbert (2001, p.126) describes as, “spontaneous information about attitudes and actions, rather than a rehearsed position” and subsequently allowing greater context to be obtained. Additional ‘probe’, or follow-up, questions were used to ask interviewees to develop certain narratives and to glean more detail on specific topics (cf. Dunn, 2010). In keeping with a semi-structured interview approach, flexibility was ensured to allow themes to be explored as they emerged, permitting digression as participants introduced new themes – which they saw as relevant - outside of the original interview guide, further providing contextually rich data.

¹⁷ The interview schedule is in Appendix A.1

3.3.2 Interview location and place

The place (and placing) of interviews is being increasingly recognised for its importance in the research encounter. Whilst previous work has recognised that knowledge is partial and situated (Haraway, 2003) and has highlighted the importance of place to the interview process, many have argued the plethora of spatial metaphors have omitted, and been removed from, the material and physical influence(s) of place on the research encounter (Preston, 1999; Anderson and Jones, 2009). At the most basic level, the location of an interview provides an important opportunity for the researcher to make observations, generating richer, more detailed information that can be gleaned from the conversational content alone (Finlay and Bowman, 2017). These observations, in addition to generating new information, can broaden and deepen the understanding of topics explicitly discussed in the interview by yielding important information regarding the way interviewees construct their identities (Sin, 2003). The location of an interview is argued to potentially reflect or refract the wider social geographies of respondents (Elwood and Martin, 2000). For example, McDowell (1998) noted that bank employees, when interviewed at their place of work, were reluctant to discuss more personal information in such spatial contexts. This perspective was taken into consideration in the research design and when contacting participants, they were given the option to choose the interview location. Due to the often busy lifestyle and day-to-day patterns of farmers, many chose the farm house as the location for the interview. This sitting part of the interview gave multiple advantages. First, the familiarity of the space to the interviewee allowed them both a level of comfort – which aided the general communication - and also for a certain power dynamic to be developed whereby the farmer was implicitly afforded a position of ‘expert’ in this specific context because, in the words of one of the interviewees, “a farmer off the farm, is like a fish out of water” (Farmer 10). The second advantage of being on-farm was that it facilitated access to a wider range of participants – with many other individuals (such as the farmers partner, son or daughter and farm workers) participating sometimes only for a few minutes, in the interview process. Hitchings (2012) has noted how everyday practices can be so habitual that respondents can forget to comment or overlook certain matters, however the likelihood of this was reduced with the presence of other farm members as they, sometimes due to their more ‘backstage’ nature, were able to consciously bring up some of these more everyday

matters and fill in some of the gaps. Aitken (2001) has noted that the presence of other individuals most specifically family members may lead interviewees to withhold information or may engender a level of coercion. This, however, was not observed within the current research and, on the whole, it was felt that other participants added important contributions to the narratives being produced (cf. Riley, 2010). The introduction of more participants was a common occurrence in the research encounter. Researchers have documented both the benefits and challenges of doing interviews with more than one participant (Valentine, 1999; Bjørnholt and Farstad, 2014; Riley, 2014). Twenty of the interviews in the sample had more than one respondent leading to a total of sixty-four respondents formally interviewed. This theme is explored in more detail in Chapter 4.

The third advantage was the possibility of continuing the interview around the farm – in many of the cases participants wanted to show particular features on their farm which had been discussed in the interview to help with their articulation, and so turned the interview into a walking one. In addition to facilitating farmers' narratives, the walking interviews also allowed the interviewer to observe and monitor the implementation of features discussed. For example, many farmers would claim they were good at keeping buffer strips alongside water courses however during the walking interview it was sometimes observed that farmers were not always carrying out their claims¹⁸. This allowed a ground-truthing of responses, confirming farm activities that were orientated to water conservation. Whilst the interviewer was not there to 'check-up' on the farmer, this visual confirmation was useful in determining whether farmers require improvements in advice, delivery or stricter regulations to ensure the greatest benefits are achieved. At the start of the interview farmers were given the option to have a static (usually in the farm house) or walking interview – where farmers opted for a more static interview (sometimes due to weather constraints) many chose to follow the discussion with a walk around the farm to expand on points discussed allowing this ground-truthing to be undertaken. This offered the advantage of 'emplaced' discussions in which farming styles, managements and features could be described and shown simultaneously.

¹⁸ It is important to note that this was only observed on a few occasions and many farmers actually implemented features that they discussed in the static interview.

Walking interviews have become an increasingly popular tool used in data collection and have been seen to foreground issues of positionality, reflexivity, situatedness and empowerment. Multiple pieces of research have adopted this method to explore people's relationship with the space around them (Anderson, 2004; Brown and Durrheim, 2009) and therefore is a fitting methodology for this research. Anderson (2004, p.254) notes how this innovative approach to qualitative interviews has the potential to initiate a "collage of collaborative knowledge" and goes on to argue that social constructions of knowledge can be heightened through "harnessing the inherently socio-spatial character of human knowledge". This project aimed to employ farm walk interviews (something developed by Riley and Harvey (2007)) to investigate, in detail, current and past management techniques on the farms. Rather, though, than using this as a starting position the choice was given to the farmer allowing them to take control of the interview encounter. This approach held potential for a more holistic approach to understanding the farm and farmers' priorities - as walking is argued to evoke responses which are heavily influenced by the environment (Evans and Jones, 2011) - whilst allowing a more shared, democratic set of knowledges about the farm to be constructed. In doing so, it moves beyond the expert/lay knowledge criticism of much farmer-environment research. Rishbeth and Powell (2013, p.167) state that "the action of walking... inevitably leads to other subjects, and at best, evokes a state in which mind, body and the world are aligned". This interactive communication between the interviewer and interviewee facilitates a more unrehearsed conversation - something which Brown and Durrheim (2009) have suggested, produces a different form of knowledge. Anderson (2004) and Elwood and Martin (2000) suggest that the walking interview facilitates the revelation of spatial relations and meanings which constitute the 'micro-geographies' of place. As a result, richer data is generated through walking interviews (Evans and Jones, 2011; Dubé et al., 2014) as the surrounding environment is likely to serve as a prompt or cue for respondents' narratives that have meanings or connections to the environment. Being in-place helps to move beyond gaining answers to questions and respondents attempting to give the 'right' or desired response, and offers the potential to unpick more experiential understandings of these places (Housley and Smith, 2010) and "help reveal some of the place and practice-based insights of participant observation without the intensity and time commitment ethnography demands" (DeLyser and Sui, 2013, p.297).

Walking interviews have been seen to be a useful approach specifically for farming research. Riley (2010) has noted that many farmers do not have time to participate in the interviews, and when lack of time was not problematic, being in the house or indoors was an issue. In light of this, a ‘go-along’ technique was adopted during the walking interview where the interview was combined with participant observation. The go-along method has been seen to unveil sometimes hidden or unseen habitual relations with place and the environment (Kusenbach, 2003) by “highlighting environmental perception, spatial practices and biographies... in the data gathered” (Evans and Jones, 2011, p.850). This go-along approach helped to investigate how participants learn about and engage with the environment, and particularly about river and riparian environments on their farm, whilst allowing the farmer to undertake any daily minor tasks (such as checking the sheep). Conducting daily tasks whilst interviewing created a more informal interaction, and as Kusenbach (2003) suggests, a ‘natural’ encounter following everyday journeys which are familiar to the interviewee. Although it was hoped that this approach would facilitate a ‘natural’ encounter, caution was taken to reflect on the extent, or even the possibility of creating a ‘natural’ meeting, as with the more static interviews, the interviewer must be mindful of their own positionality within the encounter (see Kusenbach, 2003).

3.3.3 Data recordings and research diary

For all the interviews a hand-held recording device was used to record the interviews. For the walking interviews the recorder was placed in the researcher’s top pocket – freeing up their hands to help the farmers with duties or simply opening a gate - enabling it to pick up both the researchers and the interviewee’s voice. Alongside the recording, a research diary was completed for a number of reasons: i) as an aide memoire after the research interaction, ii) to document reflections on positionality within the research document, iii) to contextualise the construction of the interview data (Cook and Crang, 1995, p.31) and iv) to comment on non-verbal aspects of the interviews not captured in the interview recordings. Although forming part of the wider research, the diary was used to recognise reflexivity and what Pile (1991) terms the importance of ‘intersubjectivity’. Although not always referred to explicitly as reflexivity, an important part of the evolution of qualitative research has been the venture of examining how the researcher and intersubjective elements influence and sometimes alter research. Through recognising that the researcher, as an observer or

participant, inevitably becomes part of the complex set of socio-cultural and political relations at work (this is discussed in more detail in section 3.7.1). At the most basic level the research diary was used as a space to record details of the interview and observations – in both informal settings and formal meeting spaces (such as the discussion groups and farm walks) (Silverman, 2013). The diary was transferred, if possible after each entry, into a typed form in a Microsoft Word document. Digitising the notes served a number of important functions. The first, the transferral allowed reflection and expansion of the notes allowing deeper reflection on initial ideas and points so that emerging themes from the interview and observation could be highlighted. This also facilitated the detection of areas where the interview process could be improved by identifying areas which needed to be explored that had not been initially signposted as a theme to cover. The second, and a more practical and ethical note, the computer file allowed easier, efficient and more secure storage of this confidential material. This digital form also proved useful in the data analysis process, allowing quicker retrieval of information through the use of word searches and an initial highlighting of themes and coding of information that could be readily used in the production of papers and the final thesis.

3.4 The research in practice

In total the research engaged with 42 farms¹⁹ (conducted over 10 months in 2017 and 2018) representing all farm locations (see Table 3.2 for location of farms) in the River Ribble catchment in the North West of England. Interviews were conducted with a total of 64 respondents²⁰ (this includes those interviews that had more than one participant) and lasted between 1 and 4½ hours. Interviews took both a walking and static (usually sitting in the farmhouse) interview approach. Of the 42 interview encounters, 38 of the interviews started as static and turned into walking interviews²¹,

¹⁹ The number of farms in the River Ribble catchment is unknown and therefore it is hard to quantify the percentage of farms within the catchment that this research involved. The Ribble Rivers Trust has estimated that there are 2000 landowners within the catchment, however a comparison with the data used in this research is not possible, as equestrian facilities and landowners with a small plot of land are included in this figure. As result any comparison would not truly reflect the percentage of the farms in the catchment that were involved in this research.

²⁰ 42 farms were visited with 64 respondents interviewed. There are more respondents than farms as 20 of the 42 farms had more than one participant (ranging from 1 to 3 extra participants). All interviews had one main respondent with others being present for only a portion of the interview

²¹ If the interview migrated from a static interview to a walking interview the main respondent stayed the same for all interviews

1 was a walking only interview and 3 were located in the same, static position (the farmhouse).

Table 3.2- Location of farms and number of people formally interviewed

Location (Code²²)	Number of Farms	Number of people formally interviewed
Small streams and ditches (X)	10	12
Small tributary rivers/streams (Y)	15	17
Main rivers (Z)	17	35
Total	42	64

3.4.1 Research Participants

The composition of the sample of participants in the study can be broken down into different categories. The distribution of farms by type is shown in Table 3.3. It is unfortunately not possible to compare these figures to the number of holdings over the whole catchment – farm type data is available through DEFRA at a ward level however data is only available for holdings of commercial size²³ and presented as holdings of only one type of livestock i.e. ‘cattle’, ‘sheep’, ‘pigs’ and ‘poultry’. The data presented in this thesis is therefore not comparable as it has visited holdings that has multiple forms of livestock, for example, ‘beef and sheep’, ‘dairy and sheep’ etc.

²² In Chapter 5, to maintain anonymity, farmers were given labels to represent age and location in the catchment

²³ For this data and information about the size of ‘commercial’ farms see

<https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june#history>.

Table 3.3 - Distribution of farms by type

Farm Type	Number of Farms	Number of Respondents
Sheep	15	17
Beef	0	0
Dairy	11	24
Beef and Sheep	7	8
Dairy and Sheep	6	10
Beef and Dairy	0	0
Sheep Beef and Dairy	3	5

The table shows that although fewer dairy farms were visited than sheep farms, the number of respondents from dairy farms was much larger, which was due to the more labour-intensive nature of the dairy farms and thus the availability of more respondents. In this sample, and representative of the catchment, sheep farms were typically smaller farms with only one or two farmers using the farm as their sole employment and income. Although more respondents were interviewed from dairy farms, the data is not heavily weighted to dairy farms as many of the respondents had only a partial input into the interview process (as discussed in more detail in section 3.3.2) – this was noted in a diary extract:

The role of the farmer’s wife on this occasion [and this was true for many others] was only partial but impacted on the interview. Although at the start she noted that she unfortunately didn’t have time to sit down and actively take part, she would stop intermittently

and listen in, chipping in when she thought she had something to say that was relevant²⁴.

(Research Diary Extract 5th July 2017)

Of the 42 farms where interviews were carried out, all of the main respondents were men, however, and as discussed previously a number of other participants were present for the interview (20 of the 42 interviews), 14 of these second participants were women – either wives, daughters or workers (the remaining 6 were male workers or farmers sons working on the farm). Table 3.4 shows the age distribution of these respondents. It can be seen that the majority of farmers interviewed were over 50 years of age, with 20 respondents aged over 65²⁵. Although the age of the farmer was not specified as important to those recommending respondents in the referral method used, the resulting sample offered respondents who had experience of farming within the catchment for a prolonged period of time. In addition, farmers, when recommending further respondents, tended to offer friends and, naturally, many of the referrals were of similar age to the referring farmer – a potential disadvantage of chain-referral sampling, however as this study would not be hugely impacted upon by the age of farmers this was deemed as unproblematic.

Table 3.4 – Age groups of respondents

Age (Code³)	Number of Respondents
20-35 (A)	11
35-50 (B)	11
50-65 (C)	22
65+ (D)	20

²⁴ This is an example of how interviews had more than one participant and as a result are included in the overall number of interview participants (64).

²⁵ This is also representative of the average age of farmers in the UK - in 2016 the median age for farmers in the UK was 60 years old (DEFRA, 2018b).

3.4.2 Lessons learned and reflections on researching in the farming community

The research faced several contextual challenges while researching in farming communities. The first was the challenge of arranging interviews. Arranging interviews with farmers is not only weather dependent but also seasonal. Usually when weather dependency is an issue it is due to wet or windy weather and dry, sunny days are better days, however within the farming community these wetter, windier days are more appropriate for an interview. As noted previously, farmers may not be forthcoming when they have to take time off the farm and sit indoors however, and as noted by farmer 6, farmers “don’t mind sitting indoors when its pissing it down outside and you can’t get on the fields or get jobs done”. It was difficult to arrange interviews in advance as farmers first needed to know what the weather would be like and whether they would be busy outside – often meaning that interview times or dates would be changed or cancelled at the last minute. An alternative time for an interview was at breakfast or lunchtime where farmers noted they had a window of time they could chat whilst they had some food. After a few interviews it was apparent that it was important to steer the interview to questions that were of priority as soon as possible as many farmers would suddenly cut the interview short as ‘my time was up’ and they would go back outside to carry on their jobs.

A second lesson and discussed in more detail in Chapter 4, is that interview topics can restrict the number of farmers willing to take part in an interview. This issue was captured in a diary extract:

Today I have rang up four farmers and all of them have declined the invitation to be interviewed. Two of the farmers I had rung previously, and they said please call back another day to arrange. Upon calling them back they again said they are too busy and will not have an hour to spare at all over the coming months. Although some of the farmers may *actually* be busy, many seemed to be put off when I mentioned that I was interested in water - all of the farmers seemed to want to close the conversation and get me off the phone. This is not the first time a number of farmers have declined, and I think my approach when ringing up should talk about farm

management and introduce the topic of water when they are more comfortable with me coming to interview.

(Monday 9th October 2018)

This dislike towards the topic of water was also observed in the interview itself. However, two situations proved to help in encouraging the farmers to discuss topics around water more freely: first, the walking part of the interview, particularly near watercourses, facilitated the discussion. I think being in the field led farmers to be less conscious about the audio recorder and become more at ease. Second, the inclusion of other respondents - most specifically farmers wives - were able to add positively to the conversation around water, helping to broach the questions so that the farmers would continue in conversation rather than move onto alternative, 'safer' topics. This experience led me to agree with Elwood and Martin's argument that "reflections on the micro geographies of interviews is a process that starts before the actual interviewing begins, and continues throughout the research and analysis" (2000, p.656). This experience demonstrated the need to assess and reassess the signals and information provided both when arranging the interview and the interview itself in light of the socio-spatial dynamics observed in different interview sites.

A third lesson learnt was the need to look as though I fitted in. As somebody from a farming background and still heavily involved in the farming community I know some farmers will judge somebody on their appearance and suitability for being on a farm. As I was researching a farming community that I have had no previous contact with, I was conscious that I needed to be appropriately dressed and 'practical' (for example, ready to walk round a farm and be unphased by being on a farm) in order to blend in to minimise being cast as an outsider and making the research encounter problematic (Kuehne, 2016). It would be naïve of me to assume that I would instantaneously become an insider by putting some wellies on, however I believe my choice of attire and the way I interacted with the farm environment helped in forming relationships that positively impacted the research encounter. Additionally, in some cases it also helped in gaining common ground from which the interview and relationship could develop where the power relations between researcher and participant are reduced (Elwood and Martin, 2000).

Exploring the lessons learnt through the research process, reflection and reflexivity were important processes in understanding i) my role as a researcher and interviewer, ii) the actions and responses of the interviewee and iii) the research process as an effective means of understanding someone else's world and how this process shapes the research outcomes. The research diary provided a space in which this reflection could be recorded in a commitment to the pursuit of reflexivity and awareness on one's own epistemological assumptions (Nadin and Cassell, 2006). The research process is thus subject to a variety of influences which impact upon the interpretations and outcomes produced, and so a reflexive stance is needed in order to recognise and understand what these influences are. Through this thinking: "reflection can [...] be defined as *the interpretation of interpretation* and the launching of critical self-exploration of one's own interpretations of empirical material" (Alvesson and Sköldberg, 2017, p.11; original italics). Although more commonly associated with the disciplines of sociology and ethnography, reflexivity is a key issue for qualitative researchers in human geography. Probst (2015, p.37) defines reflexivity as an "awareness of the influence the researcher has on the people or topic being studied, while simultaneously recognising how the research experience is affecting the researcher". In this study, this consideration of the researcher as both observer of the farming narrative and participant in it, is just as important as the participants interactions with the interviewer. This more reflexive and flexible approach to research encounters allows the researcher to be more amenable to the challenges to their theoretical position that arises within fieldwork, whilst adding an extra layer of information which could be used in both the interviews to follow and the overall outcomes of the research. Thus, there are opportunities for the construction of new knowledge through a reflection on the research process, and more specifically on interviewing farmers about riparian environments (see Chapter 4).

3.5 Data processing and analysis

The digital audio data, as well as that from the research diary, were transferred into a textual form in a Microsoft Word Document through the process of transcription. Each transcript was read through after transcription to informally identify trends and themes. The primary analytical approach was thematic narrative analysis (after Braun and Clarke, 2006) with a focus of the thematic analysis being largely on "what" is said (Riessman, 2008). For this approach a 'verbatim' transcript was needed, recording all

verbal utterances, as well as nonverbal expressions such as laughter, sighs and facial expressions – something that was a common occurrence in multi-respondent interviews (Poland and Pederson, 1998). The analysis aimed to deal with the material thematically to determine categories, relationships and assumptions which informed the respondent's views more generally but also the research topic in particular. Because of its theoretical freedom, thematic analysis provided a flexible and useful research tool, which helped to provide a rich and detailed set of data.

Although there are a number of software packages that have been noted to be of value in the analysis and storage of data (such as NVivo and ATLAS.it) (Tesch, 2013), it was decided that the material could be interrogated satisfactorily using Microsoft Word files. In practice this meant that each individual transcript was read on multiple occasions and coded manually. Importantly, the analytical process of the research began with the initial interviews and continued throughout the data collection process as 'repeated patterns of meaning' in relation to the research questions started to unfold in the data (Braun and Clarke, 2006).

The analytical process was iterative and recursive, rather than linear, and involved all different elements of the research. As Braun and Clark (2006, p.86) suggest, such an analytical approach involves "a constant moving back and forward between the entire data set, the coded extracts of data that you are analysing, and the analysis of the data that you are producing", and so the process followed a general, but loose structure. The first phase included familiarisation of the data through transcription and repeated reading, through which ideas, themes and a potential coding scheme could be written down. At first these themes were broad in relation to aims of the projects, namely 'land management, 'water', 'conservation/sustainability', and 'knowledge' with a fifth 'other' theme allocated for relevant information which did not relate directly to these four but was deemed relevant to the research and research questions and which would be analysed. Extracts which related to these themes were cut and pasted into a separate Word document, collating all extracts of a same theme in one file. Each extract was labelled with a farmer number, page and starting line number as well as a hyperlink²⁶ from the interview transcript which the extract originated. This allowed immediate access to the wider context of the extract, which was particularly useful later in the

²⁶ Using the "Insert Hyperlink" tool in Word.

analysis where themes and issues were linked beyond the distinctions relating specifically to the four research aims.

In the second phase of analysis extracts from interviews, assigned to each broad theme, were copy-pasted into a Microsoft Word document and through re-reading the transcripts the themes were refined and subdivided down into more specific themes. The data in each separate Word document were coded into these more specific themes – for example the data on conservation was subdivided into themes relating to “schemes”, “attitudes”, “environmental awareness”, “water conservation management/practices” and “scheme advisors” etc. Later on, the sub-themes were further spilt into new sub-themes, with further division carried out where necessary. To allow easier movement between extracts and their original documents (i.e. back to the original full interview transcript or to a particular date in the research diary) hyperlinks were inserted to allow the tracing of the extract. This link between extracts and full transcripts proved particularly useful in the later analysis phase, as the themes highlighted as most important could be related back to their original context to be considered alongside other more general themes.

The final phase of analysis involved the integration of the interview and research diary extracts into written analysis binding the themes and sub-themes together into a coherent report. During this integration, full transcripts and theme documents were referred back to on multiple occasions to provide contextual data and situate particular themes within the wider narrative as, as Braun and Clarke (2006, p.86) note: “[w]riting is an integral part of analysis, not something that takes place at the end, as it does in statistical analysis”. This phase involved inserting all relevant extracts and providing written analysis around these extracts, noting how this was complementary, opposing or building upon previous research. These large documents were then redrafted, removing extracts that repeated the same argument leaving final documents which had extracts of an important value to the answering the research questions, which could be used in the final written analysis (presented in Chapters 4, 5 and 6).

3.6 Presentation of the research

The very nature of qualitative research - the ‘data’ appears as words (from an interview transcript or a research diary extract), rather than numbers - has raised multiple questions in the literature on how best to display findings (Flick, 2018). The

importance of displaying qualitative data effectively is highlighted in the following extract from Wolff (1987):

“Research experiences have to be transformed into texts and to be understood on that basis of texts. A research process has findings only when and as far as these can be found in a report, no matter whether and which experiences were made by those who were involved in the research” (p.333).

Wolff (1987) infers that the text is not only a means for documenting the data and providing a base for interpretation but also that its usefulness and success at communicating findings and knowledge is dependent on its effective delivery. Bogden and Biklen (1982) proposed that good delivery of qualitative research is well documented with evidence from data which illustrate and substantiate the assertions made. This thesis aimed to present findings in a style of quotes and research diary extracts which provide the basis on which discussion and interpretation follow, creating insight in the literature on which it draws upon (Pile, 1991).

All the farmers were assigned a number, and where a quotation is included from a farmer their corresponding number is included in brackets afterwards (e.g. Farmer 31²⁷). The majority of the principal farmers were male, and where a farmer is referred to by their number in the text it can be assumed that they are male. As previously mentioned, a number of additional participants were present in some interviews, where they have been referred to in the text their position has been stated in the brackets following the quote. Other symbols used in the quotations are listed below:

F The farmer is speaking

I The Interviewer is speaking

FW The Farmer’s wife is speaking

FS The Farmer’s son is speaking

... Pause by the speaker

²⁷ An exception to this is Chapter 4 where quotes are followed by, for example F-12, signalling Farmer 12. In Chapter 5 additional codes follow the farmer number, this is both explained in section 3.4 and section 5.2.4.

[...] Denotes a long pause, or where material not relevant to the discussion is excluded.

[] Denotes that something (names in particular) have been removed to maintain confidentiality or something is added by the researcher to provide clarity to the discussion.

3.7 Ethical issues

An awareness of ethical consideration is central to research, research design and methodology (Valentine, 2005). The main ethical issues identified were:

- Ensuring consent is fully informed
- Safeguarding participants from emotional distress
- Ensuring confidentiality and anonymity for the participants
- Maintaining the safety of the researcher in the field

The research gained ethical approval²⁸ from the University of Liverpool before any participants were contacted. This approval was on the condition that formal consent was sought, and received, from all those partaking in the interview. Prior to agreement, all participants were handed an information sheet outlining the nature of the research and who to contact if they experienced any distress in written form. In addition, a verbal introduction was given about the project explaining the aims of the research and the nature of questions asked²⁹. The information sheet reassured participants that all the information given, verbal or otherwise, in the interview would be confidential and, where reproduced, this data could not be associated with them specifically – hence ensuring the anonymity of participants. Following this, the standardised ethics procedure was explained, and written consent was gained³⁰. To ensure confidentiality and anonymity after consent was given, where farmers were referred to in the findings of the study, care was taken to ensure nothing was included which would reveal the identity or location of the respondent. For example, where farmers referred to a specific person using their name, it was removed and replaced with their role or relationship to the farmer (e.g. farm advisor). Audio recordings, interview transcripts and the research diary (converted from handwritten to a typed form at the earliest

²⁸ Faculty of Science and Engineering Committee on Research Ethics reference number: 1489

²⁹ A copy of this information sheet is in Appendix A.2

³⁰ A copy of this consent form is in Appendix A.3

convenience) were kept in password protected computer files. All participants were contacted by telephone to arrange a time of interview – which was an important stage for two reasons. First, it allowed any immediate questions relating to the nature of the research to be discussed with the farmer, and immediate queries or reservations to be dealt with and second, it meant details such as a name, number and farm location could be gained which helped to maintain the safety of the researcher in the field. The ethical issues of being a young, female researcher in the farming community, often visiting isolated locations has been noted by Chiswell and Wheeler (2016). Prior to interviews my supervisor was notified of each farm visit, meaning my location was known at each interview for safety reasons.

3.7.1 Power and knowledge – navigating relationships when undertaking interviews

Previous research has highlighted the importance of paying attention to issues of reflexivity, positionality (discussed in more detail in Chapter 4) and power relations in the field in order to undertake ethical and participatory research (Sultana, 2007). The relationship between the interviewer and interviewee is a key component of in-depth interviews, with power imbalances within this relationship likely to influence the research encounter and its outcomes. Nunkoosing (2005) argues that these power imbalances are the distinguishing feature of the qualitative research interview from other forms of verbal exchanges. As such, the interview situation is characterized by different forms and degrees of power with this power shifting back and forth between the interviewer and the interviewee. The power balance between the researcher and interviewee is often seen as imbalanced in the favour of the researcher, as the researcher is defining the situation and introducing the topics whilst guiding the interview, however this power can shift and the interviewee can be viewed as the expert when the researcher is asking the interviewee for an account of their personal experiences and understandings as they own the knowledge and experience. With this thinking, when the respondent accepts the role of interviewee, they may feel empowered by allowing them to communicate in a way not normally available to them (Anyan, 2013).

Power relations are important to the interview dynamic and I was keen to try and make the relationship with farmers less hierarchical (Hoffmann, 2007). I hoped to place

myself alongside the farmer through a number of ways. Kuehne (2016, p.7) notes that “one way to gain greater understanding of the world of farmers is to live and work with them”, although I did not directly live or work with the farmers interviewed, being a farmer’s daughter and coming from a farming community helped to dissolve any power relations, placing myself and the interviewee on the same level. Similarly, farmers guided me through spaces of their own choosing which allowed for respondents to shape the direction of the research (Riley, 2010), creating an interview that was more “alongside” (after Brown and Durrheim, 2009), rather than face-to-face or potentially confrontational. Elwood and Martin (2000, p.649) argue that the “interview site itself embodies and constitutes multiple scales of spatial relations and meaning, which construct the power and positionality of participants in relation to the people, places and interactions discussed in the interview”. As such the “micro-geographies” of the interview reflect not only the relationship between interviewer and participant but also the participant with the location and the location within a broader sociocultural context that influences both the interviewer and interviewee. For example, in this research, in one location (e.g. the farmhouse) the interviewee may perform one identity – such as the son of the farm owner – and in another may respond with a different perspective – for example the farm manager and concerned conservationist. The second technique of addressing the issue of power during the interview process was trying to make the participants feel comfortable with me, prior to the interview, starting by informally chatting with participants giving some information about myself and what the research was interested in, in a bid to create a power dynamic in which I was not seen as being in total control. In practice, when conducting the interview and appearing less knowledgeable about farming in their location (discussed in more detail in Chapter 4), many of the farmers appeared to feel empowered and more superior than they may have originally felt. The final technique was to make data collection conscious of the time commitments of the participant ensuring interviews were fitting in and around their daily and seasonal schedules.

Despite efforts to reduce power imbalances and create a neutral research space, McDowell (1992) argues that unequal power relations are impossible to avoid in research situations and completely ‘escaping’ them is a utopian vision. McDowell (1992, p.409, original italics) instead suggests that “we [as researchers] must recognize and take account of our own position, as well as that of our research participants, and

write this into our research practice rather than continue to hanker after some idealized equality between us”. With this in mind the position of the researcher was taken into consideration in the production of data. Many researchers have previously highlighted the relationship between researchers and participants through the concept of positionality (Browne, 2016). Jackson (2001 p.210) notes that there is a “need to consider the researcher’s positionality in relation to the research participants as an integral part of the research process”. This was taken into consideration within the research noting the different ‘subject positions’ held by myself, in the eyes of the respondents, noting how these ‘subject positions’ may have impacted upon the research – this element is discussed in more detail in Chapter 4.

Chapter 4

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4. Methodological issues in interviewing farmers about rivers and riparian environments

4.1 Chapter Introduction

The previous chapter introduced the methodological approaches used within the study. This chapter presents the first in a series of three publication chapters; the first focuses on the methodological aspects of the study, whereas the following two draw upon the empirical findings. This chapter contributes to a body of knowledge that explores the challenges of undertaking research within rural communities and adds to the ongoing debates around how to investigate and represent the everyday practices and understandings of these communities (Pini, 2004; Chiswell and Wheeler, 2016). From a methodological perspective, this paper offers critical insight into undertaking emplaced research interviews with farmers in relation to riparian environments – something that has previously received very little research attention.

The aim of this chapter is to reflect on these specific methodological aspects of the research. Importantly, this chapter explores subtle nuances in the approach which might be required when seeking to interview farmers about riparian environments on their farms. At the time of writing, this paper drew upon interviews with twenty-six participants, however the final number of participants in the study was sixty-four (see Chapter 3).

This paper was published in the journal *Area*. The paper was accepted for publication on the 25th September 2018 and published online on the 2nd November 2018. It is available at: <https://doi.org/10.1111/area.12507>.

I am the first author of the following article and the second and third authors are members of my supervisory team. My contribution included data collection and data analysis, as well as drafting the paper and manuscript revisions. Their contribution included guidance concerning data analysis, discussion of the ideas arising from analysis, critical review and editing.

Area is an international peer reviewed journal, ranking in the first quartile of journals publishing in the field of geography, planning and development. The journal had a H index of 68 and impact factor of 2.195 in 2017. The paper is published in accordance with the *Area* author guidelines and the copyright conditions of the publisher allow for inclusion of the paper in this PhD thesis.

The full citation for the article is:

Thomas, E., Riley, M. and Smith, H., 2019. A flowing conversation? Methodological issues in interviewing farmers about rivers and riparian environments. *Area*, 51(2), pp.371-379.

4.2 A flowing conversation? Methodological issues in interviewing farmers about rivers and riparian environments.

4.2.1 Introduction

Set within the wider reflection on the use of qualitative methods for geographical enquiry, *Area* has recently played host to a vibrant discussion relating to the (re)placing of the research encounter (Anderson, 2004; Holton and Riley, 2014). A fruitful element of these contributions has been around the importance of place to the research interview - or what Anderson and Jones (2009, p.292) refer to as the ‘where of the method’ – with a consideration of the significance of particular material sites (and siting) of the interview itself (Pitt, 2015), how changing context and being mobile might add to the research encounter (Anderson, 2004; Holton and Riley, 2014; van Eck and Pijpers, 2017) as well as how these issues of place may (re)shape power dynamics, reflexivity and positionality within the interview (Browne, 2016). Central to these contributions is a recognition of socio-spatial construction of knowledge – that is, an awareness that “there is no place without self and no self without place” (Casey, 2001, p.684) – and the subsequent exploration of how place may be used within research to examine everyday lived experiences and practices (Hitchings, 2012), as well as how particular knowledge(s) may be cosubstantive with particular contexts (Anderson, 2004; Holton and Riley, 2014)

Research with farmers is a particularly fruitful arena for developing this emplaced methodological discussion for several reasons. First, farming offers very particular people-place relations – something Gray (1998, p.345) articulates with their use of the

term ‘consubstantiation’, which they see as: “the spatial relation between family and farm, between beings and a place, such that the distinct existence and form of both partake of or become united in a common substance”. Accordingly, there has been a profusion of work which has focused on the place-specific beliefs and knowledges of farmers in relation to issues such as animal disease (Maye et al., 2014; Naylor et al., 2018), soil management (Ingram, 2008b) and wider farmland conservation (Burton et al., 2008; Riley, 2016a). Second, very specific sets of patriarchal relations may make research with farmers challenging – particularly as the work of those outside the principal farmer often remains invisible – and more emplaced qualitative methods have proven useful in getting behind this (Riley, 2008; 2010; Chiswell and Wheeler, 2016). Third, the often remote and isolated locations of farms create logistical, as well as health and safety, issues in travelling to and conducting interviews (Chiswell and Wheeler, 2016). Fourth, and cutting across these, the very particular cultural contexts of farming mean that the research interview is one of identity work, with issues of positionality in relation to gender, age and background (and, of course, their intersectionalities) being important (Pini, 2004; Chiswell and Wheeler, 2016). Despite the progress made on the particularities of farm interviews, and innovations therein, such research encounters have been largely land-based and reflect the wider criticism in geographical research that we have been too ‘terra-centric’ (Steinberg, 1999). Where more emplaced farm interviews have been developed, these have been overwhelmingly land-focused, with relatively little attention paid to farmers’ perspectives on rivers and riparian environments. Conversely, where research using farmer interviews has touched upon riparian environments, farmers’ perspectives have either not been disaggregated from other stakeholders under discussion (see Whatmore and Landström, 2011), or often sparse detail has been provided on how interviews are conducted or what questions are asked (e.g. Winter et al., 2011). The following paper draws on research with farmers in a river catchment in the North West of England (UK) to examine the methodological issues and potential for undertaking emplaced research interviews with farmers focusing on these riparian environments.

4.2.2 Placing the research encounter on the farm

As Dowling et al.’s (2016) recent review suggests, qualitative researchers are currently paying close attention to the place (and placing) of the interview – considering how such sites may be understood through interviewing *in situ* and how these places (such

as the city or the home) may be an active methodological resource. Underpinning this endeavour is a recognition that “place is regarded as constitutive of one’s sense of self” (Casey, 2001, p.604). As Anderson (2004) notes, drawing on various philosophies considering the people-place dialectic, the human condition is both spatial and *patial*. Such insights recognise that space is not an inert background, but an active medium producing, and being produced by, human action and that “as a consequence of the reciprocal relations between place, human identity and time, individuals engender meanings and significances for particular places” (Anderson, 2004, p.256). This intimate connection to place is particularly prominent within farming and although Chiswell and Wheeler (2016) note that there has been comparatively little critical reflection on rural research with farmers, two aspects are proving important – how being on, and performing in, the farm space is important to the research encounter, and how *moving around* the farm can be enlightening to these research approaches.

Chiswell and Wheeler (2016) note several practical issues of undertaking qualitative research with farmers, including the remote locations of many farms (and associated challenges of access and health and safety) and the importance of the micro-geographies of the farm space, highlighting how the seemingly indistinct boundaries between home and work create a challenge around what is seen as appropriate researcher behaviour. Related to this, very particular sets of patriarchal relations mean a male-dominated arena may pose a challenge to female researchers. Riley (2010) examines how these quite particular circumstances make interviewing around the farm particularly valuable as it may uncover less singular, male-dominated, narratives (see also Mackay et al., 2018). Once on the farm, several authors have noted the importance of interviewer positionality, particularly in relation to gender dynamics – with Pini (2004) acknowledging the importance of reflexivity in considering the multiple identities employed during farm interviews. This is something extended upon by Chiswell and Wheeler (2016) who recognise the importance of intersecting positions in noting that despite experiencing issues of sexism (implicitly and explicitly), their positions of ‘young’ and ‘non-farming’ allowed them to be considered ‘non-threatening’ and gave access to the very full narratives of farmers.

Moving around the farm as part of the interview may be a fruitful aspect of the research encounter. Being mobile may give an insight into how people (re)interpret particular

places, whilst being *in place* means that visual cues – such as particular landscape features or pieces of farm machinery – may stimulate narratives and take the interview in unexpected directions (Mackay et al., 2018). Moreover, the routes taken may tell us something about respondents’ engagement with a particular environment (Mackay et al., 2018). Conducting interviews in and around places such as the workplace or the home may have the practical benefit of allowing the researcher to tag onto the tasks of the day (and feel less of an intrusion on interviewees’ time), whilst surrounding artefacts and environments may embellish the interview narrative and move from a seemingly more confrontational face-to-face approach to a more ‘side-by-side’ encounter (Holton & Riley, 2014). Not only might such approaches allow more incidental (and equally fruitful) encounters with people and places (Benwell, 2009; Holton and Riley, 2014), they might also give an appreciation of the socialisation in oft-repeated routines (Kusenbach, 2003).

4.2.3 Methodology

The material considered in this paper is drawn from an ESRC-funded project focused on farmers’ understandings of river and riparian environments, with the interviews (conducted between August 2017 and January 2018) of twenty-six participants drawn upon here. The specific aim of our project was to assess the extent of farmers’ knowledge of riparian environments and how they articulate this, how their treatment of these environments had changed over time and what (if any) was their level of engagement with conservation and environmental activities relating to these.³¹ Farmers were located in a river catchment in the North West of England. The catchment extends across a geology of predominantly carboniferous rocks, flowing from upland acid moorland areas and peat and peaty loam soils to more deep loam in the lower catchments. These conditions result in predominantly grassland farming. Our specific sample reflected the range of farming types in the catchment (4 dairy and sheep farms; 4 beef and sheep; 8 sheep farms; 8 dairy; and, 8 dairy beef and sheep – with two of these growing some crops). Farmers interviewed represent both different farm types as well as a variety of locations across the catchment (higher up along

³¹ It was made clear to farmers that we would not relay any specific information from their interviews to regulatory authorities, but that we hoped our general findings would contribute towards a greater understanding of how farmers’ knowledge of riparian environments might be used in future policy or to develop information available to farmers.

tributary rivers and also those along the main river), this includes those with land along the main river channels as well as farms that only had small becks/brooks. Initial contact was made with the local Rivers Trust to gain access to the first wave of respondents and chain-referral sampling (Heckathorn, 2002) was used to locate subsequent respondents. The interviews were all conducted on farm and lasted between 1 and 3 ½ hours, with a ‘walking’ interview approach adopted wherever possible. Walking interviews were largely co-constructed, with the interviewer requesting to visit the farm’s riparian environments, but the farmers left in control of the route taken and parts of the farm visited, which helped gain an insight into farmers’ lived experiences of their surroundings. A research diary was completed – extracts from which are used here - both as an aide memoire, but also to record reflections on positionality within the research and to comment on non-verbal aspects of the interviews not captured in the interview recordings. The interviews were recorded using a handheld voice-recorder, transcribed verbatim and interview transcripts and research diary extracts were read through several times and coded manually following Riessman’s (2008) framework. Several themes were identified using this narrative thematic coding and are discussed in the following sections.

4.2.4 Getting across the river

Previous research has suggested that accessing the farm for the more emplaced research encounter is heavily shaped by researcher positionality; in particular their positioning, by farmers, as being ‘trustworthy’ and worthy of the farmer’s time which enables the development of an interviewer-interviewee rapport (Chiswell & Wheeler, 2016). Our own research experience revealed how this was interlaced with how *useful* farmers felt they themselves would be to the perceived objective(s) of the research. The following interview and research diary extracts illustrate a number of facets to this:

“You’re not allowed to do certain things and they get quite concerned don’t they? they seem to think... we’re out to destroy everything” (Farmer 1)

“We just have it [the farm] for basically, wild birds, wild flowers and that’s about all I can say... you can ask questions, you can ask what you want..[Later in the same interview when asked about river management]

you can see where it were fenced in, and they say its clean now as it's ever been... I don't know much more about the water, that's it." (Farmer 5)

"After the distribution of participation information sheets many farmers suggested that they may not be helpful because they "don't know much about rivers", making it difficult to gain access to have an interview. I have tried to stress that I am also interested in land management - this element proved useful with many farmers saying "oh yes well I can talk about that all day long". Although it seemed the topic of water and rivers appeared to put some farmers off, I think it is still vital for me to include this within the information sheet to make it as transparent as possible as to what my intentions are as a researcher." (Research Diary extract)

Taken together, the extracts highlight the difficulty in accessing talk about rivers and riparian environments and, in subtly different ways, highlight the potential lack of ownership taken by farmers in relation to rivers. The first extract illustrates a prominent issue in gaining initial access for interview – the extent to which rivers have become a very politically-sensitive topic. This recent scrutiny – both in terms of environmental regulation and public attention³² – was something which left many farmers wary of engaging in conversation about them. As noted in the research diary extract, sometimes the mere mention of rivers could serve to block access, with farmers cautious that their interview may be associated with some sort of monitoring of their action, or that they would get into trouble (or at worst be fined) for information revealed, with one noting rivers had “become something else we’re negatively contributing to, along with everything else” (Farmer 12)³³. The way in which such words carry a toxicity offers the wider methodological insight that it is important to recognise the political climate within which interviews are set and to give careful consideration to how the objectives of the research are articulated. For several farmers, rivers represented a politically-laden topic which served to make them, initially at least, reluctant participants in discussing them.

³² See for example media reports on “Careless farming adding to floods”: <http://www.bbc.co.uk/news/science-environment-26466653> and George Monbiot’s assertion of ‘How we ended up paying farmers to flood our homes’: <https://www.theguardian.com/commentisfree/2014/feb/17/farmers-uk-flood-maize-soil-protection>

³³ Interestingly, although fines for pollution were mentioned in nearly all interviews, there were only 2 farmers who knew someone who had actually been fined.

The second interview extract and research diary extract highlight that even when the sensitivity of the topic did not foreclose interviews, accessing detail and farmers' narratives about rivers was problematic. Although previous research with farmers has highlighted that they are often quite willing to discuss their farm space and farm practices - as they are often a clear demonstration of their objective and embodied cultural capital (skill) (see Burton et al., 2008) - the research revealed that rivers do not offer this same type of association. This, it was revealed, related to the structural and cultural challenges of ownership as well as the relative lack of experiential knowledge of rivers farmers had developed on their farms. The aforementioned reference to it "didn't affect me", reflected a wider uncertainty amongst farmers regarding who had management responsibility for rivers. Whilst farmers were able to give detailed accounts of their land, and changes to it, they commonly struggled to offer a similar articulation of the nature and history of rivers on their farms:

"They do fish counts in the stream and they tell us the rivers are better [...] So... I think it has improved, I wouldn't just know why, put my finger on a cause of it..." (Farmer 2)

"Do you know if it's actually changed the quality of the river?"
(Interviewer)

"That I don't know, that's, outside my comfort zone, but I can only go on what people tell me about what they have actually measured in, you know, water quality." (Farmer 6)

Such responses – similar to many across the research – reveal how the specific nature of engagement with rivers shaped farmers' knowledge. As Stuver et al. (2004) note, the continuous interaction between mental and physical labour, and the continuous (re)interpretation and evaluation of actions create an experiential form of knowledge that farmers draw upon. Whilst the cultivation of crops and tending to livestock (Holloway and Morris, 2014) – that is, *land based* management – developed this knowledge, engagement with rivers was reported by farmers as much more sporadic and ephemeral. In some cases, this historically involved dredging rivers³⁴, their use as

³⁴ Dredging is the process of removing sediment from river beds, usually through excavating these.

a water source for livestock – important in the predominantly livestock region under study - and engagement when the river was flooded at certain times of the year. The interview responses revealed that such intermittent engagement meant that farmers' narratives were disjointed, with relatively little understanding of the specifics of rivers themselves (cf. the detailed species and field knowledge that farmers may have of their land (Riley, 2008)). The nature of this engagement poses a methodological challenge for using interviews to understand farmers and rivers, with two main narrative approaches demonstrated by farmers in the research. First, as in the case of the farmer referred to in the research diary extract, was a refusal to discuss them and second, as in the case of farmer 2 and farmer 6, an articulation of rivers (in this case water quality and fish levels) which borrows heavily from second-hand understandings passed by others (in this case information offered by their local Rivers Trust).

In seeking to overcome such barriers of access and articulation, our research approach was to alter the usual question order within the interview. Rubin and Rubin (2011) note that interviews are built around 'main questions', 'follow-up questions' and 'probes', and whilst rivers should have made up our initial main questions, it was necessary to open with questions around land management, using these as orientating main questions in order to ask follow-up and probe questions where rivers featured. This had the advantage, as noted in the earlier extracts, that it started from a topic with which farmers were familiar and comfortable and, accordingly, allowed interviewers to bring rivers into the discussion in their own time and in a way they felt appropriate. Moreover, adjoining interview topics in this way revealed that many of farmers' understandings of rivers were deeply enmeshed in narratives of their land management and that it was only in probing these narratives that details of rivers and riparian environments began to emerge. Rarely did we encounter farmers' standalone narratives of river management or use, but instead found them, often hidden, as a side-issue – such as how they hinder, limit land or interrupt land use – to discussions of wider land management.

4.2.5 Going with the flow

The aforementioned discussion of interview questions and how they might allow access to various understandings are interweaved with the wider issue of interviewer positionality – something previously noted as a crucial aspect to the success of

interviews. The interviewer's identity of 'farmer's daughter' proved significant within the research, exemplified by Farmer 4's claim that "it's ok, you're one of us" (Farmer 4). McDowell (1998) and Pini (2004) suggest that sometimes there is a need to move between different subject positions within and across interviews, but to this we add a need to recognise two issues: first, that project-specific constraints might restrict the ability to move between the different positions and second, that multiple (and potentially conflicting) positions may, necessarily, be performed simultaneously. The position(s) of 'farmer's daughter', 'young woman' and 'researcher' were enacted at one and the same time. The position of researcher was stated in all cases (and young woman inferred) from the contact material sent to all farmers – these positionings were subsequently fixed and inseparable.³⁵ Whilst the status of 'farmer's daughter' was volunteered, rather than formally stated, working in the project-specific context of a river catchment (as well as using chain-referral sampling) often meant that this information was shared between farmers. Although in the majority of cases these three positions worked in tandem to generate a generally positive reception – with statements such as "I like to help students if I can, you see" (Farmer 8) – the legitimacy afforded in being a farmer's daughter was, in some cases, challenged by the more 'outsider' position of being associated with a University:

"A lot of these universities, they try to breed the common sense out of you... cause there's a lot of them [students]... they haven't got the common sense to see things" (Farmer 2)

Implicit within the extract is a distinction drawn by farmers between the validity of their experiential knowledge and the more codified understandings perceived to be associated with institutions such as Universities. Whilst the position of farmer's daughter served to counter this positioning as lacking common sense – or more specifically lacking experiential knowledge – as well as allowing access to interviews, it also served to impact on the type of information accessed *within* interviews. As Berger (2015) notes, interviewees may reveal more if they perceive the researcher to be sympathetic to their situation – and whilst this may be a positive for uncovering

³⁵ To gain ethical clearance for the research, it was necessary for all participants to be provided with a Participant Information Sheet and subsequent Consent Form which documented that this research related to an ESRC-funded project.

information within the interview, it was also found to offer a potential challenge. At one level, it was perceived that being a farmer's daughter would mean that similar views would be held, with farmer 2 noting "oh good, so you're on our side then" – with assumptions made about the researcher's particular perspective. More significantly, this particular positioning led to what can be described as short-handing of responses, where particular assumptions were made about the interviewer's understanding of certain aspects of farming practices:

"Just the usual problems that come with excess water on fields really, but you'd know about that" (Farmer 4)

Such assumptions presented a dilemma within the research process. On the one hand, maintaining the *status quo* meant that much of the fine-grained, nuanced, data central to the research may be glossed over and missed. On the other hand, the interview approach of "confessions of ignorance" (Shakespeare, 1993), which present an invitation for respondents to offer more fine-grained detail, ran the risk of interviewer losing credibility and the potential benefits as an insider. To the observation that moving between subject-positions may aid the interview (cf. McDowell, 1998), we add the caution that moving may undermine a positive research encounter. Our approach, therefore, was to move to the position of being 'geographically ignorant'. Here, the position as an insider (farmer's daughter) was kept largely intact, but finer-grained information was requested on account of 'not being from around here'. Qualitative studies with farmers are replete with references to the geographically contingent and very context-specific knowledge of farmers – and the ensuing antipathy of others (such as scientists) who fail to recognise context-specific differences and who make general assumptions that farm practices (see Burgess et al., 2000) – and this approach of not being familiar with their specific context was taken as a mark of respect by interviewees and positively elevated their position as qualified informant.

4.2.6 Liquid Narratives – (re)positioning the interview

In addition to access, *where* the interviews took place was central to the narratives gleaned. Farm spaces arguably have a micro-politics with more frontstage (productive) and backstage (reproductive) spaces (Bennett, 2006) and moving between these during

interviews allowed access to a wider range of participants on the farm. The extract below highlights the multiple advantages that this offered:

“Our land has quite a good amount of fall and then it goes very steep to the river [...] they [the rivers] are so far away from the farm to cause any hassle...” (Farmer 9)

“Am I right in saying your problem is, if you put some slurry on there and it rains, it goes into the dykes and then into the river, and the fisherman complain, because of the fish and the nitrate?” (Wife of Farmer 9)

“So there is a fishing group here then?” (Interviewer)

“Yes, the fisherman will mention it and they’ll say... ‘we don’t want to mention it to anyone else, we don’t want to get you in trouble, there looks like a bit of stuff was running through there the other day, can you bear that in mind and not do that’ [...] they know us well enough to sort anything out before it goes anywhere else.” (Farmer 9)

“Not all farmers do, though do they?” (Wife of Farmer 9)

The opening extract echoes the point made in the previous section, that a comfortable starting point for the interview was the land management practices of the farmer. Here, his discussion was framed in relation to the management of land and its accessibility, near the river. Such information was important to this dairy farmer, as slurry application was a significant aspect of his farming routine.³⁶ The interjection of the farmer’s wife had a twofold importance. First, and seen too in other interviews, they acted as a bridge between the farmer and the interviewer, often helping an articulation of the research questions to the farmer and helping target the discussion to what they perceived to be the specific objectives of the research. Second, they demonstrated their own knowledge of those rivers. This formed an important observation across the interviews - that farm members beyond just the principal farmer held important

³⁶ Riley (2006) has noted how slurry application is often prioritised by farmers (sometimes over conservation-orientated managements), not only in relation to soil fertility and grass growth, but through concern around storage issues and pollution.

understandings of riparian environments. Seeking out such alternative, as well as complementary, narratives is arguably an important lesson for wider research on farms and farm practices, but is especially pronounced in this context of farmers and rivers given our earlier observation that much farmer knowledge is production-orientated and land-centric. Significant in this, and similar interview exchanges, is that such knowledge is often wrapped within the recollection of wider biographical events – such as the encounter with fishers in this case – which the principal farmer may either not remember or not wish to bring forward.

Moving *to*, being close *to*, and walking *alongside* rivers was an important aspect of the approach and in investigating farmer's understandings of rivers. The following extracts illustrate different examples of this:

“These trees help the area where the fish would be nesting, laying their eggs... trying to keep those waters shaded and cool before they reach the main rivers, right?” (Farmer 16)

“Some volunteers planted these trees and that's it so [...] shading the river as well like you know. She talks about riparian habitats and that....and I don't mind as long as a few fish come up every now and again...” (Farmer 1)

Taken together, the examples highlight how being *at* the river led to an articulation of things not previously mentioned in the static part of the interviews. Farmer 9's earlier reference to the steepness/inaccessibility of the land adjoining the river reminds us how many contemporary farmers come to experience their land through their machinery and how walking to the river – a place not often visited because of its inaccessibility to machinery and cultivation - might offer a fresh interpretation. For farmers 16 and 1, it was the visual prompt of trees and tree planting which led them to discuss the issue of shading.³⁷ As expected, given the points made earlier in the paper, it was land management which provided an entrée into the discussion, and being

³⁷ Shading – riparian trees create shade over the water keeping rivers cooler in warmer temperatures helping to protect aquatic wildlife. See <http://www.woodlandtrust.org.uk/mediafile/100814410/pg-wt-060216-keeping-rivers-cool.pdf>.

confronted by the river forced an articulation of what was present and how and why it was important. Whilst previous mobile-interview research has highlighted its usefulness in (re)interpreting familiar environments (and the practices associated with them) afresh ‘in-the-moment’ (Holton & Riley, 2014) and moving away from the rehearsed and more unreflexive accounts, drawn from memory, in amobile interviews (Mackay et al., 2018), our application highlights that they too can be used to add colour to the blackspots of interview narratives. The discussion of shading had not arisen within the first, amobile, part of the interview, and being confronted by trees not only initiated an articulation of their relevance, but also gave an insight into the farmers’ understandings therein, revealing the uncertainty (i.e. stating their response as a question for farmer 16) and giving an insight into how, in the case of farmer 1, they have taken on board the knowledge (“what she says”) of river conservation groups. Not only does such an emplaced approach help give voice and articulation to those things otherwise missed, it also offers the opportunity to use such visual cues to better understand those specific places and/or practices which farmers have difficulty in articulating.

4.2.7 Conclusions

Given the contemporary importance of rivers and riparian environments within discussions such as flooding, climate change and pollution, engaging farmers’ understandings of them is crucial. This paper has considered some of the methodological issues in undertaking such research interviews on farms, offering suggestions for emplaced methodologies in general, as well as specific insights into working with farmers and researching environmental management(s) and issues on the farm. We have seen that subtly different skills, research approaches and (re)placings may be required from those used, hitherto, for more conventional land-focused interviews. The dual issues of negative press attention (as well as increasingly stringent environmental regulations) and farmers’ general lack of sustained engagement with river environments (*vis a vis* their land management) mean that farmers were, initially, less forthcoming in their discussions. This example highlights how a need for flexibility in interview (re)design may be necessary – with the approach of adjoining questions on rivers with those of wider land management in which discussions of rivers may be couched or hidden. Such an approach offered a comfortable starting ground

for discussion and allowed an excavation and unpicking of farmers' knowledge that was often hidden within these land management narratives.

Our insights are important for the more general discussion of positionality within the interview. Working with communities in close geographical proximity to one another (catchment areas in this case) means that they may share information about the researcher, making the movement between subject positions advocated in previous research somewhat more problematic. Although previous research has discussed the relative merits and challenges of taking up the position of 'insider' and 'outsider', our approach of 'geographical ignorance' illustrated how an interplay between these two positions can be worked out – allowing the development of trust, shared identity and credibility (in terms of farming knowledge) with interviewees, whilst leaving open the possibility to ask further probing questions and request finer detail without compromising this insider position.

Getting *onto* the farm is central to the success of such farmer interviews. At one level – and we offer this as a clear recommendation for broader research on farms – being *on* the farm allows a movement away from a myopic focus on the perspective of one, often male, principal farmer. The specific riparian focus here shows how the input offered by other farm members can both usefully alter the interview dynamic – taking on roles such as facilitator, translator, challenger or confirmer – in what may be considered hard to reach subjects, and may also offer their own understandings to a more detailed picture of these environments, which may offer even greater nuance and detail than offered by the principal farmer. Whilst such methodological approaches may help uncover more detail on riparian environments, they also reveal the relative lack of detailed understandings (certainly in comparison to terrestrial environments) and the associated lack of ownership taken by many in relation to rivers running across their farms. Moving around the farm may both allow access to micro-spaces and practices not discussed in static interviews and we would argue that this approach offers a valuable in-the-moment (in)articulation by farmers which can tell us much about their understandings and perspectives on riparian environments. Whilst our intention has been primarily to show the methodological *potential* here, it leads us also to reflect on how transcribed interviews extracts, such as those used here, might lose the “richness and messiness of talk and human experience” (Laurier, 1999, p.37) that

we have sought to capture. Whilst we share the view that such critiques of the singularly verbal should not lead to underplaying value of the in-depth (and in our case mobile) interview (Hitchings, 2012) we echo the call for methods which help us capture and, importantly, (re)present the non-verbal, which might include the use of geo-narratives (Bell et al., 2015) and video recording (Simpson, 2011). Whilst our interview approach of moving around highlights the importance of farmers' different embodied engagements with their land – such as that mediated via agricultural machinery – it is also important to note how new technologies and decision-making tools may be changing this engagement further (Rose et al., 2018).

4.3 Chapter Conclusion

This chapter introduced the first of three published papers presented in this thesis. It explores the methodological challenges of interviewing farmers about their lived experiences of, and perspectives on, rivers and riparian environments. The chapter notes how positionality is central to gaining access and suggest how performing the role of “geographical ignorance” can help simultaneously play the role of insider and outsider. It demonstrates the political climate within which interviews can be set and provides ways in which some of challenges faced within rural research can be overcome, by considering interview structure and how being on and moving around the farm can act as a way of encouraging farmers' narratives of these spaces.

In the next chapter I introduce the first of the empirical chapters, exploring the ‘good farmer’ concept and farmer's understandings and management of rivers, and how this management may or may not feed into the good farming identity.

Chapter 5

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5. Riparian environments and the concept of the ‘good farmer’

5.1 Chapter Introduction

The previous chapter introduced the first publication which explored the methodological issues of interviewing farmers about river and riparian environments. This chapter presents the second publication focusing on the ‘good farmer’ concept and how it might be applied to our understanding of farmers agri-environmental actions in river and riparian environments. This chapter draws upon the conceptual ideas of the ‘good farmer’ and Bourdieu’s concepts of habitus, field and capital that were introduced in Chapter 2. As previously noted, studies on the good farmer, to date, have been framed largely in relation to land management, with little consideration given to riparian environments which make up a significant part of the farmed landscape.

This paper was published in the *Journal of Rural Studies*. The paper was accepted for publication on the 15th February 2019 and published online on the 8th March 2019. It is available at:

<https://www.sciencedirect.com/science/article/pii/S0743016718311380>

I am the first author of the article, the second author is a member of my supervisory team and the third author is a director at the Ribble Rivers Trust. My contribution included data collection and data analysis, as well as drafting the paper and manuscript revisions. Their contribution included guidance concerning data analysis, discussion of the ideas arising from analysis, critical review and editing.

Journal of Rural Studies is an international peer reviewed journal, ranking in the first quartile of journals publishing in the field of geography, planning and development. The journal had a H index of 88 and impact factor of 3.301 in 2018. The paper is published in accordance with the Journal of Rural Studies author guidelines and the copyright conditions of the publisher allow for inclusion of the paper in this PhD dissertation.

The full citation for the article is:

Thomas, E., Riley, M. and Spees, J., 2019. Good farming beyond farmland–Riparian environments and the concept of the ‘good farmer’. *Journal of rural studies*, 67, pp.111-119.

5.2 Good farming beyond farmland – riparian environments and the concept of the ‘good farmer’

5.2.1 Introduction

There is a growing body of work which has fruitfully developed and applied the Bourdieusian-inspired notion of the ‘good farmer’ (Burton, 2004b; Burton et al., 2008; Riley, 2016a). Such approaches have offered the advantage of a more holistic framing which moves beyond a myopic focus on the economics of agriculture towards seeing the importance of other forms of capital (Burton, 2004b). The application of the good farmer concept has allowed nuanced explorations of diverse areas such as farmer-to-farmer relations (Sutherland and Burton, 2011), changes to farming practices (Sutherland and Darnhofer, 2012) and the handling of livestock disease (Naylor et al., 2018). A particularly fruitful discussion has arisen around farmland conservation and environmentally sensitive farming practices – considering how the greening of agricultural policy fits, or not, with good farming ideals and identities and the extent to which such environmental practices may be ‘culturally sustainable’ (Burton et al., 2008). This growing body of research has asked crucial questions relating to how the greening of agricultural policy in recent decades, and the associated promotion of environmentally-friendly farming practices, represent an (un)acceptable challenge to a farmer’s self-identity (Burton et al., 2008), the extent to which such changes in policy represent a change to the ‘rules of the game’ within the field of farming and whether such changes might signal a revision, over time, of what is thought of as ‘good farming’ (Sutherland and Darnhofer, 2012; Riley, 2016a).³⁸ This previous good farmer research has, however, been predominantly terra-centric, with an overwhelming focus on land-based practices and little consideration given to the riparian environments

³⁸ Using the lens of Stewardship, parallel research has considered how what is considered as ‘good’ stewardship has the potential to take many forms in relation to different aspects of the farmed landscape and also that these may change, albeit subtly, over time in relation to policy and wider societal changes (see Bieling and Plieninger, 2017).

which make up a significant part of the farmed landscape. Such an omission is surprising given that the management of riparian environments is recognised as providing a key public benefit (Buckley et al., 2012) and is increasingly becoming embedded in policy and industry standards (e.g. The European Union Nitrates and Water Framework Directives). The following paper considers how riparian environments on farms fit within notions of good farming. Utilising Bourdieu's ideas of capital(s), and the application of these ideas to the notion of good farming, the paper draws on in-depth qualitative interviews with farmers to explore farmers' engagement with riparian environments on their farm to consider how they feature in, and are shaped by, notions of good farming.

5.2.2 Riparian environments and farming

Whilst riparian environments and water management have featured within agricultural policy since the introduction of Agri-environmental Schemes (AESs) in the 1980s, it is in recent reforms to the Common Agricultural Policy (CAP) and the EU 2000 Water Framework Directive (WFD) that water has gained a more prominent position within agricultural land management in Europe. CAP provides a route through which the water management goals of the WFD can be met, with a key message being the issue of diffuse pollution from agriculture and its associated impact on water quality (for a more detailed discussion on water quality and UK agriculture see Holden et al. (2017)). More broadly, CAP, as implemented at the national level in the UK through Rural Development Programmes, includes the cross-compliance framework which puts forward statutory requirements relating to water protection and management that farmers must adhere to. Such requirements include minimising soil erosion and the establishment of buffer strips, along watercourses, to reduce pollution and run-off from agricultural sources. Non-compliance with these rules can lead to reduced CAP payments to farmers³⁹. The Environment Agency's (EA)⁴⁰ aim of achieving 'good' ecological status in at least 60% of UK water bodies by 2021 (Priestley, 2015) has brought the topic of water quality to the forefront of agricultural policy. As a result of increased pressure to improve the quality of watercourses, UK farmers have previously

³⁹ It is also important to recognise the relevance of various voluntary schemes (e.g. Countryside Stewardship and Catchment Sensitive Farming) and enforced regulation through designated areas (such as NVZ) that also influence agricultural management.

⁴⁰ The Environment Agency is a public body in the UK, sponsored by the Department for Environment, Food and Rural Affairs (DEFRA) which has responsibilities for environmental protection and enhancement.

been encouraged, and are now required⁴¹ (from April 2018), to reduce livestock access to watercourses⁴². From April 2018, DEFRA requires all farmers in England to follow rules ('Rules for farmers and land managers to prevent water pollution'⁴³) which specifically apply to farmers and are designed to help protect water quality. A key aspect of these rules is the management of livestock and their restricted access to watercourses – most commonly achieved through watercourse fencing.⁴⁴

As would perhaps be expected, given this regulatory background, the most voluminous academic literature relating to agriculture is that focused specifically on water pollution. Such work shows wide geographical diversity – with studies emerging from Illinois (McDermaid, 2005), Oklahoma (Popp et al., 2007), Scotland (Sang and Birnie, 2008) and Sweden (Bratt, 2002) – and several key findings emerge from this research which are relevant to the current study. Ward and Lowe (1994) for example, considered attitudes of dairy farmers in Devon towards water pollution and pollution control, grouping their sample into three: 'sceptical farmers' (17% of the sample), who were those who did not recognise that farm pollution was a problem; 'ambivalent farmers' (62% of the sample) who recognised pollution as a problem, but saw it as a problem *for* farming, not as a problem *of* farming, and believed that solutions should be provided by third parties external to the farm; and 'radical farmers' (22% of the sample) who saw pollution as reprehensible, who approved of pollution regulations and saw farmers as needing to take responsibility for pollution control. Ward and Lowe's (1994) analysis noted the importance of succession and noted that 'sceptics' were most likely, and the 'radicals' least likely, to be planning for family farm succession. Drawing on the same sample, Ward et al. (1995) set farm pollution

⁴¹ Whilst recently the new 'Rules for Farmers and Land Managers to Prevent Water Pollution' has meant that farmers must take reasonable precautions to prevent pollution from managing livestock through the erection of fences to restrict livestock access to watercourses, at the time of interviewing these rules (enforced on 2nd April 2018) had not been introduced and so some farmers continued to use watercourses as livestock drinking points.

⁴² Livestock access to watercourses has been associated with the deposition of faecal material directly into streams, bank erosion due to poaching and destabilization by stock, and the subsequent destruction of aquatic habitats (see Conroy et al., 2016).

⁴³ For more information on these regulations see <https://www.gov.uk/government/publications/farming-rules-for-water-in-england>

⁴⁴ This framework is similar to the 2014 Farm Bill (Agricultural Act of 2014) in the USA, which is set to be replaced by the 2018 Farm Bill currently in two versions - the Agriculture and Nutrition Act of 2018 in the House and the Agriculture Improvement Act of 2018 in the Senate. For farmers in the USA, water regulation is enforced by United States Environmental Protection Agency (EPA), although there is not one cohesive national water policy there are a number of governance and policy structures at the federal, state, and local levels that administer the regulations authorised by Federal Laws (the most important law concerning environmental aspects of water is the Clean Water Act).

incidents in wider social context, noting how the presence of non-farming ‘newcomers’ might be leading to a re-evaluation of environmental management in the countryside as well as farmers’ roles within it.

Focusing too on pollution control, Barnes et al. (2009) considered the recently introduced Nitrate Vulnerable Zones (NVZs)⁴⁵ through a telephone survey of 184 farmers (and associated workshops) and also developed a typology from their sample. They noted that following NVZ introduction, few farmers had made capital investments, especially in slurry storage and transportation, with many expressing negative views towards their introduction and challenging the science underpinning their designation. Using factor and cluster analysis, Barnes et al. (2009) classified farmers as ‘apathists’, ‘resistors’ and ‘multifunctionalists’. *Apathists* showed a general disengagement from the regulations and demonstrated little attitudinal shift in light of these regulations. *Resistors* demonstrated mostly negative attitudes to NVZs and disagreed that there were links between the health status of the farm and water quality, did not generally encompass any pro-environmental attitudes, but did seek additional information on the regulations. *Multifunctionalists*, by contrast, showed a greater level of acceptance towards the links between farming and pollution and demonstrated more proactive information-seeking in relation to the regulations.

Drawing on the case of New Zealand, Bewsell et al. (2007) examine the specific practice of stream fencing as a method of riparian management – something that is increasingly being introduced in the UK. In addition to benefits on water quality, this practice is thought to have ecological benefits of increasing river vegetation diversity (Amy and Robertson, 2001) and associated benefits for river fauna (for a review see Hansen et al., 2019). Bewsell et al. (2007) draw on qualitative interviews with 30 New Zealand dairy farmers to identify the factors influencing their decisions to adopt stream fencing. Farmers were classified into four segments based on the benefits they were seeking from watercourse fencing: (1) fencing was undertaken as the watercourse was a boundary; (2) fencing was used as stock control; (3) fencing was implemented for animal health reasons and (4) fencing was undertaken due to external pressure to conform to local government guidelines or industry codes of practice. It was concluded

⁴⁵ Nitrate Vulnerable Zones were introduced in reaction to the Nitrates Directive (91/676/EEC) which called for all EU countries to reduce nitrate levels in drinking water to a maximum of 50 mg/l.

that fencing streams was widely associated with stock management and had minimal association with environmental benefits such as water quality improvement.

Others have set the farmer-riparian environment relations within the wider discussion of the adoption of agri-environmental measures, echoing the general observations for land management, that uptake rates may increase when financial incentives are offered (Bratt, 2002) and when there is belief that farmers will benefit from their environmental actions (Posthumus et al., 2008). More recent research on riparian environments has echoed Siebert et al.'s (2006, p.327) observation for land management that "although economic reasons are almost always brought up in interviews, they are accompanied by other reasons and explanations". Macgregor and Warren's (2006) discussion of water quality, for example, observed a lack of connection made by farmers between on-farm practice and water quality issues. Through interviewing 30 Scottish farmers (including all farm types), it was noted that farmers viewed the terrestrial environment as more important than the aquatic environment as a result of farmers seeing themselves as food producers and viewed the environment through a production lens. Taking a more socio-psychological framing, Yeboah et al. (2015) considered landowner willingness to implement filter strips, and noted that participation is positively correlated with perceived on- and off-farm benefits of the conservation practice such as improvement in aesthetics and soil conservation improvements. Utilising a social psychological framework, and implementing a mixed methods approach of in-depth interviews and postal surveys, McGuire et al. (2013) sought to understand the mechanisms within a farmer's identity structure that allow them to balance production and environmental objectives. Farmers were offered performance tools to assess water quality by tracking pollutants and the data collected was shared amongst a farmer-led watershed group specifically set-up for the research. Results showed that the activation of farmers' conservation identity was achieved through the group setting stimulating a tempering of the productivist identity. They concluded that for conservation identities to be maintained they must be socially supported to allow the conservation identity to prevail over the productivist – a theme considered more explicitly in the good farmer literature to which this paper now turns.

5.2.3 The ‘good farmer’ and ideas of ‘good farming’

Although, hitherto, the work on farmers’ understandings and management of rivers has not been explicitly brought together with the concepts of ‘good farming’ and the ‘good farmer’, the literature in this latter area offers significant potential for thinking through these interrelations. In particular, Bourdieu’s ideas of capital, field and habitus – with a focus on “the two-way relationship between objective structures (those of social fields) and incorporated structures (those of the habitus)” (Bourdieu, 1998, p.vii) - provides an apt framing to offer a more nuanced account of the social and cultural contexts which iteratively shape what it is to be a ‘good farmer’ (Sutherland and Burton, 2011; Sutherland and Darnhofer, 2012; Riley, 2016b). Bourdieu’s attention to the (re)production of capital(s) – something he sees as central to social relations and social positioning – is especially useful for the discussion of farmers and rivers. As the review of existing literature in the previous section suggests, the financial aspects of riparian management – particularly as they relate to changing regulatory frameworks - have often been foregrounded in considering farmers’ engagement with rivers. Here, the Bourdieusian-inspired conceptual tools are useful in also taking account too of the importance of social capital (emanating out of, and reaffirmed by, social contacts), cultural capital (skills, knowledge and dispositions which may be gained by socialisation and education) and symbolic capital – that is, the reputation, status or prestige that these other forms of capital might underpin within a particular field. As parallel literature considering farmers and agri-environmental management has testified, there is a need to recognise that farmers’ activities and conservation preferences move beyond simply monetary considerations (see for example Raymond et al., 2016b). Within the application of Bourdieu’s ideas to the discussion of agriculture, it has been cultural capital which has been most often discussed. Cultural capital is seen to take three forms: *institutional cultural capital* (involving the certification of cultural competence, often associated with agricultural organisations); *objectified cultural capital* (associated with high status objects, which might include agricultural buildings and machinery (Sutherland and Burton, 2011) and high crop yields (Sutherland, 2013)); and *embodied cultural capital* (in the form of farming skills associated with, for example, crop and livestock management). Embodied cultural capital, Sutherland (2013, p.432) notes, is “socialized from childhood and allows the owner to have appropriate reactions to typical circumstances”. As such, the value of

objectified cultural capital is reliant on being actioned through the embodied cultural capital of the individual and Burton et al. (2008) note three necessary conditions which allow farming activities to exhibit cultural capital to other farmers: 1) such activities must require a skilled performance which can be differentiated as either ‘good’ or ‘bad’; 2) there needs to be an outward sign that an effective action has been performed; 3) these signs must be accessible (usually visually) to other farmers.

The good farmer literature has noted the importance of a farm’s appearance, with consideration given in particular to ‘tidy’ farms and landscapes (Burton, 2012), which relates not simply to aesthetic preference, but their connection to specific examples of ‘good farming’ such as the ‘correct’ application of fertilizer, pesticides, and the successful and skilled operation of machinery within tasks such as ploughing and cultivating (Burton et al., 2008). Such farming skill can be categorised into *motoric*, *mechanical*, and *managerial* (Burton et al., 2008; Burton and Paragahawewa, 2011). Motoric skill might include the safe and effective handling of machinery; mechanical skill includes the ability to set up and maintain this machinery for its correct use; and managerial skills are those which ensure that the ‘right’ tasks are performed at the right time. Burton et al. (2008) note a close relationship between skill and productivity levels and it is noted, accordingly, that AESs may fail to become culturally embedded because their aim – that is a ‘natural’ farming landscape which places emphasis on habitat (and therefore visual) diversity and complexity – are “antithetical to the outcomes of skilled conventional farming performances” (Burton and Paragahawewa, 2011, p.99). Burton and Paragahawewa (2011) apply these ideas to the specific case of farming practices and, more specifically, the desire to change these practices as part of agri-environmental policies. They argue that the most desirable and productive relationships within farming are those with other ‘good farmers’, judged on their levels of capital as described above, but note a caution when considering the move toward new managements targeted towards environmental goods, “the cultural capital lost or gained in changing farming activity contributes to the overall capital loss of the farmer” (Burton and Paragahawewa, 2011, p.98).

5.2.4 Methodology

The research presented in this paper is drawn from interviews with 42 farms (conducted over months in 2017 and 2018) based in a catchment in the North West of

England⁴⁶. The catchment extends across a geology of predominantly carboniferous rocks, flowing from upland acid moorland areas with peat and peaty loam soils to more deep loam in the lower catchments. These conditions result in predominantly grassland farming. As noted by Blackstock et al. (2010), managing resources that transcend aquatic-terrestrial boundaries such as watercourses, requires action on a catchment scale and so this research worked across a whole catchment in an attempt to create an informed view of the river from source to mouth. Our specific sample reflected the range of farming types in the catchment (6 dairy and sheep farms; 7 beef and sheep farms; 15 sheep farms; 11 dairy farms; 3 dairy, beef and sheep farms). Using the catchment area as a geographical boundary initial contact was made with the local Rivers Trust to gain access to the first wave of respondents and chain-referral sampling (Heckathorn, 2002) was used to locate subsequent respondents. Farmers interviewed represent both different farm types, as well as a variety of locations across the catchment (higher up along tributary rivers and also those along the main river) - this includes those with land along the main river channels (40% of the sample), those along tributary rivers and smaller becks/brooks (60% of the sample). Interview questions focused on farmer perceptions and understandings of riparian environments on their farm and what management practices (both voluntary or involuntary) they and/or other farmers were adopting in relation to water (this includes flooding, water quality improvements, reducing pollution, and indirect management, for example fencing off rivers). All interviews took place on the farm, with several interviews having more than one participant (usually a farm worker or a farmer's partner). Interviews lasted between 1 and 4½ hours, and where possible took a walking interview approach which helped to gain access to details on specific environments or conservation-related features. Interviews were recorded using a handheld voice-recorder, transcribed verbatim and the transcripts were coded manually following the framework laid out by Jackson (2001). Several overarching themes were identified using this thematic coding and are discussed in the following sections.⁴⁷

⁴⁶ At the time of data collection the catchment was not in an NVZ however some farmers had received advice through CSF regarding voluntary action to reduce diffuse water pollution from agriculture to protect water bodies and the environment.

⁴⁷ To maintain anonymity, farmers are labelled by age and location in the catchment using the following codes: Age – A(20-35), B(35- 50), C (50-65), D(65+), Location – X(Small streams and ditches), Y(small tributary rivers/streams), Z(Main rivers).

5.2.5 ‘It’s technically ours but...’ – ownership and river responsibility

Within interviews, two issues were most readily pointed to as shaping farmers’ engagement with riparian environments (and rivers in particular) which, in turn, shaped their ability to contribute to good farmer status: their (im)materiality and their associated structures of ownership. Although river channels were relatively static on many of the farms considered, changing water levels, erosion (and deposition) and flooding echoed Bear’s (2013) observation for the sea that “boundaries are drawn on maps to determine where certain activities may or may not take place, but the materiality of the space does not necessarily respect the boundaries which are, in many ways, imaginary”. The three following extracts come from such interview discussions around ownership and responsibility:

“Yes, it’s technically ours but they [EA] put the onus onto the farmer and then, you know...if we set to, to do anything, they jump on us don’t they? So, it’s not really ours, we can’t do anything with it if we wanted to” (Farmer 4, D, Z)

“I would like to think it’s like maps and to the middle of the river, but we all know it isn’t really, it’s up to edge, the actual bit you can stand on, or if there’s a fence, up to there [...] because at the end of the day past the fence I can’t use it so there’s no point in calling that bit mine” (Farmer 24, B, Y)

“Well I think we all see it as stopping at the edge of the river, don’t you? And the river belongs to the river authority and the other bit belongs to the guy on the other side, erm [...] We had to get the river authorities permission to re-do the banks. We are fine at the base of the bank, but you can’t touch anything on it even though technically it is our land but because the bank is protecting the floodplain [...] and further down and that’s what it’s there for isn’t it? But when we signed up to the scheme I accept that yes it is my land but I have to adhere to whatever rule is set by the EA for example, you know, but before when you aren’t involved in the schemes, then that was the annoying thing we still had to seek permission to do the river banks,

but now we are part of the scheme, if they want to do something, they can” (Farmer 13, C, Z)

At a fundamental level, the quotes highlight a recurring theme in interviews – a general confusion over who owns rivers and the associated, but distinct, issue of who has management responsibility for them. The responses showed that there was a historical uncertainty over ownership, with farmer 24 being one of the few who could offer the legal definition of ownership – that landowners own watercourses that run within their land, and up to the centre of land on the boundary⁴⁸. Lying deeper than this, however, each of the responses highlighted how the changing regulatory framework has served to add a layer of uncertainty over who was responsible for specific managements. Farmer 4, for example, referred to how his objective of “saving my soil” was tempered by a concern for “being told off for messing about near the river”, highlighting the fundamental challenge of “technically” owning the river but being uncertain over the appropriate management (cf. Ward and Lowe, 1994). The extracts highlight how more recent interventions have not only increased uncertainty, but – as was the case for farmer 24 – the erection of watercourse fencing has served to redraw, symbolically at least, the boundaries of responsibility.

These particular material aspects of rivers, and the structural issues around ownership, accordingly shaped how they were framed by farmers. Previous discussions, particularly relating to conservation and farming, have noted the distinction farmers draw between ‘productive’ and ‘non-productive’ habitats (see Macdonald and Johnson, 2000; Raymond et al., 2016a; Riley, 2016a), and how the latter may be more likely to be entered into conservation agreements than the former (see Wynn et al., 2001). The interviews revealed that rivers and watercourses historically fell somewhere between the two positions – not being symbols of production (after Burton et al., 2008) *per se*, but playing a role within production through providing a water source for livestock as well as through land drainage systems which has improved and maintained production on several of the farms interviewed. As such, rivers were often tangential, rather than having a direct connection to the symbols of good farming that have been noted in previous research. On many farms, drainage systems had not been altered for several years, whilst the recent encouragement to avoid using watercourses

⁴⁸ For the UK perspective see: <https://www.gov.uk/guidance/owning-a-watercourse>

directly for livestock drinking has seen them become more distanced from capital-generating activities. As such, whilst rivers were generally viewed, by farmers, as a positive feature of farms in the past, these recent regulatory changes have resulted in less positive opinions amongst the farmers interviewed. This progressively tangential association with capital generating activities meant that most farmers were amenable to erecting fences alongside watercourses – an issue discussed later in the paper – but this was prompted not in terms of its environmental benefits but in relation to how it allowed, symbolically at least, the boundary of responsibility to be redrawn or confirmed.

Intersecting with the issues of ownership and rivers' materiality is the issue of 'tidy farming'. As Burton (2012) notes, preference for tidy landscapes is not simply one of aesthetics, but is also tied to specific examples of 'good farming' and 'correct' management. Such insights are arguably set within a wider, masculine, farming identity associated with the 'control' of nature (Saugeres, 2002). Rivers offered two levels of control which posed a challenge for farmers and contravened their idea of tidy farming:

"Somebody said, "water will fetch a load of nutrients", yeah but it'll fetch a load of rubbish as well... my grandad used to spend a week, carting all the rubbish into a heap and having a bonfire, every year, sometimes more than once a year [...] And having a bonfire, used to take him ages [...] So I think for a lot of us that was as big an issue as anything – was rubbish that came with the flood water and we have to use valuable time to fix it back again." (Farmer, 10, B, Y)

"The River board used to come and tell you what to do, well they actually used to maintain the river banks if they thought it needed doing and wouldn't charge you. But they have never done our land because we kept it tidy. But now it's all us and if we do anything within I think 3m we have to notify them legally, I think it is totally wrong." (Farmer 7, D, Z)

The extract of farmer 10 notes both the unpredictability and the untidiness of the river – a theme common across the interviews. Not only did this relate to the debris specifically, but the wider challenge of managing land near rivers, with the possibility of flooding, bank erosion and changing water courses all severely impacting on

farmers' ability to plan and manage the adjacent land – that is, to demonstrate the motoric or managerial skills (cultural capital) which would allow them to enhance their good farmer status. Farmer 7 notes the intersecting issues of day-to-day management control and hints at two issues. First, and noted in previous research (Thorne, 2014; Holstead et al., 2017), was the theme of dredging rivers – that is the underwater excavation and removal of riverbed sediment – and second, the changing regulatory framework, referred to earlier, which has reframed farmers' positions and responsibilities. For those farmers old enough to remember the more widespread practice of dredging, it sat more comfortably with the ideals of good farming, being an active practice which could result in less untidiness if the river flooded.⁴⁹ Alongside this, the material dredged from rivers, interviews reported, was often placed in gateways and on livestock tracks to reduce poaching – a practice which elevated a farmer's status not only in relation to the subsequent tidy appearance of the farm, but also allowing them to express their embodied cultural capital (skill). As such, the discouragement of dredging – born out of ecological concerns⁵⁰ - was viewed by several farmers as an end to one of the few ways that river work could allow capital accumulation. An important consequence of this, is that farmers reported a receptiveness to the erection of watercourse fencing – not simply to control livestock (cf. Bewsell et al., 2007), but in creating a visible boundary between their managed land (which is both an example of objectified cultural capital and on which embodied cultural capital is inscribed through management) and the unmanaged (and hence non-capital generating) river.

Hinted at in the interview extracts is that farmers' direct engagement with rivers is relatively infrequent and, in some cases, becoming more infrequent. This infrequency had a twofold implication for the role of rivers with farmers' good farmer identity: first, the distinctive knowledge developed (or not) in relation to rivers and, second, their associated role in developing farming skill. As Stuiver et al. (2004) note, it is the continuous interaction between mental and physical labour and the continuous

⁴⁹ Several respondents expressed the view that the cessation of dredging had increased the frequency and magnitude of flooding.

⁵⁰ Dredging is known to impact fish populations through the damage and disturbance of fish spawning grounds, whilst disturbing the volumes of suspended sediment and dissolved oxygen within the water (Manap and Voulvoulis, 2016; Wenger et al., 2017). Alongside ecological disadvantages, the EU Habitat and Water Framework Directive has meant the process of dredging has been discouraged – although dredging has not been banned by EU legislation, member states are prohibited from undertaking dredging if it disturbs certain habitats which can then lead to a breach of the EU Water Framework Directive.

(re)interpretation and evaluation of actions which create an experiential form of knowledge that farmers draw upon, and which Burton (2004b) notes is central to the good farmer identity. The continuous and repetitive engagement with their land through past production, was distinct from their knowledge development for rivers. As such, rivers did not allow the development of specific skills in the same way as land and, significantly, their shifting nature did not allow the visible demonstration of skill which has been seen as central to the good farmer identity.

“Well we don’t really go down to the river, because it’s quite steep to it, so for us we don’t really notice it’s there and just kind of carry on like normal”
(Farmer 9, A, Y)

“We have a look at what damage has been caused [laughed] ...I think last time, [...] we put some lengths of tree stump in the side to stop the erosion, there was five of them and then it took half of them with it – so what we did didn’t stick around for long” (Farmer 3, A, Y)

For these farmers, the shifting nature of the river meant any demonstration of management or skill was often only short term and often challenged by flooding. As Sutherland (2013, p.432) notes, it is important that skill is accessible (usually visually) to other farmers, in order to become symbolic capital and the moving surface of rivers meant that they did not offer the capacity to embody or demonstrate those skills in the same way as land. Whilst some direct engagement was reported by farmers in the past, including the reconstruction of river banks following flooding and erosion, or constructing river crossings, these were presented as subsidiary, and in service to, the management of their land – such as ensuring field size and shape were maintained or allowing easy access for livestock and/or cultivation. Farmer 3 makes reference to the practice of using felled and fallen wood to try and stop erosion damage on the river bank and his quote is reflective of the wider sample which noted that management of wooded areas adjacent to rivers is an increasingly more passive aspect of farm management. Whilst the historical literature suggests trees were actively coppiced and used for fuel (Watkins, 2014), most farmers suggested that where trees existed next to rivers they were only tended to if they started to obstruct river flow or encroach on adjacent field

practices. This broad lack of direct attention to trees offers potential for conservation-centred management. Whilst existing woody debris from these trees brings a host of potential ecological advantages (Krause et al., 2014), their conceptualisation by farmers as non-productive habitats makes them potentially fruitful sites for the recent move toward tree planting along watercourses – something returned to later in the paper.

5.2.6 ‘This business is about having a win-win...’ – rivers and conservation

The most obvious example of farmers’ engagement with the environmental protection of rivers was through the erection of fences alongside watercourses. As noted in the previous section, farmers’ motives were not, primarily, driven by environmental concerns but more pragmatic motives of instating a ‘tidy’ boundary to their land which in turn served as a metaphorical boundary relating to responsibility. This style of adoption may be seen as more “passive” or opportunistic (after Morris and Potter, 1995), whereby engagement is accepted on the basis of not disturbing the existing pattern of management rather than being driven by environmental concerns. Several farmers expanded on their entering into (or not) watercourse fencing and these offer useful insight for considering their intersection with good farming:

“If there's a fence there, it makes digging your ditches out hard, and if you don't they'll soon fill up and eventually water will end up on the field and be a soggy mess, and there'd be no point the ditch being there. At the end of the day ditches have been in farming since day dot, they didn't put them in way back when for the fun of it, they do have a purpose and if you can't dig them every say 8 years or so, it'll be a pain.” (Farmer 18, D, X)

“That end of the field is quite a level field and then it drops down to the river and that there is the main bit of shelter really, for the livestock on it, it would be taking away you know, the best bit of shelter. So, we said no to doing anything [fencing] on that bit.” (Farmer 31, B, X)

“[We are] getting the fences, and the sheep don't get into the river and don't get washed away. Yeah, somebody else has paid for the fence it's this business about having a win-win. It makes my life easier, no animals lying

in the ditch, I can check them easy. Nobody likes seeing a dead sheep in a ditch.” (Farmer 30, B, Y)

Taken together, the examples illustrate how farmers still prioritised their production (cf. Burton et al., 2008), but illustrate their subtle variations within this, with the demonstration of the three positions of refutation, accommodation and acceptance. Crucial to the farmers’ level of engagement is the particular positioning of their farm in relation to the river. For farmer 18, for example, the majority of his land was traversed by open ditches which fed into a river which crossed only a small part of his land. His reasons for refutation, therefore, focused on the ability of ditches to be free-flowing in order to allow his land to remain productive – or at least to not become waterlogged. Here, he drew together the discourses of historical continuity with managerial skill (embodied cultural capital) as a reason not to commit to watercourse fencing. For farmer 31, his approach was one of accommodation, albeit quite piecemeal. For the majority of land, he undertook fencing, but refused on an area of more sheltered land. Here, his concern for livestock – that is, objectified cultural capital – was prioritised over the aforementioned advantages that fencing might offer. For farmer 30, who was next to a main river, there was an acceptance of the fencing of the river. Whilst his actions – fencing all watercourses on his farm – are the most positive scenario for river management, he too was driven by a primary concern for livestock management and production. Moreover, scenarios such as this offer the further concern that river fencing may, inadvertently at least, impact on other environmentally sympathetic managements on the farm. As farmer 11 (C, Z), a similar adopter across all his land, explained: *“You can graze the fields a bit tighter and you have more control as the sheep can’t go across the banks and go walkies”*. For our wider understanding of good farming and water courses, such examples highlight the potential conflict between environmental priorities - that is, improving river quality and protecting the aquatic environment might inadvertently lead to tighter grazing and increasing stocking rates which, in turn, might have a negative impact on grassland habitats on the farm.

Whilst the aforementioned examples were relatively recent engagements with watercourse fencing, others in the sample had longer-term experiences and offered alternative viewpoints on the connection between good farming and watercourse fencing:

“So about 10 years ago now, they wanted us to fence the river off, [...] I wouldn't let them do it, because they said they'd fence it for free, but I had to maintain it but I said when the river floods, it'll come down and wash the fence out, but they said oh no it shouldn't do..... That is a wooded area, and that used to be grazed and that was about 10 years ago and the chap who owns that land at that side, fenced it off and planted trees, there's two examples there. That up there used to be like this, and that's what it would be like now. [...] it's full of nettles and weeds... there's a place [nearby] and it's just been left it's an absolute disgrace [...] that's what the countryside will look like if you don't have farmers.” (Farmer 7, D, Z)

Partner 7: “the fenced area on the other side started sprouting up this stuff [Himalayan balsam] and its now spread to us and that doesn't look good on us does it harbouring this god-awful plant, it's not a nice plant, but if you let cows and sheep graze the banks then it won't grow will it?”

Farmer 7: “They don't grow where sheep graze, simple really!”

At one level, the extracts highlight that the identity-enhancing value of neat and tidy boundaries may become negated over time as what is seen as bad farming practice – the presence of unmanaged land containing weeds – become visible to farmers (and others) and, in the case of farmer 7, began to encroach on their land. Not only do such examples echo the earlier point that longer-term symbols of good farming – those associated with active, productive-orientated use of land – persist in the judgement of new practices, it also highlights the value of recognising the longer time horizons of farmers' field observations. Whilst the debates in relation to good farming and its alignment to conservation practices have noted the importance of taking on board farmers' past experiences as a source of relevant knowledge (Riley, 2008), these examples highlight that farmers can also monitor the longer-term consequences of environmental-orientated managements. More fundamentally, they highlight that although conservation ideals have the potential to dovetail with, or at least not disturb, pre-existing notions of good farming – and hence create a 'win-win' situation for farmers and environmental regulators – there remains the potential for these to shift over time, often in unanticipated ways, into examples of bad farming.

5.2.7 ‘It is a river we’ve all got to look after’ – rivers and changing rules of the game

The previous sections highlight that for many of the farmers spoken to, direct engagement with rivers had historically been sporadic, for some had effectively ceased with the more recent fencing off of rivers, and for most was dictated largely by how riparian environments intersected with specific land and livestock management. Despite these somewhat disconnected and distanced engagements with rivers it was also noted, however, that farmers’ relationships with rivers may change over time. The two following quotes are illustrative:

“If we get 24 hours of that real heavy rain I know that’s as much as we can take, anymore and we’ll have a shift round of things [cattle], [...] we’re quite good now at knowing what we can take [rain] and when to do something [move cattle], when I first started here, I admit, it wasn’t my strong point.” (Farmer 40, D, Y)

“When it floods we used to see everything come down it, all sorts, tyres, animals, washing machines, name it, I’ve probably seen it, but now you won’t see any of that, we might moan and groan a bit but generally the message has got through to majority of people that it is a river we have all got to look after.” (Farmer 11, C, Z)

Taken together, the examples highlight not only how farmers’ understandings of riparian environments may change over time, but how too they may learn to work *with* rivers, rather than just seeking to ‘control’ them (see Eden et al., 2000). Although, for farmer 40, his primary driver is the wellbeing of his livestock, he highlights how he has accumulated, over time, an increasingly sophisticated understanding of the patterns of rainfall and river flooding and adapted their farm management accordingly. Farmer 40 echoes the sentiment of others interviewed - that observation and successful timing is a key part of farming close to rivers and is something that can only be achieved over a long-term period. Important to farmer 40’s observation, is his length of residence on the farm enabling him to develop spatially-specific rules, and the associated skill (embodied cultural capital) of working with the river and managing his land and cattle (objectified cultural capital) effectively. Although not always articulated as overtly as this farmer, such an

approach was found to be common amongst those farming adjacent to major rivers. In such instances, working *with* the river has arguably become an extension of the embodied cultural capital historically associated with farmers' abilities to understand the correct time to deploy specific practices such as seed sowing, fertilizer application of cutting grass (see Burton, 2004) with the perceived increase in frequency and severity in rainfall and flooding meaning many farmers have had to employ and refine these skills more often.

The change noted by farmer 11 relates to a more fundamental consideration of rivers which offers useful insights for our understanding of the good farmer and water. First is a recognition of how changing regulations on watercourse use and water pollution have brought about changes that are *visible* to farmers. The observation of less litter coming on to their farm from the river – and the positive associations with the notion of tidy farming noted earlier in the paper – stands in contradistinction to land management associated with AESs, where a common criticism is that farmers are often unable to observe discernible outcomes of their changing management practices (Burton and Paragahawewa, 2011). Second, and following on from this, is a recognition of farmers' responsibility within this. Although farmer 11's observations centre on river litter, rather than the ecological health of the river *per se*, and the somewhat more passive 'management' of avoiding tipping in the river rather than more proactive management aimed at embracing river health, they illustrate that such a baseline might be becoming part of being a good farmer. This baseline of becoming a good farmer is facilitated by the importance of being 'good neighbours' (Sutherland and Burton, 2011). As noted earlier, rivers transcend boundaries connecting farms (not necessarily in close proximity) and so creating a narrative of the farm management upstream. Farmer 11 touches upon the fluid nature of rivers connecting farmers, and so connecting farmers responsibility towards river health. This is echoed by farmer 3 - "*in a way it would make mine [efforts] pointless... erm... especially if it were someone upstream of you, putting things they shouldn't into the brook*". The farmers interviewed noted their increasing need to be aware of the consequences of their management and regularly pointed to importance of 'looking good' to neighbouring farmers as they "*didn't want to be letting the side down*" (Farmer 3, A, Y) and ultimately effecting their status as a 'good neighbour' and 'good farmer'. Such observations echo those studies which have noted the crucial importance of pre-

existing trust to potential future collaboration between farmers (Raymond and Robinson, 2013; Riley, 2016a) and extends the work of Sutherland and Burton (2011) in noting that ‘good neighbour’ status is not solely dependent on the sharing of production-related resources but also the joint contribution towards environmental health.

Whilst avoiding tipping into the river might be seen as a more passive form of engagement by farmers, and can be directly linked to the close policing of river pollution in recent years, there was evidence of changing understandings of responsible river management intersecting with wider structural and policy changes which have served to alter farmers’ relationships with rivers:

“The climate has got wetter and wetter, and it really is getting hard work now, so really, we are sort of embracing it now and we’re going the whole way, and turn it all to a wetland...it has given us more time when the river comes up, it doesn’t flood as big as it did do, or it has to be a really big flood before it comes over the bank [...] also our rainfall has increased [...] so it is becoming un-farmable.” (Farmer 13, C, Z)

“I mean a lot more fertiliser use, well there was, happen a lot more folk have cut down on it now though, I mean, folk used to just ladle it on and grass would grow but folk are more you know, they think more about it now and work out how much they need with soil sampling that sort of thing, you know.” (Farmer 2, D, Z)

As Naylor et al. (2018) note, there are a myriad of changing, and sometimes competing, factors which shape how farmers may view their practices, and the extracts above illustrate how these intersecting factors may be reshaping how rivers sit within notions of good farming. Farmer 13 represents a particular case of how the perception that the climate on his farm is getting wetter and the rivers flooding more frequently⁵¹ can be taken, to some extent, as evidence of what Bourdieu (2000) refers to as a crisis event in that the land is “becoming un-farmable”, with the outcome being to enter the land into a wetland agreement in an AES. The intersection of changing water policy

⁵¹ Although beyond the intended scope of this paper, there is debate and uncertainty around whether flood frequency or severity has increased (see Kundzewicz et al., 2018)

and structural change is seen in the more widespread example of fertilizer usage discussed by farmer 2. More judicious use of fertilizer was reported on by all farmers spoken to, and this was reported as resulting not only from an increased concern over pollution, but also in intersection with both the rising costs of fertilizer and also the availability of expertise in areas such as soil testing. Alongside the case of farmer 13, farmer 2's example highlights how structural and policy changes may be reshaping farmers' understandings of riparian environments and the managements that they undertake in relation to them. Moreover, such cases accord with the suggestions in previous research, that changing economic fortunes of agricultural production may be resulting in a weakening of production-only symbols of good farming (Sutherland, 2013). Important to note is that such changes, from the sample of farmers considered in this research, is not a replacement of production-orientated symbols of good farming, but an evolution of them such that production at all costs – exemplified in farmer 2's reference to the previously indiscriminate and heavy applications of fertilizer – is developed into skilful, timed and financially prudent demonstrations of their skill.

5.2.8 Conclusions

This paper has considered farmers' understandings of rivers and riparian environments and examined how these sit within notions of good farming. Whilst the paper echoes previous studies which have observed some confusion amongst respondents relating to both ownership of, and responsibility for, riparian environments (Popp et al., 2007; Barnes et al., 2009) it has also observed a change in the two decades since Ward et al.'s (1995) study – with farmers being acutely aware of their responsibilities in relation to avoiding pollution. Clear, and strict, regulatory control has meant that all farmers were aware of their responsibilities to not, knowingly at least, pollute rivers. Drawing in ideas of good farming to this discussion allows us to consider how this may be translated into more proactive managements to enhance river health, as well as how new regulations relating to watercourses may become embedded. The paper has seen that riparian environments are distinct, in the eyes of farmers, from their land, in that ownership structures and the materiality of rivers mean that they neither stand, overtly, as objectified cultural capital, nor allow farming skill to be displayed upon them – that is, farmers are unable to gain any obvious prestige through their direct

management of riparian environments.⁵² Indeed, the ability of rivers to lead to ‘untidy’ farming – through their unpredictability in terms of flooding and associated debris – means that they might often stand as the antithesis of good farming. This intersection offers a potential positive for organisations looking to promote river health-enhancing activities – such as watercourse fencing considered here – where farmers’ often sporadic engagement with rivers, their relatively marginal position in informing good farmer identity, and their desire for more clean lines and tidy farms, may allow a ‘win-win’ scenario that benefits river health, as well as according with a good farmer identity. Furthermore, for some farmers this may allow them to navigate the complexity of regulations by (re)drawing a simple – literal and symbolic – boundary of what they consider to be their responsibility.

Important to note, however, is that these potential ‘win-win’ situations are case-specific and may be precarious. The evidence within the sample here is that such fencing is not primarily valued through its benefit to rivers, but how it dovetails with pre-existing symbols of good farming and capital-generating activities such as the aforementioned tidy appearance, and allowing the efficient management of capital-generating livestock. Accordingly, when river fencing comes into conflict with this – such as potentially fencing off sheltered land or bank grazing considered to be valuable – engagement with fencing may be weak or partial. Alongside this, an observation relevant to those administering river fencing is that longer-term, more unanticipated, consequences may arise, with longer-term adopters of watercourse fencing seeing the aesthetic, symbolic and practical value of fences being eroded, at least partially, through the negative associations of weed spread and an unmanaged appearance.

Our findings here are relevant not only to understandings of river management – but also the concept of the good farmer. Our observations point to the value of considering farm habitat and farm feature-specific aspects of good farming – that is, that different aspects and spaces of the farm have different capital-generating (and displaying) potential. Therefore, it is important to understand that having high levels of capital, both economic and symbolic, in one area might allow greater flexibility in less capital-rich aspects or activities – such as watercourse fencing – in others. As that literature considering landscape stewardship amongst farmers concurs, it is rarely a simple

⁵² Although it is difficult to quantify and/or isolate, it is possible that the presence of watercourses may contribute to the overall economic value of land if it sold.

dichotomy of production versus environmental perspectives that are brought to bear on their agri-environmental practices, but an intersection of these which create place-specific, and potentially habitat-specific, dispositions which shape how farmers manage these environments (Raymond et al., 2016a; Bieling and Plieninger, 2017). Alongside this, is a recognition of the evolution of symbols of good farming, and two insights can be drawn from our case here. First, is that the changing regulations on straightening of river channels and perceived increase in the frequency of flooding has brought a discernible trait amongst farmers of working *with* the river – that is, adjusting expectations and management to accommodate watercourses, rather than seeking to control it. Here there is a potential, perhaps, to engage more farmers into AES options such as floodplain planting⁵³ (woodland or grassland) as although there is some capital loss as production on land adjacent to rivers goes down, capital may be gained through developing and demonstrating the managerial skill of knowing and predicting the best timing and duration of particular managements. Second, and perhaps the most overt example of this potential change to the rules of the game, can be seen in fertilizer use. The significant shift farmers experienced in relation to pollution policy (and its association with inorganic fertilizer use), placed alongside rising costs of fertilizer, has seen a greater nuancing of farming skills and a re-defining of symbols of good farming. Whilst historically ‘production at all costs’ has seen good farming associated simply with heavy applications of fertilizer, farmers now reported a more nuanced and selective approach, where skill is demonstrated not just through application, but through appropriate site-specific levels and timing. Such examples remind us that although production-orientated symbols of good farming remain clearly evident, policy interventions and structural changes have the potential to subtly alter these over the longer-term.

Our observations in this paper bring forward potential areas for future research. Most obvious is a need for more longitudinal research which traces further the evolving relationship between farmers and riparian environments. We have noted, here, some of the histories to this relationship and future research could usefully consider how new policies (re)shape this association, similar to that undertaken by Riley (2016a) in

⁵³ Potential benefits of tree planting include increasing water quality, stabilising river banks, allowing a buffer zone between farmed land and rivers and offering potential shade which may be beneficial to aquatic animals (Johnson and Wilby, 2015).

relation to terrestrial environments. This research might be fruitfully extended to consider monitoring these changes with the use of riparian and ecological surveys and through taking advantage of recent developments in remotely sensed data (cf. Bizzi et al., 2016). As previous research has noted, the relationship between multiple stakeholders, including scheme officials, advisors, NGOs and the general public are crucial to successful and holistic environmental management (see Bieling and Plieninger, 2017), more research is needed to consider how these different perspectives can be brought together in developing future managements and the protection of riparian environments on farms.

5.3 Chapter Conclusion

This chapter introduced the second published paper in this thesis. Using the Bourdieusian-inspired notion of the good farmer this chapter observes how riparian environments' (im)materiality, unpredictability and untidiness limit their ability to generate and exhibit capital(s) and how an infrequency of direct engagement with rivers – arguably reinforced through recent regulatory changes on what farmers can and cannot do to riparian environments – mean that farmers have often not developed skills and capitals associated with rivers in the same way that they have for land. These observations are used to consider farmers' engagement with more recently introduced river health-enhancing managements and to consider whether, when taken together, we might be witnessing a shift in how riparian environments contribute to good farming and good farmer status.

In the next chapter I introduce the final empirical chapter, bringing together the conceptual discussion of the good farmer developed in Chapter 5 with the literature on farming knowledge(s) to consider how farmers utilise and share knowledge, and how knowledge can gain credibility, salience and legitimacy in different contexts.

Chapter 6

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6. Farmers’ social relations and knowledge sharing practices in ‘Catchment Sensitive Farming’

6.1 Chapter Introduction

The previous chapter introduced the second publication exploring the ‘good farmer’ concept and how it aids our understanding of farmers agri-environmental actions in river and riparian environments. This chapter presents the third publication, which considers how farmers engage with, utilise and share knowledge through a focus on the Catchment Sensitive Farming (CSF) initiative in the UK. This chapter draws together the aforementioned Bourdieusian-inspired notions of good farming with the broader literature on knowledges to consider how different knowledges gain credibility, salience and legitimacy in different contexts.

This paper was published in the *Land Use Policy*. The paper was accepted for publication on the 3rd October 2019 and it is available at:

<https://doi.org/10.1016/j.landusepol.2019.104254>

I am the first author of the article, the second author is a member of my supervisory team and the third author is a director at the Ribble Rivers Trust. My contribution included data collection and data analysis, as well as drafting the paper and manuscript revisions. Their contribution included guidance concerning data analysis, discussion of the ideas arising from analysis, critical review and editing.

Land Use Policy is an international peer reviewed journal, ranking in the first quartile of journals publishing in the field of geography, planning and development. The journal had a H index of 93 and impact factor of 2.62 in 2018. The paper is published in accordance with the Land Use Policy author guidelines and the copyright conditions of the publisher allow for inclusion of the paper in this PhD dissertation.

The full citation for the article is:

Thomas, E., Riley, M. and Spees, J., 2019. Farmers’ social relations and knowledge sharing practices in ‘Catchment Sensitive Farming’, *Land Use Policy*

<https://doi.org/10.1016/j.landusepol.2019.104254>

6.2 Knowledge flows: Farmers’ social relations and knowledge sharing practices in ‘Catchment Sensitive Farming’

6.2.1 Introduction

Better understanding farmers’ knowledge(s) and learning processes is a central goal in the move towards more sustainable agricultural practices. Accordingly, there is now a growing body of social science research which seeks to uncover the nature and complexities of farmers’ knowledge – both relating to how they understand their farm environments as well as the potential knowledge conflicts that may arise when farmers come into contact with other, conservation-focused, environmental knowledges (Reed et al., 2010; Riley, 2008). Recent attention has moved beyond a focus on individual farmer knowledge toward a call to understand more collective forms of environmental management and farmer-to-farmer knowledge relations. This research agenda has been given fresh impetus through the recent review of the Common Agricultural Policy (CAP), which has emphasised the need for more collective modes of working which “encourage farmers to deliver a significant enhancement of the quality of the environment at a larger scale and in a measurable way” (European Commission, 2018, p.78). This suggestion comes out of a realisation that the founding premise of individual, farm-level, agri-environmental measures may be insufficient to achieve their environmental objectives – both because many habitats and features of environmental value may span ownership boundaries and also, particularly relating to riparian environments, the actions of one land manager within a catchment may impact upon those within another part (Lawton et al., 2010; McKenzie et al., 2013).

In progressing our understandings of more ‘joined-up’ approaches, there have been reviews of the current landscape-scale environmental scheme options open to farmers (Franks, 2019), hypothetical considerations of what future attempts at collaborative management may look like (Franks and Emery, 2013), and a consideration of what barriers farming histories and pre-existing farmer relations may play in impeding the facilitation of these developments (Riley et al., 2018). Whilst such studies have recognised the importance of fostering more landscape-scale interaction between farmers and the need to encourage farmers to learn from, and take into consideration, the knowledge of other farmers in their region, there is relatively little empirical research on how such attempts may play out in practice – with Stock et al. (2014,

p.412) noting the pressing need to pay “greater attention to the micro/macro relationships between actors at and across different scales”. Drawing on in-depth interviews with farmers involved in the Catchment Sensitive Farming (CSF) initiative in the UK - a government-led initiative focusing on ‘priority catchments’ which utilises catchment steering groups and designated ‘catchment sensitive farming officers (CSFOs)’ in an attempt to enable farmers to improve water quality and health on their farms⁵⁴ - the following seeks to be one of the first to attend to this current gap in our understanding. Running since 2006, CSF is part of the national response to meet the requirements of the Water Framework Directive (WFD) and is currently in its fourth phase (which runs until 2021).⁵⁵ The initiative aims to raise awareness of river and water health, with a specific focus on reducing pollution, and had an overarching focus on long-term behavioural change with interested farmers and participation is voluntary. To fulfil these aims, CSF offers farmers free advice and access to grants for infrastructure⁵⁶ that will benefit water quality (for example, yard works for clean and dirty water separation). The grants were up to £10,000 per holding paying 50% of the costs of the implemented infrastructure. This paper considers, if and how these farmers engage with, utilise and share knowledge within this initiative and examines the importance of social relations and social contexts to this.

In reviewing the broad literature on the interface between scientific and other forms of understanding relating to the environment, Raymond et al. (2010, p.1769) caution that the past tendency to use simplistic, and often dualistic, terms for different types of knowledge (expert-lay; local-scientific etc) “does not sufficiently take into account the way individuals learn, make sense of new information, or the social contexts that influence how people understand something” – and two aspects of this assertion are important for the context of this paper. First, although there is a large body of work

⁵⁴ <https://www.gov.uk/guidance/catchment-sensitive-farming-reduce-agricultural-water-pollution>. For a detailed report that describes the purpose and activities of CSF covering Phase 3 of the project from April 2011 to March 2014 see <http://publications.naturalengland.org.uk/publication/6312755155959808>.

For the complementary detailed evaluation report see <http://publications.naturalengland.org.uk/publication/6510716011937792>

⁵⁵The Water Framework Directive is a UK initiative which seeks to provide an overarching framework for the protection and improvement of inland surface waters, ground waters, estuaries and coastal waters. For comprehensive details of the context and deliver of WFD see:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/307788/river-basin-planning-standards.pdf

⁵⁶ Following the CAP reform in 2014, these grants were merged into Countryside Stewardship Grants falling under Water Capital Grants.

which has noted the potential value of environmental knowledge which may arise from farmers' direct, experiential, engagement with particular environments (Berkes, 2017), there is an emerging literature which has noted that farmers have, often for many years, engaged with and integrated, more codified and scientific understandings into their practices - especially in the name of production (Burton and Riley, 2018). Second, and interrelated, there is a realisation that knowledge and knowledge practices are "thoroughly social" (Tsouvalis et al., 2000, p.912). As such, there is a recognition that farmers' social relations are crucial to their knowledge development, contestation and sharing. In paying attention to these social relations and social contexts, the following paper explores three hitherto under-considered areas. First, whilst there have been some studies which have considered farmers' knowledge interactions within more structured environments aimed at 'social learning' – such as in farmer field schools (Guo et al., 2015) – the paper reflects on their many everyday, more informal and ad hoc interactions which may remain undocumented. Second, and interrelated, the paper moves beyond the tendency in previous studies to focus on the individual (usually principal farmers) in examining issues of farmer (and farmer-to-farmer) knowledge, considering how other actors on farms (workers, partners and family members for example) may play a role in these processes. Third, the paper calls for a closer recognition of the temporal dynamicity of farmers' knowledge interactions – noting that their interactions with other farmers, as well as environmental advisors and officials, often have a long history that (re)shapes the nature of current knowledge practices. In examining these issues, the paper draws together the literature on farming knowledge(s) with notions of the 'good farmer' - which offers a useful lens for understanding how farmers' social interactions may be shaped by farmers' adherence to locally-recognised practices, symbols and performances of 'good farming' and a recognition that these networks are only as good as the social relations which make them (Sutherland and Burton, 2011; Fisher, 2013). Following a discussion of this conceptual framing, the paper outlines the case study and methodological approach drawn on in the research before exploring the knowledge interactions between farmers and other actors and the importance of spatial and social contexts to this.

6.2.2 Background

The literature relating to farming knowledge(s) has grown significantly within the last few decades, with a prominent focus being on the epistemological differences and

similarities between farmer and scientist understandings of the farming environment (and specific farming practices) and how these might come together in the discussion of farm production activities (Burton, 2004b), new technologies (Tsouvalis et al., 2000, p.912) and farmland conservation (Riley, 2016). Whilst early research noted the differences in, and common incompatibility between, ways of knowing observed between farmers and conservation scientists (Burgess et al., 2000), more recent work has pointed to the evident similarities between the two and offer examples of where constructive dialogues might take place (Ingram et al., 2016). Various classifications of knowledge have been put forward and are useful to the exploration of knowledge practices within farming. Lundvall and Johnson (1994) distinguish between four types of knowledge: ‘know-what’ (empirical knowledge of facts), ‘know-why’ (knowledge of scientific principles and theories), ‘know-how’ (practical skills of doing things) and ‘know-who’ (an understanding of the knowledge community and who to access for ‘know how’). Although classified separately, each knowledge type may interact with each other and work together.

The shaping of farmers’ knowledge is a complex and multi-stranded process which, in part, is closely linked to place (Wójcik et al., 2019). This tacit, local form of knowledge develops within context and the specific features of an area, informed by various sources and shaped by the culture and economy of the area. The importance of place is fundamental to understanding knowledge production and sharing – providing social settings and sites in which new information is exchanged in the development of knowledge. As Agnew and Livingstone (2011, p.328) highlight: “knowledge creation and circulation are invariably situated somewhere [...] Beyond mere location in space, therefore, from this perspective places really matter for what we think abstractly as well as what we do practically”. Wójcik et al. (2019) acknowledge this, discussing the importance of space for knowledge development, noting how farmers “grow in” to the space of an area, resulting in a sum of knowledge that arises out of many years of collaboration between a person and space, and the subsequent socialisation and experiences of living in that space.

In developing a less dualistic framework for understanding knowledge, Raymond et al. (2010) consider how knowledge may be placed on different continuums: 1) that which is local or context-specific; 2) the extent to which the knowledge is formalised; 3) whether it demonstrates expertise; 4) whether the knowledge is articulated in ways

that can be accessed by others (i.e. whether it is more *tacit* (more subjective unarticulated and personal) or *explicit* (documented, public and structured) (see (Wójcik et al., 2019)); and 5) whether it is embedded within cultural rules or norms and in dialogue with ecological conditions in a particular context. In light of this framework, Raymond et al. (2010) suggest that ‘local knowledge’ may refer to lay, tacit and personal knowledge – but may include expert understandings; ‘scientific knowledge’ may include that derived through more scientific methods with a focus on validity and reliability (perhaps from natural or social science research); whilst ‘hybrid knowledge’ is the new understandings that may emerge from an integration of these knowledge sources.

In those empirical studies seeking to move beyond a focus on individual farmers’ knowledge, advisors have been seen as important in providing specialist support and policy advice (Ingram, 2008) and as facilitators amongst farmers’ groups where there might be a reluctance to share knowledge where it is thought to have/offer a competitive advantage (Garforth et al., 2003). Critiquing the previously-popular linear view of advisor-to-farmer knowledge transmission – where advisors are seen as experts and farmers as more passive recipients of knowledge – recent work has noted the importance of the associated social relations between farmers and advisors, has considered how advisors need to understand the social context of the farm, and how productive dialogue may take place as the ‘know-what’ and ‘know-why’ of farmers is combined with the ‘know-who’ and ‘know-why’ of advisors (Ingram and Morris, 2007). Those focusing on farmer-to-farmer knowledge relations have highlighted how pre-existing groups and collectives (such as clubs or auction markets) may get replaced by more topic-specific coalitions in relation to environmental management (Curry et al., 2012) and how facing risk may lead to greater levels of new knowledge seeking and sharing (Sligo and Massey, 2007). Although there have been examples, such as in the discussion of tillage, where farmers may experiment on their farms and share knowledge with neighbours, there is a suggestion that this is not universal (Ingram, 2010). Indeed, others have noted that knowledge-sharing practices relating to production may differ quite markedly from those relating to conservation (Riley et al., 2018).

Crucial to understanding how such integration of knowledge may occur, and how different knowledge(s) may be developed and valued, is understanding the importance

of social context and social relations. In seeking to frame these social relations, we utilise Bourdieu's (1977; 1986) understandings of capital, habitus and field and, specifically, their application to the concepts of the 'good farmer' and 'good farming' (Burton, 2004b). Bourdieu considers how capital development and exchange is central to an individual's positioning relative to others within the field and can help us to understand the social underpinning to farming knowledge(s). Bourdieu notes that capital exists in forms other than just economic capital (material goods) and calls attention to social capital (derived from, and reaffirmed by, social contacts) and cultural capital (skills, knowledge and dispositions as developed through processes of socialisation and education). Linking to these is symbolic capital which is the recognition – or “prestige and renown” (Bourdieu, 1977, p.179) - that an individual enjoys by virtue of having these capitals when they are seen as legitimate within the 'rules of the game' of a particular field. As such, symbolic capital is important in defining what forms of capital, as well as how they are applied, are seen as legitimate within particular contexts, such as the case of farming considered here. The concept of habitus – what Bourdieu sees as the “system of lasting and transposable dispositions which, integrating past experiences, function at every moment as a matrix of perceptions, appreciations and actions” (Bourdieu, 1986, p.82) – is central here, as acting in accordance with the habitus is central for group membership as it “provides each of its members with the backing of collectively-owned capital” (Bourdieu, 1986, p.51).

Bourdieuian thinking has been taken forward in the literature on good farming, which observes how a farmer's status may be assessed on how they exhibit capital, specifically cultural capital, in one of its three forms: institutional (cultural competence certified through official institutions), objectified (symbols of prestige within a network which might include crop yields or high-status agricultural machinery), or embodied (“dispositions of the mind and body” (Bourdieu, 1986, p.47)) – that is, skills which might include motoric, mechanical and managerial (Burton et al., 2008)). Exhibiting this capital, Burton et al. (2008) suggest, requires three conditions: 1) a skilled performance that differentiates between 'good' and 'bad' practice; 2) a clear, outward, sign that the skill has been performed; 3) that these signs are (visually) accessible to others. In their consideration of farming cooperation, Riley et al. (2018) note that although Bourdieu does not explicitly refer to trust within his discussion of

capital, it is clear within his reference to how: “the reproduction of social capital presupposes an unceasing effort of sociability, a continuous series of exchanges in which recognition is endlessly affirmed and reaffirmed” (Bourdieu, 1986, p.52) – where trust is, as Fisher (2013) concurs, a catalyst for social capital and relationships become translated into social capital where trust is present. Zucker (1986) refers to three modes of trust: ‘institutionally-based trust’ (coming from formal, institutionalised, settings), ‘characteristic-based’ trust (a product of group membership and social similarity of joint identity) and ‘process-based trust’ (more person-specific trust based on recurring exchanges between individuals). Lewicki et al. (1998) note that such trust may vary over time – not only being accumulated in a linear fashion, but varying in depth and strength across the different contexts and spaces of these relationships – a theme also picked up on by Fisher (2013) who argues that three factors are important to helping trust develop: longevity, consistency and regularity of contact.

Trust and capital are thus important to knowledge sharing, with observations showing that farmers are more likely to utilise knowledge when it comes from a trusted source (Fisher, 2013) which, as Riley et al. (2018) note, is associated with the capital status of farmers and how easy it is for other farmers to observe this status. Albeit using slightly differing terminology, Tsouvalis et al. (2000) and Riley (2008) note similar themes in their discussion of ‘knowledge cultures’ – a term they use to consider how knowledge is a relational achievement within which different groups may compete and align when articulating the social meaning of things. Knowledge cultures thus pay attention to the ways that discourse is structured and how knowledge is ascribed legitimacy. Like the literature on the good farmer, this work pays attention to the “rules of the game” (Bourdieu, 1977) – and, specifically, notes that such rules may be challenged by members of the group or outsiders. In applying such a framing to farmer-conservationist discussions, Morris (2006) considers the agri-environment-scheme policy knowledge culture which is framed by expert knowledge associated with environmental and conservation agencies and DEFRA – which draws on scientific and codified ways of understanding nature on farms. Farmers’ knowledge-cultures tend, by contrast, to put emphasis on their place-specific, experiential understandings but have often been influenced by scientific understandings in the past (Morris, 2006; Riley, 2008). Morris (2006) goes on to reflect on the porosity of any

supposed ‘boundary’ between such knowledge-cultures – showing how there has been, albeit tentatively, a co-constructing of what is seen as legitimate (see also Ingram and Morris, 2007). In thinking through the discussion of how this knowledge may be valued and taken on, Ingram et al. (2016), following Cash et al. (2003), outline three aspects which are important: credibility, salience and legitimacy. *Credibility* refers to whether such information is considered to be accurate, valid and of high quality. For science, this credibility is derived through ideas of rigour in light of its rationalist and systematic derivation and, as such, credibility can be increased through reducing perceived uncertainty, or at least being transparent about this uncertainty (Steingröver et al., 2010). Social science research with farmers has noted that such credibility may be challenged by farmers when they hold observations to the contrary or where there is seen to be conflicting evidence (Wynne, 1996). Moreover, such assessments of credibility are often viewed through a broader contextual lens, with trust and social capital seen to play central roles. *Salience* refers to how relevant particular information is to a particular decision maker. Actors have different knowledge interests and hence different criteria for assessing the relevance of knowledge – relating to timing, context and need (Ingram et al., 2016). *Legitimacy* highlights “the extent to which knowledge production has been respectful of the divergent values and beliefs of stakeholders, unbiased in its conduct and fair in its treatment of opposing views and interests” (Ingram et al., 2016, p.118) – that is, a model that involves empowerment and inclusion of individuals. It has been noted that these factors (co)evolve over time and that change in one measure might impact on another.

6.2.3 Methodology

The research reported upon here comes from a study in the North West of England (UK), which sought to explore farmers’ knowledge and understandings of riparian environments on their farms and what management practices (both voluntary or involuntary) they and/or other farmers were adopting in relation to water (this includes flooding, water quality improvements, reducing pollution, and indirect management - for example fencing off rivers). The research was based in a catchment with mainly upland characteristics, resulting in predominately pastoral farming, which has shaped much of the landscape. A total of 42 farms participated, representing the range of farm types in the area (6 dairy and sheep farms; 7 beef and sheep farms; 15 sheep farms; 11 dairy farms; 3 dairy, beef and sheep farms). In terms of their pre-existing knowledge,

7 of the 42 principal farmers interviewed had some form of formal agricultural training – be it through college courses or higher education. Of the sample, 11 reported that they had been on topic-specific training events organised by groups such as the National Farmers Union on issues such as dipping sheep, agri-environmental schemes (when they were first introduced) and soil compaction, but only 3 noted that they had, prior to their CSF involvement, been to ‘open farm’ events. Of the sample, over three quarters can be classified as family farms – with family labour making up the predominant labour forces. As will be discussed in the following sections, most of the holdings could be considered as self-contained – with little evidence of the share-farming or buying cooperatives noted in other parts of Europe. In locating farmers for interview, initial contact was made with the local Rivers Trust to gain access to the first wave of respondents and chain-referral sampling (Heckathorn, 2002) was used to locate subsequent respondents. At the time of interviewing, the catchment was designated a priority area within the CSF programme – catchments which were deemed at risk of agricultural diffuse pollution⁵⁷ (sediment, nitrogen, phosphorus). Advice offered through this programme was geared towards water management and includes information on suitable manure management, nutrient management, soil health, farm infrastructure, farm waste products and cross-compliance.⁵⁸ Various mechanisms are drawn upon to disseminate information, with most being group-focused – including workshops, demonstrations, farm walks and farm events. Access to such advice and information had meant some farms⁵⁹ had taken action to advance river health including tree planting alongside watercourses, water course fencing and installing dirty water handling facilities.

As the focus was on knowledge development and sharing, interviews took place on the farm to open up the possibility of having more than one participant (usually a farm worker or a farmer’s partner) present for the interview (20 of the farm interviews had more than one respondent) (see Thomas et al. (2019a) for a fuller reflection on the methodological issues of interviewing farmers about rivers and riparian environments). A semi-structured interview approach was adopted to allow unforeseen

⁵⁷ These were determined by combining the Environment Agency’s and English Nature’s risk assessment on diffuse agricultural pollution to identify priority catchments.

⁵⁸ Cross-compliance is the requirement of minimum thresholds of management associated with public, animal and plant health; environment, climate change and good agricultural condition of land; and animal welfare.

⁵⁹ Of the 42 farms visited 35 farms had reported undertaking some level of work associated with CSF.

areas of discussion to be explored and the addition of participants other than the main farmer. Discussion of knowledge was noted prior to interviewing as a topic for exploration, however in most instances it arose through wider questioning of farm management in relation to water and farming in a CSF priority catchment. Interviews lasted between 1 and 4 ½ hours, and where possible, took a walking interview approach (after Riley, 2010) which helped to gain access to details on specific environments or conservation-related features which had been implemented as part of CSF. Interviews were recorded using a handheld voice-recorder, transcribed verbatim and the transcripts were coded manually following the framework laid out by Jackson (2001). Several overarching themes were identified using this thematic coding and are discussed in the following sections.

6.2.4 Knowing the field – farmer-advisor relations

A common starting point, when farmers were asked about knowledge and CSF within interviews, was that offered by CSF advisors. Previous research has noted that farmer-advisor relations are a crucial nexus of knowledge exchange (Ingram and Morris, 2007), with some noting that rather than being solely a relationship of potential conflict, the farmer-advisor relationship may be one of productive dialogue (Morris, 2006). The following extracts offer insights into the nature of this relationship and its productive elements:

“Farming is a right mix of everything so at the end of the day although sometimes we might think it, we don’t know everything and ultimately these [advisors] are handy just to get another opinion or just vet something out.” (Farmer 20)

“Well that’s why I joined the [discussion group]..To keep the water clear [...] and do my bit but I don’t know much more about the water...” (Farmer 35)

“Yeah I suppose if it was a bigger river, I probably wouldn’t see it the same, as it isn’t so “manageable”, but with this small beck I suppose I don’t really need to know much about it” (Farmer 21)

“[Advisor] was great, she went through it all and said what would be good and what wouldn’t for us, our system. I haven’t got the time to faff around with all the information, she gave me the main bits and I got to grips with those and took those on board” (Farmer 29)

The extracts reflect a general openness – even amongst those who did not change their practices as a result of participation in CSF activities – to listen to the knowledge offered by advisors and, in turn, exemplify two emerging findings relating to farmers’ understandings. First, that farmers’ knowledge may vary in relation to different aspects of their farm and second the very particular ways that farmers may utilise the knowledge given by advisors. The references of farmer 35 and farmer 21 to ‘not know[ing] much’ about rivers on their farm is in clear contradistinction to previous studies’ observations of the detailed and temporally-layered understandings farmers have of particular terrestrial habitats on their farms (see for example Morris (2010)). As Thomas et al. (2019b) note, farmers have a much greater level of everyday interaction with terrestrial areas of their farms as a result of their longstanding role within farm production and hence farming livelihoods. Rivers and riparian environments, by contrast, commonly constitute a ‘non-productive’ habitat in the eyes of farmers, often playing only subsidiary roles in production (such as a water source for cattle or as part of past land drainage systems). As such, farmers demonstrated less detailed know-how in relation to these environments and highlighted that they play a more marginal role in elevating their status as a ‘good farmer’ – standing less as objectified cultural capital or demonstrations of embodied cultural capital (skill) as might be noted for the appearance of crops and the condition of farm land (Burton, 2004b). Added to this, the interview extracts illustrate that the recent regulatory changes – including the ‘farming rules for water’ which came into effect in the UK in April 2018⁶⁰ – revealed a level of uncertainty amongst farmers. This lack of know-why in relation to current regulations, when placed alongside the historical lack of continuous engagement (know-how) with rivers, meant that the understandings of CSF advisors had an increased salience to farmers and were openly listened to.

⁶⁰ <https://www.gov.uk/government/publications/farming-rules-for-water-in-england>

Rather than being a blanket acceptance of CSF advisors' knowledge, the extracts from farmer 20 and farmer 29 illustrate how advisor input forms part of the knowledge practices of farmers in relation to rivers and riparian environments and also highlight the work advisors do in order to position their knowledge as legitimate. Farmer 29, similar to several interviewed, highlighted what can be seen as a filtering process, whereby farmers relied on advisors to 'vet something out', or filter what knowledge was appropriate to their particular context. Crucial to this filtering process was the ability of advisors to articulate, to farmers, an understanding of the specific contexts in which the knowledge would be operationalised. This contextualisation related both to the knowledge of the specific region (and catchment) in which the farm was situated as well as the relevance of CSF to the specific farm itself. Such observations of contextual filtering are important for our wider understanding of knowledge dynamics and farmer-advisor relations. First, they illustrate how an appreciation of farmers' specific context can greatly enhance the credibility and legitimacy of advisors' understandings. Studies of farmer-advisor knowledge conflicts, particularly relating to agri-environmental measures, have arisen when more generic scheme prescriptions are applied to contexts which farmers feel are less appropriate, or what Clark and Murdoch (1997, p.41) refer to as "travel[ing] very effectively into a whole range of differing locales". As authors such as Clark and Murdoch (1997) suggest, scientific expertise and agricultural extension work requires the field to be 'prepared' in advance – that is, in order to stop science 'stammering' (after Latour, 1999) as it enters the spaces of imprecision and uncontrollable variables of the field, conservation scientists often attempt to "modify the local environment in line with scientific prescriptions" (Clark and Murdoch, 1997, p.57). By contrast, what we have observed is a process of advisors tailoring knowledge to fit the particular contexts of the field. This can be seen as part of what Raymond et al. (2010) refer to as articulating knowledge so that it is accessible to others - illustrating what general regulations mean for the specific practices on their farm and how current funding support may impact on farmers' practices. Rather, though, than this being about reducing the level of technical language or jargon *per se*, this process was about a *geographical* articulation, with advisors helping to translate scientific knowledge into a contextualised and cognisable form.

Whilst there was a general willingness by farmers to initially listen to CSF advisors, attend events and utilise their understandings in filtering the most appropriate

knowledge to their contexts, the interviews also revealed how productive relationships developed over time between farmers and advisors. Echoing the observations of Schneider et al. (2009) – who show how a lack of trust between actors can impede knowledge sharing and co-development – the following extracts refer to the case of a specific advisor and illustrate how these relationships might proceed:

“I mean, [an advisor], the farmer’s daughter she’s very, you know, she’s very theoretical about it and she enjoys meeting farmers and has taken her time to get to know us you know, knows our point of view, she’s definitely one you can entrust with your business.
(Farmer 2)

“He’s [environmental officer] only learnt it from a textbook, not proper learning, not practical knowledge, not 50 years of making mistakes and fixing them, whereas [trusted advisor] she’s got both, well not quite 50 years but 30’ll do so we’ll let her off and yeah she probably does know better than me sometimes” (Farmer 32)

The statements of farmers 2 and 32 note that knowledge which is born out of direct experience is given greater credibility than that born out of more decontextualized and abstracted ‘book knowledge’, or what Bruckmeier and Tovey (2009, p.268) refer to as knowledge which is “pruned of its contextual references”. Beyond the aforementioned recognition of specificities of the geographical context, the examples also illustrate how their farming biography affords the advisor a level of capital and trust which, in turn, enhances the credibility and salience of the knowledge they offer. Their knowledge is what might be thought of as *geographically salient* in being developed in a familiar context through practical experience of farming. Significant to our broader understanding of farmer-advisor knowledge relations is that advisors, like farmers, have the potential to develop their own forms of social capital and trust and the interviews revealed that this happened in two main ways. First, and illustrated in the extract of farmer 2, is that the advisor’s farming biography both affords them a level of community-based trust and also a demonstration of valued embodied cultural capital in terms of a broader understanding of agricultural practices and management. Second, interaction through the CSF events and individual farm visits meant that more processed-based trust was developed. Important to note is that these two forms of trust

intersect in how farmers interact with advisor knowledge, with the community-based trust facilitating more rapid development of interpersonal trust. Farmer 2 and farmer 32 for example, illustrate how the ‘theoretical’ knowledge that they are sceptical of in the case of one advisor (cf. Wynne, 1996), becomes entrusted for the second advisor when it is interlaced with the capital they demonstrate in being local to the area and having a familiarity with farming.

6.2.5 Placing farmers’ interactions

As Tregear and Cooper (2016) have noted, social interaction can be a crucial element of knowledge and learning, and for CSF is a central rationale in bringing farmers together. An emerging finding from the interviews was that spaces of interaction are important to this process, with two contexts proving significant – the CSF discussion groups (and farm walks) and the farm itself. Farmer 21 reflected on the role of discussion groups:

“I’d never really met him [a nearby farmer] before the meetings but now we get on and chat on a regular basis, discuss the things raised in the meeting– without the meetings we probably would know of each other but never really talk” (Farmer 21).

For this farmer, the group meeting served a structural function of providing a space – both materially and cognitively – to meet another farmer in the area with whom he had no previous engagement. For others, the meetings provided not simply a place for introduction, but a space for what may be seen as a *re-engagement* with farmers with whom they already have an association. Important to explaining this re-engagement was the discussion of relationships with other farmers. Echoing the observations of Riley et al. (2018), the interviews revealed that many farming practices have become increasingly individualised⁶¹, and whilst friendly and convivial relations are seen between farmers, these are often sporadic and relatively superficial engagements, with ‘good farming’ being seen as demonstrating autonomy and avoiding over-reliance on others. That is, whilst other farmers and neighbours may be drawn on in times of

⁶¹ Particularly associated with structural changes to agriculture such as individual farm subsidy payments made to farmers in the UK under the Basic Payments Scheme. For more information see <https://www.gov.uk/government/collections/basic-payment-scheme>

emergency, there is a strong level of expectation that farmers will be “self-sufficient” (farmer 10) and “not relying on others too much” (farmer 20) for their day-to-day activities. As a result, although there was often clear evidence of farmers making observations of neighbours’ activities in general – what Burton (2004b) has referred to as ‘hedgerow farming’ – most farmers reported having relatively little knowledge of their neighbours’ specific land management activities. Accordingly, the group meetings provided a useful forum of common purpose for these farmers. In the case of farmer 21, this involved introductions to a farmer with whom he previously had no contact, whilst for others this was a chance to open more specific dialogue with farmers they already knew. Building on the earlier point that farmers have different knowledge practices in relation to the different areas across their farm, the interview discussions of CSF meetings highlighted a general openness to share information, about rivers and riparian environments, with other farmers. Whilst previous studies have observed farmers’ unwillingness to share information outside the farm, and have attributed this to its perceived competitive value (Garforth et al., 2003; Ingram, 2008a; Ingram, 2010), the interviews highlighted a readiness to share and co-develop knowledge in relation to riparian environments. This comparative willingness to share information was seen to relate both to the peculiar nature of these environments and also to where previous knowledge on these environments originated from. Whilst knowledge associated with production is seen as ‘hard earned’ (Ingram, 2010) (often developed through years of trial and error on their farm) and a clear expression of cultural capital - and hence something farmers were less likely to share - it was found that the same association was not made with riparian environments on their farms. Moreover, much of the information that farmers did hold in relation to issues such as flooding and river health (and regulations associated with these) had been passed to them from off-farm sources (including CSF advisors), rather than developed from their own, direct, experience. Together, these factors meant that this knowledge was something that was not seen as competitive. As it was knowledge that had been passed to them in recent history, rather than something they had personally developed over many years, and was not readily turned into economic capital (cf. knowledge on how to increase crop yields or the value of livestock (Burton et al., 2008)), it was knowledge that they deemed appropriate to discuss collectively and, where appropriate, share with other farmers. Underpinning this sharing is the value of CSF activities in providing a space for a move from characteristic-based trust to process-based trust – or from ‘thick’ to

‘thin’ trust (Putnam, 2001). Whilst farmers held thin, characteristic-based trust of other farmers – as a result of them being part of a more abstracted ‘farming community’ or being based on their reputation (symbolic capital) – the meetings allowed thicker, process-based trust to develop as they talked through ideas on the farm. Such trust, the interviews revealed, was in part aided by their geographical location and their status as ‘off-farm’:

“It was an interesting meeting that, it just made you think, nothing strenuous or intimidating just thinking and going through what we do and just picking up stuff we could improve and knock a view ideas about” (Farmer 8)

For respondents such as farmer 8, and echoing the wider interviews, this being off their own farm and in a group situation meant that CSF meetings were ‘non-intimidating’ spaces. The good farmer literature highlights how the farm can be seen as portrait of the farmer themselves, standing as both objectified cultural capital in itself and also as the material embodiment of their farming skill (cultural capital) (Riley, 2010). As such, the farm represents not only their farming successes, but also their failures (cf. Wójcik et al., 2019). Farmers reported that on-farm visits, such as those that several had experienced in entering into agri-environment schemes, could accordingly be intimidating as farmers felt a need to justify not only their own current practices, but their predecessors’ past ones “warts and all” (farmer 12). Such knowledge was thus not only local knowledge, but *personalised* knowledge. Farm visits and walks on others’ farms allowed a discussion and sharing of local knowledge – such as the nature of a specific river and local environmental conditions – but allowed visiting farmers to be selective in how they revealed more personalised elements of this.

Whilst the previous extract highlighted the value of CSF activities being ‘off-farm’, the interviews also brought forward the importance of one’s own farm space in the (co)construction and (re)working of knowledge relating to rivers and riparian environments:

“Dad likes quick fixes and will want to know there and then, but I’m a long-term thinker and have the patience to wait, so a bit of both has been useful for running the farm – level each other out. [Interviewer: have you got any examples?]... well at first dad was

set against planting by the river, and I said well it doesn't affect us so if it's all free for us I said go ahead and now, a few years later, it looks good and all the bushes/trees have filled out and dads quite happy with the job" (Farmer 9)

"Me and my dad are very different, maybe because of the times I've been in farming, like more modern times I suppose, I think having his productive mindset and my maybe willingness to give back to nature has struck a good balance with how to run things. Like I want to look after the water, he wasn't as bothered, maybe because it was much later when he had to start thinking about it, whereas I've grown up with it." (Farmer 3)

Although arguably underplayed in previous research, perhaps due in large part to the methodological challenge of accessing people other than the principal farmers on farms (Riley, 2010), the extracts highlight how the micro-geographies and micro-politics of the farm help (re)shape knowledge (see also Wójcik et al., 2019). For our wider understanding, they illustrate that farming knowledge is neither entirely individualised nor static – continually being co-constructed and (re)negotiated between multiple people on the farm and thus evolving and changing over time. At one level, especially on family farms, this is generational, with differing cohorts of farmers exposed to different policies and technologies which shape how they view their farm practices – something evidenced in farmer 3's reference to his greater acceptance of environmentally-sensitive practices being a result of 'having grown up with it'. At a second, and interrelated, level it was apparent that knowledge of particular parts of the farm – both particular habitats and particular practices – was not equal across all members, with some taking greater responsibility for certain parts of the farm and its practices. In the interview discussion that followed the extract of farmer 9 above, for example, the farmers had a disagreement about drainage on a particular area of their farm with his father, noting: *"well you haven't been down there for ages, so I don't think your best to comment on that bit"*. Such examples of shared responsibility, and the evidence of how such responsibility may vary over time, highlight how farms are often a knowledge collective – with one person often not having full knowledge of all the parts of their farm, but relying on others to have greater knowledge of certain aspects. Whilst the example above considers family

farming, others in the sample noted the importance of non-familial workers in this process. Several implications emerge from this for our broader consideration of farming knowledge. First, is that knowledge offered to farmers – such as that given from CSF events – is negotiated, reworked and assimilated within the crucible of the farm. This process involves a co-negotiation between several actors in deciding on the salience and credibility of this knowledge and its applicability to their farm. For the case of farmer 9, discussed in the extract above, this includes him translating the knowledge brought from a CSF event to his father and then an ensuing period of negotiation as they consider its relevance and the wider implications of applying it on their farms. Second, is that whilst we might see farming knowledge as cumulative – with the stock of knowledge increasingly layered and accumulated over time – the interviews revealed how the micro-geographies and micro-politics of the farm mean that these understandings are distributed rather than held by one individual. In turn, responsibility for particular parts of the farm – and the knowledges associated with it – may change and alternate over time, such as the older farmer passing responsibility for work around the river to his son.

6.2.6 Good environmental farming?

The previous two sections have highlighted the importance of various actors (including farmers, advisors and others occupying and working on the farm) and spaces (particularly farm spaces and CSF events) in farmers' knowledge practices. Evident from this is that knowledge practices may vary in relation to different parts of the farm and may evolve and change over time. The following section considers the extent to which changing 'rules of the game' (after Bourdieu, 1990) can be noted within farmers' knowledge practices. The discussion of farm walks and farm visits, in particular, gave an insight into such potential changes:

“You know, they were all saying how its altered how it looks, but that wasn't a complaint... they weren't being ecstatic about it but I think [...] there is a little quiet pride, they will never bloody admit to it...but there is. Once they [a neighbour] had done it [conservation work on river bank], once we'd done a little bit on ours and they'd seen bits done... folk can see then because you are an advert then for

how it works. And then other people were thinking...and then some have done the same after looking at it” (Farmer 10).

“Like sometimes you may be interested in doing something [to improve the environmental performance of the farm], but just need a little bit more, you know, want to check it out before making the jump, so it’s nice to have a look at what other people have done first, see how they have done it and make sure it’s actually for us. It’s true a picture is worth a thousand words” (Farmer 34).

The extracts highlight how visual interpretations and cues are important to how farmers consider and take on knowledge. Whilst many farmers talked about not being able to understand the finer (usually written) details on ecological and riparian environments and specific aspects of agri-environment schemes (or the ‘know-why’), they highlighted that being able to visualise the result of particular conservation efforts – in this case the planting of trees around watercourses – gave an insight not only into what the ‘outcome’ of these measures would be, but also into how this would work in their particular context. Moreover, such examples suggest that the visual cues that have historically been used to assess someone’s status as a good farmer – which might include the tidiness of their farms or how straight their crop planting lines are (Burton, 2004b; Burton et al., 2008) – might also be starting to emerge for more environmentally-orientated efforts. The references to ‘being an advert’ and a ‘little quiet pride’ illustrate how such environmentally-orientated practices may too be seen as capital generating. What is important to note, here, is that these symbols which might be thought of as ‘good environmental farming’ were not seen to replace the pre-existing notions of good farming (that are often associated with production), but usually sit alongside them. The farmer observed by farmer 34, for example, was one who already had high levels of capital in the form of a long family history of farming in the region and a large farm and high-value livestock (objectified cultural capital). As Bourdieu (1996, p.262) observes, “it is people who are richest in economic capital, cultural capital and social capital who are the first to head for new positions” and such pre-existing social relations were important to how farmers took on and utilised the knowledge they offered on CSF. As Sligo and Massey (2007) observe, the risks of entering into new practices may be reduced when the knowledge about these practices come from a trusted source. For farmer 34, there was already a level of thick trust for

the observed farmer as a result of his reputation and pre-existing level of good farmer capital. The farm walk allowed the addition of a level of process-based trust – not simply from speaking directly to the farmer, but also by being able to visualise their conservation work in context. As Zucker (1986, p.60) notes, this process-based trust is premised on individuals being able to see that others will act in “broadly predictable ways” and whilst they suggest this is usually developed through the collection of “considerable amount(s) of person-specific information” through recurring exchanges, the interviews about farm visits highlight how the farm became a proxy in the absence of a history of such recurring exchanges between the farmers. Observations of the wider farm – including its size, its buildings, its machinery and the practices on it – were used by visiting farmers to assess the history of the farm and calculate the capital and good farmer status of the host farmer. This in turn offered a level of trust of the farmer and hence increased the credibility of their knowledge and offered a reassurance that CSF practices become part of, rather than detract from, their good farmer status.

A more overt example of how farmers’ knowledge practices have altered was in relation to the changing structural conditions of agriculture – relating both to evolving agricultural policy and also perceived changes in the weather:

“Like the weather is getting worse really so it’s a lot wetter, so for things like that, it’s changing now so I’ll happily take advice from [the advisors] on what we can do...yeah it was a problem but now it’s getting a lot worse so the best thing we can do is use these people and their knowledge, as its only going to get worse [the wet weather] and water can cut the farm size in half sometimes.” (Farmer 13)

“At the time it was all introduced and we were all against it, everyone wanted to keep farming and doing what they were doing, what has happened, the climate has got wetter and wetter, and [a neighbour] did some work and then we discussed it at meetings and like over the farm gate and with [advisor] and had a good think about it and now everyone is kind of on board with it all.” (Farmer 23)

In both cases, changing weather patterns were suggested as altering knowledge practices as they present farmers with a level of risk and uncertainty. Siegrist and Cvetkovich (2000) note that social trust becomes important when individuals have relatively little knowledge of a perceived risk, and it can be seen that advisors' and other farmers' knowledge gains greater salience in light of the new risks presented by changing weather patterns. As Bourdieu (1990) notes, although actions tend to be reproductive rather than transformative when the rules of the game remain constant, there is potential for habitus to "constantly perform adaptation(s) to the outside world" (Bourdieu, 1993, p.78) – particularly in relation to crisis events. The changing weather, and its association with the increased severity and frequency of flooding recently observed by these farmers, arguably serve to alter the rules of the game that farmers operate within and, accordingly, reshape the variety of knowledges they draw upon and the credibility and salience of these other sources.

A final area relating to the importance of temporality within farmers' knowledge practices pertained to how, through longer-term engagement, farmers have developed their own knowledge of environmentally-sensitive practices:

"They say we need to stop soil erosion, so this is some more of the conifer roots or whatever and a few...you shove the trunk of the tree into the bank and leave the roots hanging out in the water. Yeah, it's definitely doing its job and stopping the erosion." (Farmer 3)

Interviewer: Was this suggested by anyone?

"I just made this up myself, and it's doing a good job, quite proud of myself really! I know a few others are doing bits like me now [...] I was telling [a neighbour] at the meeting the other day about it and they are going to give it a try" (Farmer 3)

Oreszczyn et al. (2010) have referred to how problem solving is a large part of informal knowledge creation, and the examples given here illustrate how farmers' pre-existing skills in this area may be harnessed. Seeing attempts of other farmers – including tree planting and the use of reinforcing posts – to reduce soil erosion, the farmer illustrated practical know-how and skill in developing this localised solution. Here, they recognised the general objective of CSF – as put forward by advisors and shared in

CSF meetings – but are able to utilise experiential and practical knowledge on their farms in developing a type of hybrid knowledge which provides a context-specific solution.

6.2.7 Conclusions

This paper has utilised the Catchment Sensitive Farming initiative to examine farmer knowledge(s) and knowledge practices and the potential of group settings in (re)shaping these. Through a consideration of good farming and farming capitals, the paper has seen that social relations, both past and present, are crucial to how knowledge is developed and shared. An overarching observation of the paper is that the dialogue and knowledge exchange between farmers and advisors is a positive one in the context of CSF and two specific findings can be pinpointed for this. First, is that previously observed farmer-advisor knowledge contestations have tended to focus on specific environments and practices commonly holding production value and standing as clear testament to farming skill (cultural capital) whilst rivers and riparian environments, the paper has shown, stand less clearly as markers of good farming and have less competitive value thus making it more suitable for sharing. When this is coupled with the rapidly changing regulatory environment, farmers are receptive to the know-how and know-who that advisors may offer, and advisor knowledge has become increasingly salient. Second, is that in the same way that farmers may accumulate capital, and hence status, amongst their farming community, so too can advisors. The paper has seen that this can be achieved through each, or a mix of, extended periods of engagement between farmers and advisors; an advisors' own farming biography; and, significantly, advisors demonstrating contextualised knowledge – relating both to the specific locality and the relevance of advice to each specific farm. This contextualisation was seen to greatly enhance the credibility and legitimacy of advisors' understandings and was achieved by tailoring knowledge to fit the particular contexts of the field – what we have referred to as *geographical articulation*, within which advisors presented information directly related to the specific landscapes and farmscapes and hence increased the credibility of their knowledge. A practical recommendation flowing from this for those wishing to engage farmers in environmentally-sensitive practices is to play close attention to local contexts – not only relating to specific structural issues of the farm operation or the climatic

conditions of the locality, but also the local cultural milieu within which farmers operate.

Whilst earlier calls have been made to move beyond the dichotomous labelling of knowledge as either expert or lay, our findings here extend this call in suggesting a move beyond the reifying label of 'farmer knowledge'. First, although recent research has recognised that farmers develop hybrid knowledge which synthesises both scientific and more experiential understandings, we have noted that such knowledge practices may vary significantly in relation to different parts (habitats and practices) of their farms. Second, and interrelated, we note that the farm is often a knowledge collective, with seldom only one person having full knowledge, or management responsibility, for all of the farm and also observing that this may (inter)change over time. Such observations are not only conceptually important, but may inform how we seek to share knowledge on new practices and policies, with less resistance observed to taking on new knowledge in relation to rivers and riparian environments and a need to seek to engage whole farm groups rather than just individuals.

Our findings highlight the importance of place and spatial contexts (both material and social) to knowledge sharing practices. Practically, our findings reaffirm the value of CSF farm visits, walks and group meetings. These spaces are not simply containers for action but have social meaning and are value-laden. They allow important contextualisation for farmers – both of how CSF activities play out in a familiar environment and in allowing an assessment of whether those farmers practicing CSF-related activities are ones to be trusted and emulated and where the credibility of knowledge may be enhanced. Alongside this, being off-farm afforded farmers a less intimidating space where they could share knowledge selectively and personal information could be filtered out as they felt appropriate. Our evidence suggests CSF's current use of collective meetings and farms for observations are successful in providing a forum for communication and we would use our observations here to encourage the careful future selection of these case study farms. In addition to how successfully these farms implement CSF activities, organisers should also take note of the pre-existing reputation of the farm(ers) as this may allow trust to be more rapidly developed and others to more readily follow their example.

Finally, our paper has highlighted the possibility that changing rules of the game may be reworking farmers' knowledge practices and reframing what (and how) knowledges are seen as legitimate. Changing weather patterns and shifting regulations are seeing an increased porosity of farmers' knowledge boundaries and increasing their receptiveness to, and reliance on, others' knowledge. Important to note, though, is this current hybridisation of knowledge on farms remains influenced by past history. Whilst it was apparent that symbols of good farming were starting to emerge in relation to conservation and CSF activities, these were strongly interlaced with, rather than replacing, more conventional symbols of good farming. Future work could usefully seek to monitor whether longer-term engagement with initiatives such as CSF might see more widespread evidence of farmers' knowledge sharing, the innovative solutions that they might develop to environmental questions, and the associated legitimacy they give to off-farm knowledges.

6.3 Chapter Conclusion

This chapter introduced the final published paper in this thesis. Bringing together the Bourdieusian-inspired notion of the good farmer with the literature on farming knowledge(s), this chapter considers how farmers engage with, utilise and share knowledge through a focus on the Catchment Sensitive Farming (CSF) initiative in the UK. In exploring the importance of social contexts and social relations to these practices, the chapter considered how different knowledges gain credibility, salience and legitimacy in different contexts. It demonstrates a general receptiveness to the knowledge offered by CSF advisors, but highlights the importance of specific contexts and personal relationships within this process and how farmers may hold different knowledge practices in relation to different parts of their farm. Specific places and spatial contexts are important to how knowledge is taken on and reworked and changing regulations and environmental conditions, the chapter suggests, may be reshaping what knowledges farmers draw on and trust.

In the next, final, chapter I bring together the contributions of this research to the wider understandings of farming communities beyond that of the particular locality under study. The chapter also outlines some implications for policy as well as avenues for future research in this field.

Chapter 7

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7. Conclusions

7.1 Conclusions

In this final chapter, the overall findings and implications of the research are discussed. The chapter considers the broader contribution of the research to rural geography and the more specific advances it makes to the consideration of farming practices and cultures, agriculture and nature conservation. Alongside this, the chapter reflects on the specific concern with rivers and riparian environments before reflecting on avenues for future research.

This thesis has added to the broader debates on socio-cultural studies of farming by offering new empirical data on farmers' social construction(s) of riparian environments. As noted, whilst there is a growing literature on farmers' social construction(s) of the issues around the management and conservation of terrestrial habitats (see Riley, 2008), there has been little parallel attention on rivers and riparian environments. This thesis has gone some way to addressing this research lacuna, whilst simultaneously working to address both Reimer et al.'s (2011) concern that further research is needed to understand what motivates farmers to undertake conservation activities as well as responding to de Snoo et al.'s (2013, p.3) claim that: "conservation in agricultural areas is also a true social challenge and what is missing is social science...to elucidate the social processes underlying successful agri-environmental management". In order to respond to these pressing research questions, the thesis has developed a conceptual framing and innovative methodological approach which have enabled an insight into how environmental stewardship is a complex interplay between on-farm and off-farm influences.

In studying the particular context of river and riparian environments, much has been learnt which contributes to the wider understanding of agriculture and agricultural practices. The first contributions from the thesis – presented in Chapter 4 – are methodological. This thesis has contributed to the discussion around the usefulness of emplaced methodologies in understanding the farming community and farming cultures. In relation to the research encounter, this thesis illustrates the significance that place can play in the research interview and offers suggestions for the research process, whilst specifically giving insight into working with farmers and researching

environmental managements(s) and issues on the farm. It was seen, for example, that farmers struggled to articulate their knowledge of riparian environments as it was often wrapped up within wider land-management narratives. It was noted that moving around the farm allowed access to micro-spaces and practices around riparian environments that are often hidden and underrepresented in land-based discussions. For the interview encounter, it was also noted that in many cases where discussions of riparian environments were limited, there was a need for flexibility within the interview (re)design and that different skills, research approaches and (re)placings may be required when interviews encounter topics on which interviewees were less forthcoming in their discussions. For example, it was apparent that rivers and riparian environments have become a very politically sensitive topic (due to increased media attention and regulations) and, as such, there is a need for research to recognise the political climate within which interviews are set and consequently give careful consideration to how research objectives are articulated, in order to not discourage research participants. Similarly affecting the research encounter, Chapter 4 also explored the importance of researcher positionality. Although previous research has highlighted this importance - especially moving between subject positions - this thesis has noted how this can be somewhat problematic, and offers the solution of taking up the position of “geographically ignorant”. This new position allows the researcher to be situated as both “insider” and “outsider”, keeping the benefits of both positions whilst allowing a development of trust, shared identity and credibility within interviews. For the wider discussion of agricultural research, Chapter 4 provides valuable support for future qualitative research with farming communities, highlighting the importance of research design and content – factors which can heavily impact upon the successfulness of the data collection process. It is hoped that future research will utilise, and respond to, some of the critical suggestions which have been made in this paper.

A second contribution of this thesis to the wider discussion of agricultural research is also highlighted in Chapter 4. It demonstrates the significance and importance of ‘zooming’ out and looking at the farm as a system and unit and recognising that there are multiple actors on the farm that should, where possible, be included in the research process. Importantly, future research should look beyond the principal farmer. Emplaced research encounters, particularly within the farming community, offer the

possibility of adding additional participants, allowing a movement away from a myopic focus on the perspective of one, often male, principal informant. For this research, other farm members were positive additions, altering the interview dynamic and adding their own knowledge of the subject area. As such, this thesis has shown that farm management and farming behaviour is interlinked across generations and amongst those individuals working on the farm, and has highlighted that research in this area needs to move beyond the perspective of the individual farmer. It has been seen that these additional farm members play a crucial role in knowledge (re)development on farms and are important in influencing (non)participation in conservation practices.

The thesis has utilised, and taken forward, Bourdieu's ideas of habitus, field and capital in exploring the socio-cultural contexts of farmers' agri-environmental actions. It has been noted that this conceptual framing allows the thesis to attend not only to the context-specificity of farming practices, but also allows the conceptual observations to have relevance beyond the specific case studied here. The research has found that the farming identity is often articulated by farmers as a way of life and a "farmer off the farm is like a fish out of water" (Farmer 10). The thesis is the first to extend the 'good farmer' concept beyond terrestrial environments. It has seen that there are symbols of 'good farming' that have not previously been recognised, and that environmental-related symbols are starting to be integrated into the good farmer identity. The thesis has seen that, amongst farmers, riparian environments are distinct and are viewed differently from their land. This distinction arises from a combination of ownership structures and the particular materiality of rivers meaning that they neither stand, overtly, as objectified cultural capital, nor allow farming skill to be displayed upon or through them. In recognising the importance of symbolic and social capital, the thesis has highlighted the value of moving beyond more economic-centred approaches to understanding farmers' conservation activities. It has also extended previous research in this area by offering a finer-grained understanding of the specific forms of capital associated with different management(s) *within* farms - and more specifically around riparian environments – something that has previously received very limited attention.

Through the particular perspective taken, the findings from this thesis can aid understandings of how new regulations relating to watercourses and riparian

environments may (or may not) become embedded into farm management practices. Although there has been previous research which has focused on farmers' initial engagements with more general conservation schemes, there has been relatively scant attention paid to how farmers' ideals might change over time – particularly in relation to rivers and riparian environments. The empirical data presented here has shown that the farmers have, at least in part, incorporated the environmentally sensitive management of river environments into their self-concept of the good farmer. Important to note, is that their willingness to do this is, in large part, to do with their particular histories with these environments. As the thesis has reported, farmers have often had infrequent engagement with these habitats – at least in comparison to the detailed knowledges of their farmland – and are, accordingly, more open to outside influence on how these habitats should be managed and, as reported in Chapter 5, are amenable to fencing of water courses so that they can draw a clear distinction between their land management and the management of watercourses. Whilst such insights are important for our specific understanding of riparian environments, they also contribute to the wider literature on the good farmer. Specifically, the results of this thesis warrant a call for a more fine-grained and nuanced depiction of the good farmer. Whilst, to date, most of the discussions of the good farmer concept have taken place at the farm level, the current study has shown that a more micro, intra-farm discussion is needed. The farmers interviewed demonstrated how different aspects and spaces of the farm have different capital generating potential and, as such, how sustainable managements have the capacity to dovetail with pre-existing symbols of good farming. In this research, watercourse fencing provided a prime example of how these win-win scenarios - that benefit river health and accord with a good farmer identity - can practically occur. The fencing provided a tidy line and the efficient management of capital-generating livestock - symbols of good farming - whilst reducing access to the watercourse, improving the ecological status of these areas. The thesis has also shown, however, the pressing need for further research in this area. Many of the farmers spoken to were at the early stages of watercourse fencing, but there was some evidence emerging that, over time, issues such as weed encroachment and untidiness may reduce the perceived benefits and value of fencing and, perhaps, lead them to being seen as poor practice.

The thesis has applied the discussion of good farming at the micro-scale to a consideration of farming knowledges and which knowledge(s) become most valorised within farming communities. Specifically, this research has investigated the knowledge practices which surround farm riparian and river environments – something which has previously had limited attention. Chapter 6 provided much needed evidence of how, and in what ways, the knowledge practices surrounding terrestrial environments and riparian environments intersect or differ. Using the case of CSF, it was seen that advisors played a crucial role in providing the contexts and spaces for farmers to share and receive knowledge around water and river management. Crucially, however, the thesis has noted that such interactions do not take place in a social vacuum and that past, as well as current, social relations between farmers are crucial to how this knowledge is developed and shared. Thus, an empirical contribution made by the thesis is in recognising the crucial role that advisors may play in farmers’ knowledge sharing practices. In advancing the wider literature of agri-environmental knowledges, the thesis has shown that this is not a simple linear flow of knowledge – from expert (advisor) to lay person (farmer) – but involves a level of articulation and contextualisation by advisors. Previous research has suggested that advisors, to be successful, need to articulate knowledge in ways that are cognisable to farmers and other stakeholders. The findings of the current research extend this in highlighting the importance of what might be termed *geographical articulation*. This geographical articulation involved talking to farmers about the specifics of their farms and also utilising case study farms which has environmental and cultural parallels with their own farms. In this way, specific management prescriptions become less decontextualised and allow participating farmers to link them to symbols of good farming that they observe amongst those farms and farmers they have been shown. As will be returned to later in the chapter, this offers both an avenue for future research as well as a practical recommendation for those promoting sustainable river management. Conceptually, these observations also highlight how, just like farmers, advisors may develop and express their own capital within these communities. This relates not only to examples where advisors have practical farming knowledge, but also where they are able to take on board insights from farmers and work these into their own understandings and how they may develop local flexibility within how they apply broader prescriptions.

The research presented in this thesis has also contributed to the broader literature on farming knowledge(s) by highlighting the importance of place and spatial contexts to knowledge sharing practices. The farm, Chapter 6 highlighted, is an important crucible for knowledge practices – both in terms of farmers’ own farms and also the farms they might visit as part of CSF initiatives. Relating to the former, two contributions are made to the broader knowledge literature. First, and mirroring the discussion of the good farmer literature above, it is important to note that farmers have differing knowledges and varying knowledge practices relating to different parts of their farms. As suggested, farmers hold less detailed experiential knowledge of rivers (cf. land) and may thus be more willing to seek off-farm knowledge in managing these. Second, the thesis has highlighted the role of other on-farm stakeholders in developing farm-specific knowledges. Too often, farming knowledge is considered from the perspective of one individual farmer, but the empirical data presented here shows that it is, more often than not, a knowledge collective. This may relate to specific individuals (farming partners, farm workers, different generations of farmers etc) taking the lead for a specific part of the farming activity and, in turn, these different individuals working together to test, refute and rework knowledges with others on the farm. An allied contribution coming from the material presented in this thesis is that such knowledge collectives are not static. The most obvious articulation of this comes from farms comprised of several generations of farmers working together – the most common type in the UK – where each generation may not only bring new ideas and understandings, but how responsibility for specific parts of the farm may change as farmers age and change or swap roles with others. In addition to their empirical and conceptual value, these insights are also methodologically instructive – and, as discussed, lead to the call for future research to seek to engage with multiple actors on farms rather than just specific individuals. A second context which is important to knowledge development and sharing is that provided by CSF activities – including farm walks, farm visits and group meetings. As suggested, these offer a geographical articulation, for farmers, of particular knowledges associated with the schemes. More practically, though, they allow a less personalised, and hence less intimidating, space of knowledge sharing to take place – within which farmers are able to be reflective (and selective) on which knowledge they wish to share. Thus, a practical recommendation here is that ‘demonstration’ farms can be a useful place for knowledge sharing but, in light of the empirical findings here, these need to be carefully chosen – based not simply on how

well they manage rivers, but also on their pre-existing levels of good farming capital as these will allow trust between these and other farmers to be developed more rapidly and make it more likely that other farmers will follow the demonstration farm's example.

Bringing together the discussion of good farming and farming knowledge(s), the thesis contributes to the ongoing discussion of whether (and how) changes to the rules of the game may be reworking farmers' knowledge practices, reframing what (and how) knowledges are seen as legitimate. It has been seen that things such as changes to weather patterns and shifts in regulation(s) are creating an increase in the porosity of farmers' knowledge boundaries, increasing their receptiveness to, and reliance on, others' knowledge. Accordingly, when farmers were part of the knowledge generation or were given the opportunity to choose from alternative knowledge sources (rather than have them imposed), conservation knowledge had a degree of social legitimacy (from the farmers' perspective) and in the words of Ahnström (2009, p.3) placed "farmland biodiversity in the hands and minds of farmers". As such, it was made apparent that symbols of good farming were starting to emerge in relation to conservation and CSF activities, however it must be noted that these were strongly interlaced with, rather than replacing, more conventional symbols of good farming.

7.2 Implications for Policy and Practice

Issues of water quality and flooding have recently been brought to the fore in agricultural policy (discussed in Chapter 1). Building on the empirical outcomes of this thesis there are a number of points that might help to inform policy developments relating to agricultural management and, more specifically, riparian environments. Prior to the 'Farming Rules for Water' introduced in the April 2018 (discussed in section 1.2.2.4), the UK had no nationwide policy focusing solely on water. As the majority of data for this thesis was collected prior to the implementation of these rules, the success of them cannot be commented on and from this point onwards reflections of pre-existing policy and recommendations for future policy are made.

The WFD was transposed into UK regulation in 2003 and in 2015 entered into a second cycle. Defra (2018f) reported that between 2015 and 2017 there has been no improvement in water body status, with 84 per cent of surface waters failing to be close to their natural state. As such, taking forward the findings from this research, a number

of suggestions could be made. First is the suggestion that additional policy (on top of the WFD and ‘farming rules for water’) is arguably needed to develop a stronger catchment focus to improve surface water quality. Building on this, the observations from this thesis on ‘good farmer’ behaviour help us to understand why some conservation measures are either adopted or rejected in relation to water and riparian environments. The observations made in Chapter 4 around farmers’ preferences for tidy landscapes suggest that there may be some river-health-enhancing benefits that farmers will readily accept. As riparian environments do not offer the symbolic cultural capital to contribute to the good farmer identity, farmers’ engagement is often sporadic, allowing a ‘win-win’ scenario to form, benefiting river health as well as according with, or at least not working against, a good farmer identity. Watercourse fencing is one example considered here, but for practitioners wishing to develop river health further, the thesis’ findings suggest that there are other areas of direct river management which might be unproblematically taken on board by farmers. These might include tree planting or reworking of immediate riverbank environments to reduce sediment transfer – where farmers’ relative like of attachment to rivers, and the legal need to provide alternative sources of drinking water for cattle, mean that they need not interfere, significantly, with their wider practices. A note of caution from the thesis, however, is the potential for longer-term, more unanticipated, consequences of such management changes – such as the weed encroachment which was noted by some farmers after watercourse fencing. To minimise this, policy needs to be flexible to allow for adaption of rules to specific farms or provide guidelines that allow farmers to accommodate for these unforeseen consequences.

The farmers in this study have shown how working together as a collective can create a shift in farmers’ knowledge practices, reframing what (and how) knowledges are seen as legitimate and potentially increasing the likelihood of farmers taking on new, policy-directed, forms of knowledge. This thesis has observed that farmers might be reluctant to discuss certain topics, but that group meetings can provide spaces whereby communication and knowledge sharing is improved, and thus created a change in farming practice. As suggested in Chapter 6, the recommendation from the thesis is to encourage more of this type of interaction, with the caveat that the spaces used – particularly when they are farms – need to be chosen very carefully. Specifically, the thesis suggests a need to take into account the capital levels of the host farms – with

high levels of pre-existing capital allowing a strong level of trust, and ultimately knowledge sharing, to ensue.

Chapters 5 and 6 have noted the importance of advisors within farmers' (non) adoption of river-related management practices and these insights have wider practical relevance. This research has shown that if advisors are able to demonstrate contextualised knowledge, relating both to the specific locality and the relevance of advice to each specific farm, the credibility of their knowledge is increased – crucial if farmers are to take on this knowledge and put it into practice. As such, practitioners should seek to appoint advisors/enforcers that have an in-depth knowledge of the farming system and community. Importantly, continuity is central to this relationship between advisors and farmers, as it allows the build-up of capital and the increase in legitimacy and credibility of the advisor's knowledge.

7.3 Reflections on study and future research avenues

This thesis has been the first contribution that utilises and develops the conceptual framing of Bourdieu's concepts of habitus, field and capital in applying it to the context of riparian environments. This following section reconsiders the research approach, discussing how useful it has been in achieving the objectives of this thesis. The main methodological approach taken within this research was the use of in-depth interviews - utilising both the static and walking interview. The interviews, in general, have proved successful in a number of ways. First and foremost, they have contributed to the current understanding of sustainable natural resource management, highlighting some of the social processes underlying riparian management in agricultural landscapes. The informal, semi-structured nature of these interviews allowed for a deeper appreciation of issues that may not have been available through a more structured questionnaire type interview or survey. For example, where farmers were asked about their management in relation to riparian environments, many claimed there was little or no interaction, however with further questioning it was revealed that many of farmers' understandings of rivers were deeply enmeshed in narratives of their land management, and that it was only in probing these narratives that details of rivers and riparian environments began to emerge. The approach of walking interviews also proved particularly successful. In addition to providing a practical advantage of allowing managements to be seen in place, certain features and locations acted as aids

to memory, with areas of land being used as reference points for particular recollections. This approach also allowed more relaxed interviews which on average, lasted longer than those which were confined to farmers' houses. The walking interview, as previously discussed in Chapter 3 and 4, also allowed access to both a greater number and diversity of people. As noted by Clark (1999), the responses and opinions given by interviewees is often only a partial reality, with respondents, either intentionally or unintentionally, choosing to omit certain recollections and information. Although this research inevitably faced the same problem, its impact may have been reduced through interviewing multiple respondents on one farm and checking their recollections and interview responses against their actions observed during the walking interview phase.

Whilst the methodological approach taken in this research has created a number of advantages, there were some limitations. The nature of the walking interview approach meant it was time-consuming, both practically and in terms of the subsequent transcription and analysis phase. The open ended nature of the questioning meant there was much scope for digression by interviewees - which, on the one hand, created deeper content of the interview allowing the introduction of several thoughts and reflections, but on the other hand often led to the discussion of other topics which served to increase the time of interviews significantly. A second issue relates to who was interviewed. Whilst this research focused on responses from those operating farms, future research might usefully seek to take a parallel approach of interviewing advisors. This might offer an alternative perspective and also allow some level of triangulation between what farmers and advisors say, respectively. Whilst the methods used in the research borrow from ethnographic ideas, it does not fully adopt ethnography as an approach – such as that taken by Bennett (2006), who lived with a farming family for a year. Future research could focus more on this type of approach – spending time directly observing specific farming practices and wider interactions – although it should be noted that such an approach would, itself, be quite time consuming. Alongside this, whilst the interviews might not allow the same deep picture that an ethnography would allow, they have allowed a wider number of participants and perspectives to be included within the research. Future research might also seek to include one or more comparative case study areas to allow further reflection on the factors common across different areas and those which might be more

particular to the site considered here. Alongside this, the research might be developed further by adopting a more longitudinal approach, whereby the respondents could be re-interviewed over time (again as this thesis was restrained to 3 years this would not have been feasible). Such an approach would be valuable in allowing an exploration of how deep-seated the changes observed in the thesis become in the longer-term.

The general merits of the specific conceptual approach taken were outlined in Chapter 2 and have been expanded in the subsequent analysis. Specifically, the thesis has noted the ability of a Bourdieusian framing to generate insights into the heterogeneity of farm businesses and subsequent management – and allowing the consideration of the interplay with different levels of capital and the farming habitus. Secondly, the latter represents the accumulation of an individual's life experiences, encompassing certain ways of thinking, speaking, acting and reacting to situations and as such can help us to understand an individual's ability to act – either, consciously or subconsciously. In essence this gives the advantage of being able to understand why farmers may or may not adopt certain knowledge(s) and subsequent management practices. Thirdly, within the farming community there are numerous non-economic exchanges and Bourdieu's theory of capital helps to explore all the forms of capital, moving beyond just a discussion of economic capital accumulation. Finally, Bourdieu's concentration on capital (in all its forms), and the relevance of his work to the farming community, aligns to what this research is trying to comprehend. Importantly his work allows for the appreciation of the both economic and social and cultural factors that enable us to understand the farming community from a deeper sociological perspective. Whilst there have been a number of advantages to taking this stance, there are notably some limitations. Firstly, there is ambiguity in his writing. Bourdieu argues that he intends to make the reader work and that his complicated approach ensures that his writing could not be used to “manipulate this world in dangerous ways” (Bourdieu, 1990, p.52). However, Bourdieu does not always define adequately the terms he employs, and there is sometimes inconsistency in the way he utilises concepts. For example, it is not possible to find a consistent definition of habitus in Bourdieu's work, with at least three different characterisations of habitus given: as a capacity, as a set of dispositions, and as a scheme for practice. As such it can be argued that its ambiguities conceal a deeper imprecision concerning the subject of social action.

Secondly, it has been argued that Bourdieu's theory is too deterministic in omitting notions for individual agency in the face of dominating social structures (King, 2000; Couldry, 2005) and is largely neglectful of gender issues (McLeod, 2005). In line with such arguments, a similar critique has been given to the 'good farmer' literature in that it has only focused on the male 'main farmer' (Riley, 2016b). This latter critique was not deemed to be a significant problem in the adoption of this framework within the current research as it was not specifically focusing on gender dynamics. Despite these critiques, it has been suggested that Bourdieu's theories can be re-read as a general theory of change (Yang, 2014) and they retain their status, albeit contested, as fundamental to sociological understandings of social structures and are used widely in rural sociology. For this research, Bourdieu's ideas have proved useful in allowing for the simultaneous consideration of the economic, social, cultural and symbolic positions of farmers. Additionally, Bourdieu's thinking has a central concern with what people do in their daily lives and this scale of analysis has been especially useful in this thesis when trying to unpick some of the micro-scale factors and practices which shape farmers' engagements with riparian environments.

In exploring the potential of Bourdieusian ideas to inform the discussion of farmers, this thesis also highlights possible avenues for future research. From a methodological viewpoint the research has highlighted that although the qualitative interview (both static and walking) is a useful tool for research within the farming community, this thesis echoes the call for methods that help researchers to capture, and importantly, (re)present the non-verbal – this might include the use of geo-narratives (Bell et al., 2015; Bell et al., 2017) and video recording (Simpson, 2011). In addition, this research has utilised the walking interview to uncover farmers' different embodied engagements with their land, however further methodological sophistication is needed to examine how new technologies and decision-making tools may be altering farmers embodied engagements with their land. Further to this, an interrelated suggestion for future research might be one that traces the developing relationship between farmers and riparian environments, both on and beyond their farmland. This thesis has focused on the present and recent history, but future research could usefully consider how new and changing political conditions could (re)shape farmers' associations with their immediate environment (see Riley (2016a) for a terrestrial perspective). An extension of this research might also consider monitoring these changes through riparian and

ecological surveys and utilising the recent developments in remotely sensed data (Panagos et al., 2015).

This thesis has contributed to the growing body of social science research which seeks to uncover the nature and complexities of farmers' knowledge – both relating to how they understand their farm environments, as well as conflicts and discrepancies that may arise when different knowledges are brought to together on the same area of land. Previous research has highlighted the importance of moving beyond the dichotomous labelling of knowledge as either 'expert' or 'lay', and this thesis extends the call by suggesting a move beyond reifying the label of 'farmer knowledge'. The thesis has started to address this through the recognition of hybrid knowledge – a synthesis of both scientific and experiential understandings. An associated suggestion for future research would be to consider farmers long-term engagement with other policies (this thesis, for example, used CSF). This could highlight if there is more widespread evidence of farmers' knowledge sharing, if they develop innovative solutions to environmental questions and if the same legitimacy is given to off-farm knowledges. Exploring and monitoring this engagement is relevant as it could reveal important variances and nuances to how farmers take-on or reject knowledges in different contexts and in doing so could shape future agricultural policy and its dissemination.

As this thesis has observed, the specific management and conservation of riparian environments offers several directions for future research. Previous research has highlighted the relationship between different stakeholders in a catchment, such as scheme officials, advisors and landowners, and how their co-operation is crucial to the successful and holistic management of natural environments (both terrestrial and aquatic). This research has shown how farmers take on knowledge from outside sources regarding the management of riparian environments, however additional research is needed to consider how differing perspectives – between stakeholders – can be brought together in developing future managements and the conservation of riparian environments on farms. In paying attention to the social relations and social contexts of knowledge and knowledge practices, this thesis has also recognised these social elements are crucial to farmers' knowledge development, contestation and sharing. Further research, however, is needed to give closer recognition to the temporal dynamicity of farmers' knowledge interactions - noting that their interactions with

other farmers, as well as environmental advisors and officials, is something that will change, evolve and develop over time.

Appendices

Appendix A.1 – Interview Schedule

The interview schedule outlines the broad themes followed in the interview encounter and more targeted questions that were available if the interviewee goes off topic or the interviewer needed assistance.

Introduction: Hello, my name is Emma Thomas and during this conversation, I would like to talk to you about: your farm, your farm management and agricultural practices, what it is like farming in the River Ribble catchment and how this does, or does not affect how you farm in this area and are you signed up to any AES's or doing anything similar. Other questions may arise along the way, I'm here to get your opinions and understandings so if there is anything you feel is relevant please feel free to maybe go off topic or include things you think might be helpful to this research,

So, with these topics in mind let's start...

Farm background and history

1. Could you tell me about the farm? (i.e. size, crops, livestock, diversification, practices)
2. Could you tell me about the history of the farm?
3. Have your farming practices changed over time? How? Why?

Farm management and agricultural practices

1. What are the main aims and objectives of the farm?
2. What are the main difficulties in achieving the farms aims and agricultural activities?
3. What kind of role does water take on your farm/ how much does it/does not dictate?
4. Have you had to add any infrastructure to help with water management?

Agri-environmental schemes/conservation orientated management

1. Is the farm entered into any AES's or equivalent? If not, why not?
2. What do you have to do as part of that?
3. Does it affect how you manage your farm? On a daily basis? Monthly?
4. Are you aware of the CSF initiative and/ or the capital grant?
5. Have you done anything with CSF or because you are in CSF catchment?

Farm Advice and other knowledge sources

1. Have you heard of the discussion groups/farm walks/RRT?
2. Do you go to the discussion groups?
3. Have you implemented anything on the farm because of your involvement?
4. When did you implement *** on your farm?
5. Why did you choose to implement this feature?

6. Who was the key decision maker?
7. What first made you consider the implementation of ***?
8. Do you think there are any short-term/ long-term disadvantages to ***?
9. Do you know other farmers who have implemented ***?
10. Would you recommend *** to your friends?
11. If people have not adopted ***, in your opinion why do you think they have not?
12. Do you ever ask advice about these more conservation-oriented managements?
13. Who? Advisors? Those on your farm? Those on a different farm?

Farming Identity

If needed, reassure anonymisation: don't worry I'm not here checking up on you, just trying to understand farmers point of views and opinions. All answers will be anonymised.

1. Do you know much about the river?
2. Do you about its water quality?
3. Has the river been affected by pollution/ flooding?
4. What do you see as the source/cause of this pollution/flooding?
5. Has it changed over time? How? Why?
6. Do you think farmers should take an active role in reducing diffuse pollution/flood risk?
7. If yes, do you they are doing something? How?

Follow-up Questions

1. Can you expand a little on this?
2. And is there anything else?
3. Can you give me some examples?

Closing question:

1. Thanks for your time, we've covered what I was hoping to discuss, is there anything you think I haven't asked that would be relevant? Or something I have missed?

Appendix A.2 – Participant Information Sheet



PARTICIPANT INFORMATION SHEET

You are being invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. Please also feel free to discuss this with your friends and relatives if you wish. We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

Title: Understanding the socio-cultural contexts of farmers' agri-environmental actions

Aims:

1. To explore farmer's actual understandings and management(s) of river and riparian environments (on their farm and beyond)
2. To utilise the above to develop a more holistic 'catchment focused approach' for improving farm conservation activities and sustainable river management.

Objectives:

1. To explore the particular 'knowledge practices' which farmers draw upon in understanding the river and riparian environment on their farm.
2. To examine the symbolic value farmers associate with, and social capital derived from, managements (both for production and for conservation) of different features and areas of their farms.
3. To investigate the role that past conservation interventions – both in terms of AES participation and specific managements supported by the Rivers Trust – play (or not) in developing a longer-term [re]farming of the farmer's self-concept (as producer, conservationist etc).
4. To explore the potential of such conservation interventions to act as 'trigger events' to stimulating wider pro-active conservation activities amongst farmers and develop a set of recommendations for how these might be employed beyond the case study area.

The project aims to explore the experiences of farmers by undertaking interviews with the participants. Interviews will be recorded (audio only) in order for the researcher to undertake analysis. Please note that participation is voluntary and that you are free to withdraw at any time without explanation and without incurring a disadvantage. In addition, if you should experience any discomfort or disadvantage as part of the research this should be made known to the researcher immediately. Results from the interviews will be anonymised and used to write a final report that will be submitted to the university. Please note, participants will not be identifiable from the results. If you wish to obtain a copy of the report please contact myself via email at: E.E.Thomas@liverpool.ac.uk.

If you are unhappy, or if there is a problem, please feel free to let us know by contacting Mark Riley on 0151 794 2835, and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer at ethics@liv.ac.uk. When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Thank you for reading this.

Version 2.3
January 2017

Appendix A.3 – Participant Consent Form



Committee on Research Ethics

PARTICIPANT CONSENT FORM

Title of Research Project: The understanding of the socio-cultural contexts of farmers' agri-environmental actions

Researcher(s):

- | | Please
initial box |
|---|-------------------------------|
| 1. I confirm that I have read and have understood the information sheet dated, January 2017, for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. | <input type="checkbox"/> |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline. | <input type="checkbox"/> |
| 3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish. | <input type="checkbox"/> |
| 4. I understand and agree that my participation will be audio recorded and I am aware of and consent to your use of these recordings for the following purposes: data transcription and analysis | <input type="checkbox"/> |
| 5. I agree to take part in the above study. | <input type="checkbox"/> |

_____	_____	_____
Participant Name	Date	Signature
_____	_____	_____
Researcher	Date	Signature

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